
Eastern Kern County Property Acquisition Final Environmental Impact Report

State Clearinghouse #2012091066



Volume 3: EIR Technical Appendices

October 2013



State of California
Department of Parks and Recreation
Off-Highway Motor Vehicle Recreation (OHMVR) Division

Eastern Kern County Property Acquisition
Final Environmental Impact Report
State Clearinghouse #2012091066

Volume 3: EIR Technical Appendices

October 2013



Prepared for:

State of California, Department of Parks and Recreation
Off-Highway Motor Vehicle Recreation (OHMVR) Division
1725 23rd Street, Suite 200
Sacramento, CA 95816
(916) 324-4442
www.ohv.parks.ca.gov

Prepared by:

TRA Environmental Sciences, Inc.
545 Middlefield Road, Suite 200
Menlo Park, CA 94025
(650) 327-0429
www.traenviro.com

INTRODUCTION

This document is Volume 3 of the Final Environmental Impact Report (EIR) for the Eastern Kern County Property Acquisition Project. In accordance with CEQA Guidelines Section 15132, this document together with the EIR with Revised Text (Volume 1) and Comments and Responses on Draft EIR (Volume 2) constitutes the Final EIR for the Eastern Kern County Acquisition Project.

This volume contains technical appendices as originally presented in the Draft EIR dated February 2013. No changes to the appendices have been made since publication in the Draft EIR.

This volume presents the following appendices:

- Appendix A.** Scoping Documents
- Appendix B.** Parcel Size and Characteristics
- Appendix C.** Grazing Permits
- Appendix D.** Air Quality and Greenhouse Gas Data
- Appendix E.** Botanical Resources Report
- Appendix F.** Desert Tortoise Survey of [ReNu] Resources Property Acquisition Project, Kern County, CA
- Appendix G.** Eastern Kern County Acquisition Baseline Avian Resources
- Appendix H.** Special-Status Wildlife Surveys For [ReNu] Resources Property Acquisition Project, Kern County, CA
- Appendix I.** Biology Tables
- Appendix J.** A Cultural Resource Survey for the Onyx Ranch Acquisition Kern County, CA
- Appendix K.** Preliminary Assessment of Erosion Hazard Potential for Eastern Kern County

APPENDIX A

SCOPING DOCUMENTS

California Department of State Parks, OHMVR Division

NOTICE OF PREPARATION**RECEIVED**

To: State Clearinghouse
 Responsible Agencies
 Trustee Agencies
 County Clerks
 Interested individuals and organizations
 Federal Agencies

SEP 27 2012
 STATE CLEARING HOUSE

**Subject: Notice of Preparation (NOP) of the Eastern Kern County Acquisition
 Environmental Impact Report (EIR)**

The California Department of Parks and Recreation (CDPR), Off-Highway Motor Vehicle Recreation (OHMVR) Division, 1725 23rd Street, Suite 200, Sacramento, CA 95816, will be the Lead Agency for the Eastern Kern County Acquisition EIR. The purpose of this NOP is to invite comment on the scope and content of the environmental review which is germane to the proposed project.

Pursuant to California Environmental Quality Act (CEQA) Guidelines §15082 (b), you have 45 days from the date of receipt of this NOP to respond. **Responses must be received by 5 pm November 11, 2012.** Please send your responses to Mr. Dan Canfield, Planning Manager, at the address shown above or to dcanfield@parks.ca.gov. Agency responses should include the name of a contact person at the agency.

All interested individuals, organizations, and agencies are encouraged to attend EIR scoping meetings to be held at the following locations:

Tuesday, October 16, 2012**Ridgecrest, CA****6 pm – 8 pm**

Carriage Inn

901 North China Lake Boulevard
 Ridgecrest, CA

Wednesday, October 17, 2012**Lancaster, CA****6 pm – 8 pm**

Oxford Suites

1651 W Avenue K
 Lancaster, CA

Additional project information is available on the OHMVR Division Website:
www.ohv.parks.ca.gov/ohv-ceqa-notices

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- Project Title:** Eastern Kern County Acquisition
- Project Applicant:** California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division
- Project Location:** Eastern Kern County west of State Route 14 between the cities of Mojave and Homestead (near Ridgecrest). See attached project location map (Figure 1).

Project Description:

The California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation (OHMVR) Division is proposing to acquire up to 60 privately-owned parcels (approximately 28,500 acres) in Kern County, California, from Renewable Resources Group (Renewable Resources) (Figure 1). The parcels are within an area frequently referred to as the Onyx or Rudnick Ranch (note however that the town of Onyx is approximately 20 miles northwest of the project area). The parcels are largely interspersed with lands owned by the U.S. Bureau of Land Management (BLM) (Figure 2). The checkerboard of public and private lands results in roads and trails between BLM parcels often traversing private lands. Off-highway vehicle (OHV) recreation occurs on many of the Renewable Resources and BLM parcels, largely on designated roads and trails.

The EIR for the proposed purchase will examine the direct and indirect environmental impacts associated with: 1) purchase of the parcels by the OHMVR Division from Renewable Resources, and 2) use and management of the parcels for ongoing recreation and resource protection prior to adoption of a general plan. A general plan is not part of the current CEQA process. Preparation and approval of a general plan is a separate action from this project and would be subject to separate environmental review.

The majority of the acreage to be purchased is located within the Jawbone-Butterbredt Area of Critical Environmental Concern (JBACEC) located in the western Mojave Desert. This area is the transition zone between the West Mojave Desert bioregion and the Sierra Nevada. A few parcels in the northwest project area are within the Sequoia National Forest (Figure 2). Lands proposed for acquisition also include the following areas of interest: Butterbredt Springs and springs within Alphie Canyon, which provide important habitat, and lands within the Jawbone Canyon Open Area (Figure 3). Open areas are the only areas where motorized travel is not restricted to designated roads and trails. One parcel borders the Dove Springs Open Area, and two parcels border Red Rock Canyon State Park. A number of parcels support intermittent channels, with some subject to flash floods under a 100-year storm event. Many parcels, especially to the east, are crossed by existing designated routes for both street-legal and non street-legal vehicles. The Pacific Crest Trail traverses the northern and western project area, and the Los Angeles Aqueduct traverses several of the easternmost parcels.

In addition to their recreational and scenic value, these private lands contain important springs, riparian areas, cultural sites, and other sensitive resource areas. Acquisition of these parcels would provide better overall management of the area as it would allow land managers complete access to those lands to manage and support the recreational uses, protect sensitive resources, and restore and rehabilitate damaged areas.

*Renewable Resources Property Acquisition – Notice of Preparation
California Department of Parks and Recreation, Off-Highway Motor Vehicle Division – August 2012*

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The OHMVR Division in consultation with BLM would determine the most effective way to manage the parcels using resources available from both agencies. The OHMVR Division has started discussions with BLM regarding future management. The OHMVR Division has also been working with the BLM to develop data on existing resources and management considerations.

If the OHMVR Division acquires the parcels, some management changes may occur due to operational, resource, or other management needs, but no changes significantly affecting the amount, type, or location of OHV recreational activities are proposed. No expansion of open riding areas is proposed. Upon acquisition, the OHMVR Division would begin to provide resource and visitor services via rangers, environmental scientists, and maintenance staff, which is not occurring on the private parcels.

Anticipated activities would fall into five broad categories: visitor activities, general maintenance and operations, natural and cultural resource management, special projects, and special events. The following summarizes the activities that would occur on the parcels:

- Ongoing visitor activities would include motorized vehicle use in the open areas and on designated routes outside the open areas, picnicking, hiking, horseback riding, bicycle riding, wildlife viewing/birding, and camping. Camping would be allowed throughout the OHV use area with motorized access restricted to designated routes except in open areas. Dogs would continue to be allowed.
- Maintenance and operations would include garbage pick-up, facilities maintenance, signing, fencing, and ongoing maintenance of trails and access corridors. General park operations would include patrols, public safety and law enforcement, medical aid, and emergency response to law enforcement and medical aid calls. The frequency and extent of these services would be expected to increase under OHMVR Division management as BLM staffing of the area is limited.
- Natural and cultural resource management activities would include installing and maintaining sensitive habitat protection fences, installing and maintaining other closure area boundaries signs and fences, wildlife species monitoring and management, habitat monitoring and management, vegetation management, exotic pest plant removal, and restoration planting. The frequency and extent of these services would be expected to increase under OHMVR Division management as BLM staffing of the area is limited, plus such activities are generally not conducted on the private parcels.
- Special projects are those that are not considered routine but are required to solve a facilities problem, such as installing restrooms or ensuring ADA compliance. The only such projects anticipated upon acquisition and prior to adoption of a general plan would be minor in scope. Public Resources Code section 5002.2 (c) does not allow any development that results in the permanent commitment of unit resources without a general plan.
- Special events could include organized group activities such as recreational events (including OHV competitions, organized trail rides and poker runs), tours for large groups interested in the project area, and media events that draw an unusually high number of people to the park unit and/or congregate people in confined areas. Such

*Renewable Resources Property Acquisition – Notice of Preparation
California Department of Parks and Recreation, Off-Highway Motor Vehicle Division – August 2012*

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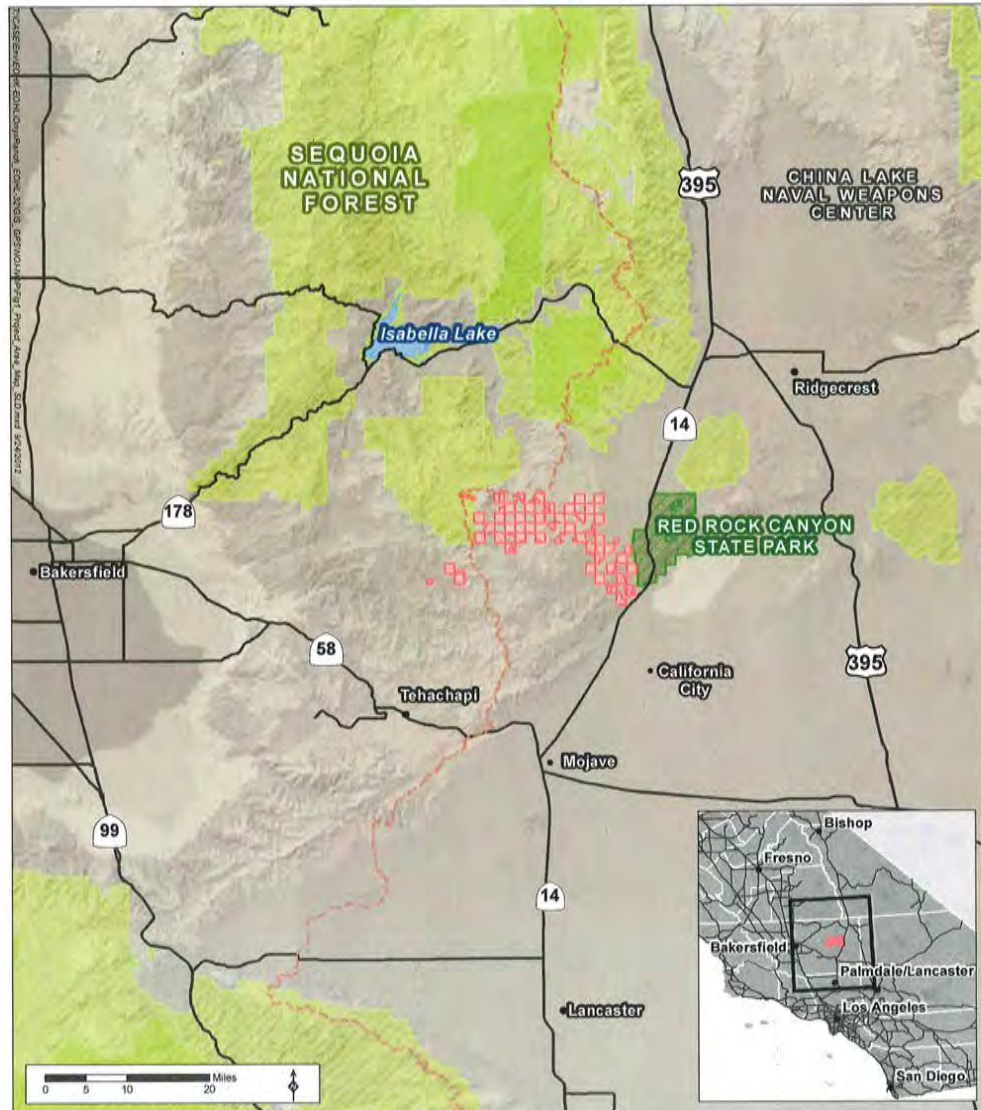
activities are subject to the issuance of Special Event Permits, which are themselves potentially subject to separate CEQA review.

Environmental Review:

In accordance with the requirements of CEQA, the OHMVR Division has determined that an EIR for the proposed project should be prepared. Potential adverse impacts relate to air quality, biology, cultural and natural resources, geology and soils, hydrology, noise, recreation, and traffic. Further refinement of the scope of the technical issues to be addressed will occur during the CEQA process, including input received in response to this NOP.

Signature: James H. Brown Date: 9/26/12
Title: Acting Chief OHMVR Division

Renewable Resources Property Acquisition – Notice of Preparation
California Department of Parks and Recreation, Off-Highway Motor Vehicle Division – August 2012



Source: BLM, ESRI, CA State Parks

- Major Roads
- - Pacific Crest Trail
- Project Parcels
- US Forest Service
- California State Parks



Figure 1 Project Location
Eastern Kern County Acquisition NOP

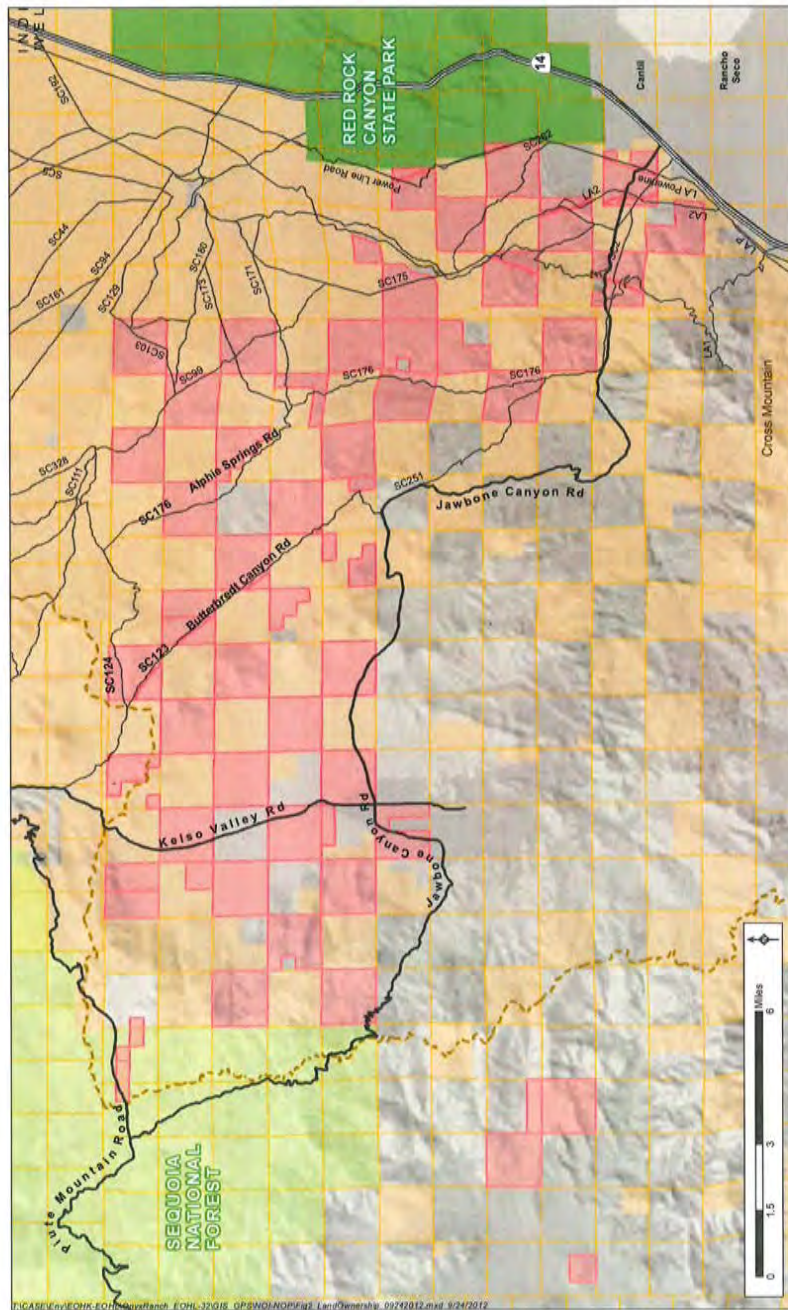


Figure 2 Land Ownership
Eastern Kern County Acquisition NOP

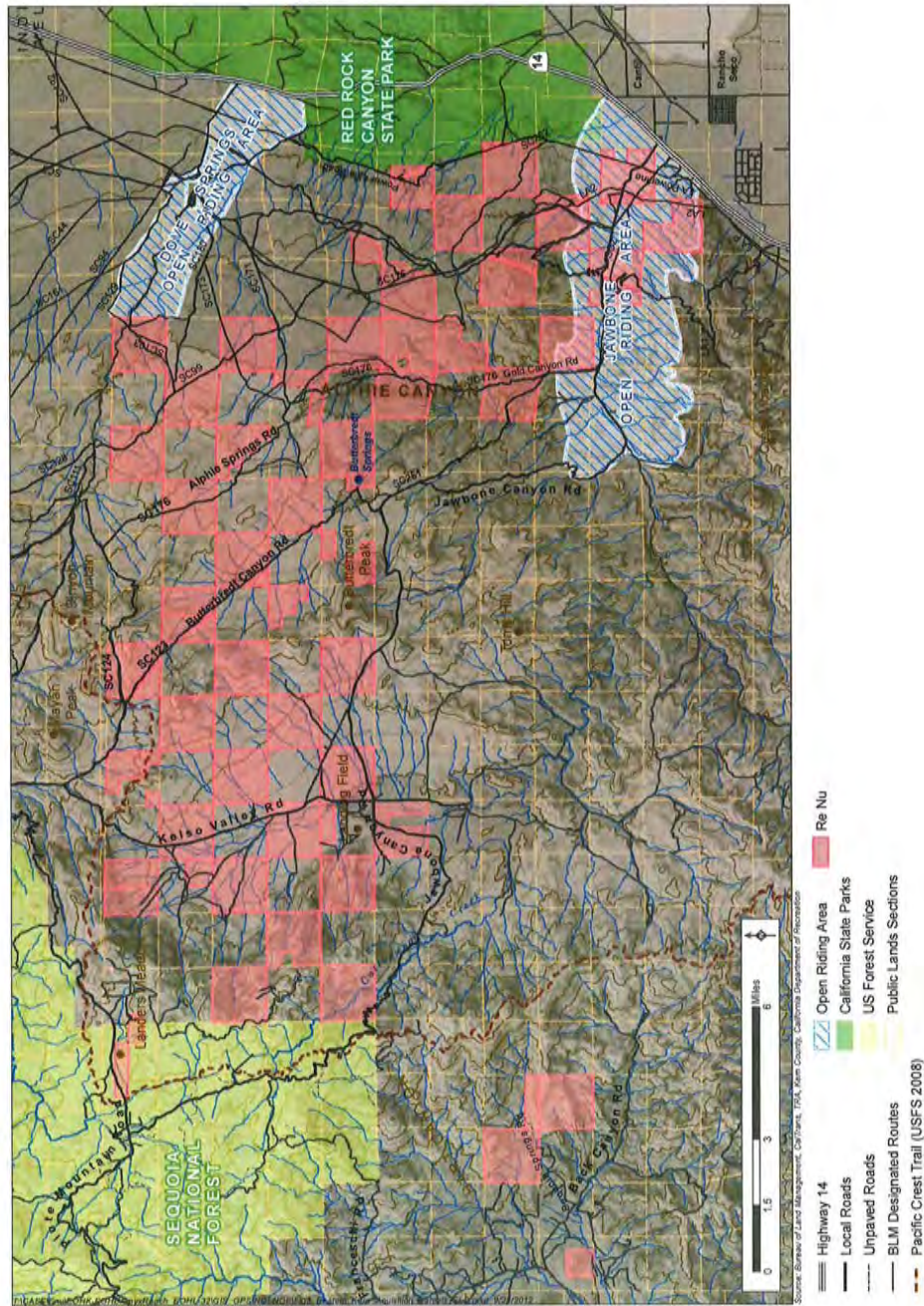


Figure 3 Eastern Kern County Acquisition Parcels
 Eastern Kern County Acquisition NOP





EDMUND G. BROWN JR.
GOVERNOR

STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT



KEN ALEX
DIRECTOR

Memorandum

Date: October 24, 2012
To: All Reviewing Agencies
From: Scott Morgan, Director
Re: SCH # 2012091066
Eastern Kern County Acquisition

The State Clearinghouse forwarded the above-mentioned project to your agency for review on September 28, 2012 with incorrect review dates. Please make note of the following information for your files:

Review period ends: November 13, 2012

We apologize for any inconvenience this may have caused. All other project information remains the same.

cc: Dan Canfield
CA Department of Parks and Recreation
OHMVR Division
1725 23rd Street, Suite 200
Sacramento, CA 95816

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

SCH# 2012091068

County: Kern

NOP Distribution List

- Resources Agency
 - Nadell Gayou
 - Dept. of Boating & Waterways
 - Nicole Wong
 - California Coastal Commission
 - Elizabeth A. Fuchs
 - Colorado River Board
 - Gerald R. Zimmerman
 - Dept. of Conservation
 - Elizabeth Carpenter
 - California Energy Commission
 - Eric Knight
 - Cal Fire
 - Dan Foster
 - Central Valley Flood Protection Board
 - James Herola
 - Office of Historic Preservation
 - Ron Parsons
 - Dept. of Parks & Recreation
 - Environmental Stewardship Section
 - California Department of Resources, Recycling & Recovery
 - Sue O'Leary
 - S.F. Bay Conservation & Dev't. Comm.
 - Steve McAdam
 - Dept. of Water Resources
 - Agency
 - Naudell Gayou
 - Fish and Game
 - Dept. of Fish & Game
 - Scott Flint
 - Environmental Services Division
 - Fish & Game Region 1
 - Donald Koch
 - Fish & Game Region 1E
 - Latine Harrisberger
 - Fish & Game Region 2
 - Jeff Diongesen
 - Fish & Game Region 3
 - Charles Armer
 - Fish & Game Region 4
 - Julie Vance
 - Fish & Game Region 5
 - Leslie Newton-Reed
 - Habitat Conservation Program
 - Gabriela Gatolet
 - Fish & Game Region 6
 - Habitat Conservation Program
 - Fish & Game Region 6 I/M
 - Brad Henderson
 - Inyo/Mono, Habitat Conservation Program
 - George Isaac
 - Dept. of Fish & Game M
 - Marine Region
- Other Departments
 - Food & Agriculture
 - Sandra Schubert
 - Dept. of Food and Agriculture
 - Depart. of General Services
 - Public School Construction
 - Dept. of General Services
 - Anna Garbett
 - Environmental Services Section
 - Dept. of Public Health
 - Jeffery Worth
 - Dept. of Health/Drinking Water
 - Delta Stewardship Council
 - Kevan Samsam
- Independent Commissions/Boards
 - Delta Protection Commission
 - Michael Machado
 - Cal EMA (Emergency Management Agency)
 - Dennis Castriilo
- Native American Heritage Comm.
 - Debbie Treadway
- Public Utilities Commission
 - Leo Wong
- Santa Monica Bay Restoration
 - Guangyu Wang
- State Lands Commission
 - Jennifer Deleong
- Tahoe Regional Planning Agency (TRPA)
 - Cheryl Jacques
- Business, Trans & Housing
 - Caltrans - Division of Aeronautics
 - Philip Crimmins
 - Caltrans - Planning
 - Terri Panovic
 - California Highway Patrol
 - Suzann Ikeuchi
 - Office of Special Projects
 - Housing & Community Development
 - CEQA Coordinator
 - Housing Policy Division
- Caltrans, District 1
 - Rex Jackson
- Caltrans, District 2
 - Marcelino Gonzalez
- Caltrans, District 3
 - Gary Arnold
- Caltrans, District 4
 - Erik Ahn
- Caltrans, District 5
 - David Murray
- Caltrans, District 6
 - Michael Navarro
- Caltrans, District 7
 - Dianna Watson
- Air Resources Board
 - Airports/Energy Projects
 - Jin Lerner
 - Transportation Projects
 - Douglas Ito
 - Industrial Projects
 - Mike Tolstrup
- State Water Resources Control Board
 - Regional Programs Unit
 - Division of Financial Assistance
 - State Water Resources Control Board
 - Student Intern, 401 Water Quality Certification Unit
 - Division of Water Quality
 - State Water Resources Control Board
 - Phil Crader
 - Division of Water Rights
 - Dept. of Toxic Substances Control
 - CEQA Tracking Center
 - Department of Pesticide Regulation
 - CEQA Coordinator
- Caltrans, District 8
 - Dan Kopulsky
- Caltrans, District 9
 - Gayle Rosander
- Caltrans, District 10
 - Tom Dumas
- Caltrans, District 11
 - Jacob Armstrong
- Caltrans, District 12
 - Marlon Regisford
- Regional Water Quality Control Board (RWQCB)
 - RWQCB 1
 - Cathleen Hudson
 - North Coast Region (1)
 - RWQCB 2
 - Environmental Document Coordinator
 - San Francisco Bay Region (2)
 - RWQCB 3
 - Central Coast Region (3)
 - RWQCB 4
 - Teresa Rodgers
 - Los Angeles Region (4)
 - RWQCB 5S
 - Central Valley Region (5)
 - RWQCB 5F
 - Central Valley Region (5)
 - Fresno Branch Office
 - RWQCB 5R
 - Central Valley Region (5)
 - Redding Branch Office
 - RWQCB 6
 - Lahontan Region (6)
 - RWQCB 6V
 - Lahontan Region (6)
 - Victorville Branch Office
 - RWQCB 7
 - Colorado River Basin Region (7)
 - RWQCB 8
 - Santa Ana Region (8)
 - RWQCB 9
 - San Diego Region (9)
 - Other
 - Conservancy

Last Updated 8/14/2012



November 14, 2012

Ms. Janelle Beland
Acting Director
California Department of Parks and Recreation
P.O. Box 942896
Sacramento, California 94296

Mr. Phil Jenkins
Division Chief
California Off-Highway Motor Vehicle
Recreation Division
P.O. Box 942896
Sacramento, California 94296

Dear Ms. Beland and Mr. Jenkins:

We write today to express our concern that the formal Notice of Preparation for the Eastern Kern County Acquisition Environmental Impact Report (EIR) fails to mention cattle grazing as a permissible activity that would be considered as part of this land acquisition proposal.

The Eastern Kern County Acquisition proposes to acquire approximately 60 privately-owned parcels totaling 28,500 acres for the Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division (OHMVRD) for continued motorized recreation in the area. However, the private land parcels are interspersed with U.S. Bureau of Land Management (BLM) managed lands. It is our understanding that due to the checkerboard nature of the BLM and private lands, grazing occurs on both. BLM has issued a grazing permit for its lands in the area, and the current permittee leases the private lands for grazing, which upon acquisition of the private lands by the current owner, it was stipulated that grazing on these lands would continue. Furthermore, we have been told that motorized recreation and grazing have coexisted in this area on both BLM and private lands for years.

As strong supporters of multiple-use of Federal and state public lands, we support the preservation of off-highway motor vehicle recreational areas and hope that should OHMVRD acquire these lands, this form of recreation remains robust in the area. We also believe that grazing, which has occurred in the area for more than 80 years, should be included in the NOP

and EIR as a permissible activity on the lands to be acquire by California. We are concerned that if the acquisition EIR fails to include grazing, it has the potential to create conflict between state-ownership and management of its lands once acquired and the BLM lands, and could disqualify grazing as a permissible activity in a general plan for the state-owned property in the future.

As you continue with the EIR process and development of management plans for the Eastern Kern County Acquisition, we encourage you to work with local ranchers in the area and leaders in the off-highway vehicle recreation community to maintain motorized recreation and grazing in the area, including on any lands that may be exchanged between Federal and state government departments, and request that grazing be included as a permissible activity in the acquisition EIR. Please do not hesitate to contact Kyle Lombardi with Congressman Kevin McCarthy, Todd Moffitt with Senator Jean Fuller, Robert Smith with Assemblywoman Shannon Grove, or Leigh Carter with Assemblywoman Connie Conway if you have any questions.

We appreciate your attention on this important matter.

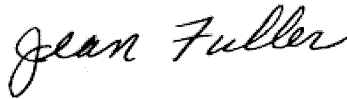
Sincerely,



KEVIN McCARTHY
Member of Congress



SHANNON GROVE
California State Assembly



JEAN FULLER
California State Senate



CONNIE CONWAY
California State Assembly



In Reply Refer To:
4100(P)
GR#403503
LLCAD-05000.37

Mr. Dan Canfield
Planning Manager
California Department of Parks and Recreation
Off-Highway Motor Vehicle Recreation Division
1725 23rd Street, Suite 200
Sacramento, CA 95816

Dear Mr. Canfield;

The BLM has obtained a copy of a "Notice of Preparation" (NOP) at recent information meeting that outlines several areas of concern which will be assessed by the California Department of Parks and Recreation (CDPR), Off-Highway Motor Vehicle Recreation (OHMVR) Division with regard to Eastern Kern County Acquisition Environmental Impact Report (EIR). The area in question is currently owned by Renewable Resources Group (RRG) where private land exists in a checkerboard land ownership pattern with the BLM. We understand that this document is necessary to satisfy CEQA requirements during the NEPA process.

After reading the NOP the BLM is perplexed because the document makes no mention of cattle grazing as a current and ongoing activity which would be analyzed as part of the Acquisition EIR. The current owner, RRG, acquired the land with the stipulation that grazing would be permitted. We know that the impetus for cattle grazing stems from the availability of federal land. However, because the ownership of land in the area has a checkerboard pattern, grazing on federal lands, and grazing on private (potentially State owned) lands are inseparable. The two land ownership types are interwoven by the practice of cattle grazing as well as by other activities. Given this situation, we believe cattle grazing should be addressed in any subsequent scoping document and in the Acquisition EIR as a current and ongoing activity.

Because the OHMVR Division did not list grazing as one of the present and recognized activities on the private land in the NOP, the BLM wonders, what is the OHMVR Division's commitment to the future of grazing in the project area? The current permittee has a ranching operation that depends upon not only forage on private land, but also upon facilities and waters on private land and would become OHMVR managed land. Ranching has been a legitimate and honorable endeavor in the project area for over 80 years. The current permittee is engaged in long term efforts to make his grazing activity more efficient and less impactful. However, neither the permittee nor the BLM can make adequate improvements without the commitment of the OHMVR Division to grazing activity. The BLM will continue to manage for cattle grazing with the anticipation that the OHMVR Division will recognize the interdependent circumstances that dictate the future of grazing in the project area.

Thank you for consideration of these concerns. If the Ridgecrest BLM can be of assistance in the future please contact either Robert Pawelek, Resources Branch Chief at 760-384-5430 or Sam Fitton, Natural Resource Specialist at 760-384-5432.

Sincerely,

Robert W. Pawelek
Field Manager, Acting

Cc: Michael Kaschak, Renewable Resources Group
Bruce Hafenfeld, Hafenfeld Ranch
Eric Hafenfeld, Hafenfeld Ranch

Signed hard copy sent via surface mail

File Code: 2350

Date: November 5, 2012

Mr. Dan Canfield
Planning Manager
California Department of Parks and Recreation
(OHMVR)
1725 23rd Street
Suite 200
Sacramento, CA 95816

Dear Mr. Canfield,

This letter is reference to the Notice of Preparation of the Eastern Kern County Acquisition Environmental Impact Report and is in reference to the project's potential implications to the Pacific Crest National Scenic Trail (PCT) which traverses the northern and western project areas.

The U.S. Forest Service is designated as the lead agency for management of the PCT and the collaborative management with California Department of Parks and Recreation and the Bureau of Land Management, and the Kern County Sherriff's Office has been a critical to our success in protecting the trail corridor in that area. As you are likely aware, there has been significant interagency and stakeholder effort in Kern County to address illegal motorized trail use on the PCT.

The nature and purpose of the PCT is to provide high-quality, scenic, primitive hiking and horseback-riding experiences, and to conserve natural, scenic, historic, and cultural resources along the PCT corridor. Motorized use is prohibited on the PCT in the National Trails System Act (P.L. 90-543) and under 36 CFR 261.20. While the project proposal does not specifically address motorized or mechanized trail development, be advised that approximately 4,500 acres of this 28,500 acre proposal are within 1 mile of the PCT and would be of concern if motorized trails were created within them.

The EIR references collaboration with the BLM regarding future management of lands. The BLM Manual Policy Direction 6250 for National Scenic and Historic Trails directs to safeguard the nature and purposes of National Trails to provide for maximum compatible outdoor recreation potential, and protection, conservation and enjoyment of the nationally significant scenic, historic, natural, and cultural qualities of the areas *and associated settings* through which such trails may pass, as well as the primary use or uses of the trail. There are approximately 4,000 acres of BLM lands that would be of similar concern since they could provide access within 1 mile of the PCT.

If you have additional questions regarding these concerns or management of the Pacific Crest National Scenic Trail, please contact Beth Boyst @bboyst@fs.fed.us or 707-562-8881.

Sincerely,

/s/BETH BOYST

BETH BOYST
Pacific Crest National Scenic Trail Manager

cc: mconley@blm.gov

NOV-13-12 05:31PM FROM-DFG

559 2433004

T-850 P.001/011 F-776



FACSIMILIE LEADER PAGE

California Department of Fish and Game
Central Region
Region 4
1234 East Shaw Avenue
Fresno, California 93710

INFO (559) 243-4017

FAX (559) 243-3004

DATE: 11/13/12 PAGE 1 OF 11

TO: Dan Canfield

California Department of Parks & Recreation, OHMVR Division

FAX: (916) 324-1610 PHONE: (916) 324-1574

FROM: Reagan O'Leary

INSTRUCTIONS: Original to follow by mail.



NOV-13-12 05:31PM FROM-DFG

559 2433004

T-050 P.002/011 F-776

DEPARTMENT OF FISH AND GAME**CHARLTON H. BONHAM, Director**

Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.dfg.ca.gov



November 13, 2012

Dan Canfield
California Department of Parks and Recreation
OHMVR Division
1725 23rd Street, Suite 200
Sacramento, California 958116

**Subject: Notice of Preparation
Eastern Kern County Acquisition
SCH No. 2012091066**

Dear Mr. Canfield:

The California Department of Fish and Game (Department) has reviewed the Notice of Preparation submitted by the Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation (OHMVR) Division for the above Project. Approval of the Project would allow for the OHMVR Division to acquire up to 60 privately-owned parcels (approximately 28,500 acres) from Renewable Resources Group for use and management for ongoing off highway motor vehicle recreation and resource protection. The parcels are within an area frequently referred to as the Onyx or Rudnick Ranch. The parcels are largely interspersed with lands owned by the United States Bureau of Land Management west of Red Rock Canyon State Park and 20 miles south of the town of Onyx, in Kern County. The majority of the parcels to be purchased are located within the Jawbone-Butterbredt Area of Critical Environmental Concern located in the western Mojave Desert. The Project area is within a transition zone between the West Mojave Desert bioregion and the Sierra Nevada. A few parcels in the northwest of the Project area are within the Sequoia National Forest.

This letter is to provide formal Department recommended avoidance, minimization, and mitigation measures for special-status species for Lead Agency guidance in preparation of the Environmental Impact Report (EIR). The Department is aware that the Lead Agency has contracted with TRA Environmental Sciences, Inc., to conduct biological studies within the Project area and for preparation of the EIR for the Project. Staff from TRA Environmental Sciences informally consulted with Department staff (Reagen O'Leary, Environmental Scientist) multiple times since November 2011 requesting guidance on species surveys and the Department's concerns relative to biological resources with implementing the proposed Project. The Department appreciates early consultation initiation, especially for projects that could impact biological resources and land use over such a large scale as is proposed for this Project.

Conserving California's Wildlife Since 1870

NOV-13-12 05:31PM FROM-DFG

559 2433004

T-050 P.003/011 F-776

Dan Canfield
November 13, 2012
Page 2

Specifically, the Department is concerned that Project-related activities such as described above could result in impacts to special-status species known to occur in the Project area including, but not limited to, nesting birds; the State and federally threatened desert tortoise (*Gopherus agassizii*); the State endangered Mojave tarplant (*Deinandra arida*); the State threatened Mohave ground squirrel (*Xerospermophilus mohavensis*); the federal candidate species and State Species of Special Concern Pacific fisher (*Martes pennanti (pacifica)*); the State Species of Special Concern tricolored blackbird (*Agelaius tricolor*), pallid bat (*Antrozous pallidus*), long-eared owl (*Asio otus*), burrowing owl (*Athene cunicularia*), Townsend's big-eared bat (*Corynorhinus townsendii*), yellow-blotched salamander (*Ensatina eschscholtzii croceator*), spotted bat (*Euderma maculatum*), American badger (*Taxidea taxus*), Bendire's thrasher (*Toxostoma bendirei*), and Le Conte's thrasher (*Toxostoma lecontei*); the State fully protected golden eagle (*Aquila chrysaetos*); the State protected furbearing mammal desert kit fox (*Vulpes macrotis ssp. macrotis*); the State Rare and California Rare Plant Rank 1B.2 listed Red Rock tarplant (*Deinandra arida*) and Tracy's eriastrum (*Eriastrum tracyi*); the California Rare Plant Rank 1B.1 listed round-leaved filaree (*California macrophylla*); Piute Mountains navarretia (*Navarretia setiloba*), and Kern buckwheat (*Eriogonum kennedyi var. pinicola*); the California Rare Plant Rank 1B.2 Palmer's mariposa-lily (*Calochortus palmeri var. palmeri*), alkali mariposa-lily (*Calochortus striatus*), Breedlove's buckwheat (*Eriogonum breedlovei var. breedlovei*), Red Rock poppy (*Eschscholzia minutiflora ssp. twisselmannii*), Piute cypress (*Hesperocyparis nevadensis*), Kelso Creek monkeyflower (*Mimulus shevockii*), Charlotte's phacelia (*Phacelia nashiana*), and San Bernardino aster (*Symphotrichum defoliatum*); the California Rare Plant Rank 1B.3 Spanish needle onion (*Allium shevockii*), Kern River evening-primrose (*Camissonia integrifolia*), rose-flowered larkspur (*Delphinium purpusii*), and Tehachapi monardella (*Monardella linoides ssp. oblonga*); and the California Rare Plant Rank 4.2 white pygmy-poppy (*Canbya candida*), and Kern Canyon clarkia (*Clarkia xantiana ssp. parviflora*), all of which are known to occur in the vicinity of the Project site and could be present on or adjacent to the Project site.

The Project site has appropriate habitat for nesting, denning, foraging, or colonization opportunities for the above species. The Department believes that with careful Project planning, there is the potential for a benefit through conservation to biological resources overall. This would require limiting OHMV recreation to discrete areas of the 28,500-acre Project site identified through a combination of habitat evaluation and focused surveys to be unlikely to potentially impact biological resources; restricting grazing; employing large buffers from riparian areas and other areas where wildlife corridors are known to exist; and routing trails in such a manner that impacts from noise and vibration would not impact species ability to den, forage, or reproduce adjacent to active and dynamic multiuse recreation areas. While the Department understands

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additional and specific Project planning is expected to occur when the General Plan is to be developed, the Department is also aware the California Environmental Quality Act (CEQA) document being prepared for the acquisition of the 28,500 acres would be examining the feasibility of continuing and managing current OHMV recreation in the absence of an adopted General Plan.

In the absence of combining appropriate biological resource density and distribution information with potential impact analysis, the Department has concerns the Project could create isolated patches of habitat within the 28,500-acre proposed Project site and that movement corridors between patches could be compromised or cut off through heavy recreational use. In addition, the OHMV recreational use could increase the potential for vehicular strikes; trash and dumping which attracts predators into areas adjacent to and within species habitat leaving them more vulnerable to predation; creates noise and vibration which may impact ground dwelling species to the extent the ability to forage, reproduce, or den is impacted. Therefore, a reconnaissance-level assessment of the Project site should be conducted by a qualified wildlife biologist and a qualified botanist. In the event that burrows, dens, and/or vegetation that could support special status species are present within or immediately adjacent to the Project site, focused biological surveys should then be conducted by qualified biologists during the appropriate survey period(s) and prior to Project implementation to determine if these species are present and if they could be impacted by the proposed Project. The Department recommends all of the potential impacts to the above species be fully discussed in the EIR prepared for this Project and that the survey results conducted by TRA Environmental Sciences be used to identify any mitigation, minimization, and avoidance measures that should be included in the EIR prepared for this Project, the succeeding General Plan, and any potential permitting needs. Our recommendations should be included in the EIR prepared for this Project as enforceable mitigation measures as appropriate. Our comments follow.

Department Jurisdiction

Trustee Agency Authority: The Department is a Trustee Agency with responsibility under CEQA for commenting on projects that could impact plant and wildlife resources. Pursuant to Fish and Game Code Section 1802, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. As a Trustee Agency for fish and wildlife resources, the Department is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities, as those terms are used under CEQA (Division 13 [commencing with Section 21000] of the Public Resources Code).

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Responsible Agency Authority: The Department has regulatory authority over projects that could result in the "take" of any species listed by the State as threatened or endangered, pursuant to Fish and Game Code Section 2081. If the Project could result in the "take" of any species listed as threatened or endangered under the California Endangered Species Act (CESA), the Department may need to issue an Incidental Take Permit (ITP) for the Project. CEQA requires a Mandatory Finding of Significance if a project is likely to substantially impact threatened or endangered species (sections 21001(c), 21083, Guidelines sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports a Statement of Overriding Consideration (SOC). The CEQA Lead Agency's SOC does not eliminate the Project proponent's obligation to comply with Fish and Game Code Section 2080. The Project has the potential to reduce the number or restrict the range of endangered, rare, or threatened species (as defined in Section 15380 of CEQA).

Fully Protected Species: The Department has jurisdiction over fully protected species of birds, mammals, amphibians, reptiles, and fish pursuant to Fish and Game Code Sections 3511, 4700, 5050, and 5515. "Take" of any fully protected species is prohibited and the Department cannot authorize their "take".

Unlisted Species: Species of plants and animals need not be officially listed as Endangered, Rare, or Threatened (E, R, or T) on any State or Federal list to be considered E, R, or T under CEQA. If a species can be shown to meet the criteria for E, R, or T, as specified in the CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15380), it should be fully considered in the environmental analysis for the Project.

Protected Furbearing Mammals: The Department has jurisdiction over furbearing mammals pursuant to Title 14, California Code of Regulations, Section 460. This Section states, "Fisher, marten, river otter, desert kit fox and red fox may not be taken at any time"; therefore, the Department cannot authorize their "take".

State Rare Plant Species: The Department has jurisdiction over plants protected under the Native Plant Protection Act. Authorization to "take" plants designated as Rare pursuant to Fish and Game Code Section 1901 cannot be authorized by the Department.

Bird Protection: The Department has jurisdiction over actions which may result in the disturbance or destruction of active nest sites or the unauthorized "take" of birds. Fish and Game Code sections that protect birds, their eggs, and nests include sections 3503 (regarding unlawful "take," possession or needless destruction of the nest

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or eggs of any bird), 3503.5 (regarding the "take," possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful "take" of any migratory nongame bird).

Stream Alteration Agreement (SAA): The Department also has regulatory authority with regard to activities occurring in streams and/or lakes that could adversely affect any fish or wildlife resource, pursuant to Fish and Game Code sections 1600 *et seq.* It appears that there could be multiple drainages within the Project area. The Project proponent should consult with the Department if the Project would result in impacts to potentially jurisdictional features. As well, the Project proponent should consult with the Department before potential ground-breaking activities or submit a Stream Alteration Notification to determine if the features are within the Department's jurisdiction and an SAA is required for the proposed activities. The Department is required to comply with CEQA in the issuance or the renewal of an SAA. For additional information on notification requirements, please contact our staff in the Stream Alteration Program at (559) 243-4593.

Potential Project Impacts and Recommendations

Mohave Ground Squirrel (MGS): The Project site is within the range of suitable habitat for MGS. In order to determine if MGS occupy the Project site, focused protocol-level surveys should be conducted by a qualified wildlife biologist. The Department recommends that survey methods described in the "Mohave Ground Squirrel Survey Guidelines" (DFG 2003) should be followed, and the results of the surveys should be submitted to the Department for review. It is important to note that a single negative survey does not indicate absence; MGS populations are known to fluctuate over years and they are difficult to detect even when present. These surveys should be conducted well in advance of any ground-disturbing activities or allowing existing OHMV recreation use in order to determine if impacts to MGS could occur. In order to implement full avoidance for MGS, the Department recommends a minimum 50-foot no-disturbance buffer be employed around all burrows that could potentially be used by MGS. If avoidance is not feasible and "take" could occur as a result of Project implementation, acquisition of a State ITP may be warranted prior to initiating Project related activities. Alternatively, based on the known historical occurrences documenting presence of MGS adjacent to and within portions of the 28,500-acre Project area, the applicant has the option of assuming presence of these species and securing a State ITP. Avoidance, minimization, and mitigation measures for MGS should be fully addressed in the EIR for the Project.

Desert Tortoise: The Project site is within the range of suitable habitat for desert tortoise. The Department recommends that surveys following the protocol contained in

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"Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*)" (USFWS 2010) should be conducted during the appropriate survey period to determine the potential for desert tortoise to use the Project site and surrounding area. Survey results should be submitted to both the Department and the United States Fish and Wildlife Service (USFWS). If surveys indicate the presence or potential presence of desert tortoise, consultation with the Department and the USFWS to develop avoidance, minimization, and mitigation measures should occur. These measures should be incorporated into the subsequent CEQA document prepared for this Project. If "take" could occur as a result of Project implementation, acquisition of a State ITP would be warranted.

Burrowing Owl: Based on the habitat type present it is likely that burrowing owl occur within the Project site. To avoid impacts to the species, focused surveys should be conducted following the survey methodology developed by the California Burrowing Owl Consortium (CBOC, 1993). If any ground-disturbing activities will occur during the burrowing owl nesting season (approximately February 1 through August 31), and potential burrowing owl burrows are present within the Project footprint, implementation of avoidance measures are warranted. In the event that burrowing owls are found, the Department's Staff Report on Burrowing Owl Mitigation (CDFG 2012) (Staff Report) recommends that impacts to occupied burrows be avoided by implementation of no-disturbance buffer zones, unless a qualified biologist approved by the Department verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Failure to implement the recommended buffer zones could cause adult burrowing owls to abandon the nest, cause eggs or young to be directly impacted (crushed), and/or result in reproductive failure, in violation of Fish and Game Code and the Migratory Bird Treaty Act.

If the Project proposes to evict burrowing owls that may be present, the Department recommends passive relocation during the non-breeding season. The CEQA document should describe all avoidance measures that would be employed in the event that owls are found on the Project site, as well as methods that would be used to evict owls from burrows. The CEQA document should specify how the impact of evicting owls would be mitigated to a less than significant level. The Department's Staff Report on Burrowing Owl Mitigation (CDFG 2012) recommends that foraging habitat be acquired and permanently protected to offset the loss of foraging and burrow habitat. The Department also recommends replacement of occupied burrows with artificial burrows at a ratio of 1 burrow collapsed to 1 artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting a burrowing owl.

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Other Nesting Birds: Nesting birds have the potential to exist on the Project site. If Project-related activities must occur during the breeding season (February through mid-September), surveys for active nests should be conducted by a qualified biologist no more than 30 days prior to commencing Project-related activities. A minimum no-disturbance buffer of 500 feet should be maintained around non-listed raptor nests, and a buffer of 250 feet should be maintained around other non-listed avian nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Avoidance, minimization, and mitigation measures for nesting birds should be fully addressed in the EIR prepared for the Project.

Desert Kit Fox: The Project site is within the range of suitable habitat for desert kit fox. The Department recommends that the USFWS "Standardized recommendations for protection of the San Joaquin kit fox prior to or during ground disturbance" (2011) be followed and that surveys be conducted accordingly and prior to commencing any Project-related activities, including existing OHMV recreation use. If any active or potential dens are found on the Project site during these surveys, consultation with the Department would be warranted for guidance on "take" avoidance measures for the desert kit fox. Avoidance measures for desert kit fox should be fully addressed in the EIR prepared for the Project.

Special-Status Plant Species: There is the potential for multiple special-status plant species to occur on or adjacent to the Project site. The Project site should be surveyed for special-status plants by a qualified botanist. The Department recommends following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009). This protocol, which is intended to maximize detectability, includes the identification of reference populations to facilitate the likelihood of field investigations occurring during the appropriate floristic period. In the absence of protocol-level surveys being performed, additional surveys may be necessary. Further, special-status plant species should be avoided whenever possible by delineation and observing a no-disturbance buffer of at least 50 feet from the outer edge of the plant population(s) or specific habitat type(s) required by special-status plant species. If buffers cannot be maintained, then consultation with the Department should occur to determine appropriate minimization and mitigation measures for impacts to special-status plant species. Should a State- or federally listed plant species be identified during botanical surveys then consultation with the Department and/or the USFWS should occur and "take" authorization may be warranted prior to commencing Project related activities. Avoidance, minimization, and mitigation measures for special status plant species should be fully addressed in the EIR prepared for the Project.

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In addition there is the potential for two State Rare plant species to occur in the Project site; Red Rock tarplant and Tracy's eriastrum. Because these species are designated as Rare under the Native Plant Protection Act, the Department cannot authorize "take" of this species and full avoidance of this species is recommended when executing the Project.

State Species of Special Concern: Pacific fisher, tricolored blackbird, pallid bat, long-eared owl, Townsend's big-eared bat, yellow-blotched salamander, spotted bat, American badger, Bendire's thrasher, and Le Conte's thrasher could occur in the Project area. Focused surveys should be conducted for these species well in advance of any Project related activities. The surveys should be done by qualified biologists familiar with the species during the appropriate survey period(s) and prior to Project implementation to determine if these species are present and if they could be impacted by the proposed Project. Survey results can then be used to identify any mitigation, minimization, and avoidance measures to minimize significant impacts to State Species of Special Concern. Such measures should be included in the EIR prepared for this Project.

Wildlife Conflicts: Several wildlife species that often result in human/wildlife conflicts could be present in the Project area. These species include black bear, mountain lion, coyote, feral pig, deer, raccoon, and skunk. Direct and indirect human interactions with some of these species can result in human fatalities, injury, and loss of property, as well as, wildlife injuries, fatalities, and an increase in depredation permit requests.

The EIR should include measures to avoid and minimize human-wildlife conflicts, which should be developed in cooperation with the Department. State vehicular recreation area visitors should be educated about how to appropriately deal with wildlife encounters, and how to minimize impacts to wildlife and to protect themselves. One recommended approach is that these issues be incorporated into the on-site educational materials.

Federally Listed Species: The Department also recommends consulting with the USFWS on potential impacts to federally listed desert tortoise, Mojave tarplant, and Pacific fisher. "Take" under the Federal Endangered Species Act (FESA) is more broadly defined than CESA; "take" under FESA also includes significant habitat modification or degradation that could result in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS in order to comply with FESA is advised well in advance of Project implementation.

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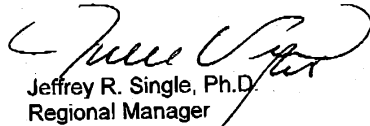
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More information on survey and monitoring protocols for sensitive species can be found at the Department's website (www.dfg.ca.gov/wildlife/nongame/survey_monitor.html). If you have any questions on these issues, please contact Reagen O'Leary, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 243-4014, extension 244, or by electronic mail at roleary@dfg.ca.gov.

Sincerely,



Jeffrey R. Single, Ph.D.
Regional Manager

cc: United States Fish and
Wildlife Service
Ventura Office
2493 Portola Road, Suite B
Ventura, California 93003

Lahontan Regional Water Quality Control Board
14440 Civic Drive, Suite 200
Victorville, California 92392

United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 1101
Los Angeles, California 90017

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Literature Cited

CDFG, 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. California Department of Fish and Game, November 2009.

DFG, 2003. Mohave Ground Squirrel Survey Guidelines. California Department of Fish and Game, January 2003.

DFG, 2012. Staff Report on Burrowing Owl Mitigation. California Department of Fish and Game.

USFWS, 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*).

USFWS, 2011. Standard Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance. United States Fish and Wildlife Service.

**BOARD OF SUPERVISORS
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 Bakersfield, CA 93301
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www.co.kern.ca.us

December 18, 2012

California Department of Parks and Recreation
 Off-Highway Motor Vehicle Recreation Division
 Attn: Dan Canfield
 1725 23rd Street, Suite 200
 Sacramento, California 95816

Dear Mr. Canfield,

The Kern County Board of Supervisors appreciates the efforts of the State to expand opportunities for recreational use in our desert areas by establishing a new Off-Highway Vehicle (OHV) riding area in Kern County. Kern County has been in partnership for many years with the Division in attempting to site and permit a new riding area without success.

The Eastern Kern County Acquisition is supported by the Board as long as traditional grazing and mining uses are accommodated and incorporated into any plan coordinated with the US Bureau of Land Management. The size of the acquisition, potentially 28,500 acres, provides opportunities for accommodation of all these traditional uses in the desert.

Please contact Lorelei Oviatt, Kern County Planning and Community Development Director for assistance and comment as you develop this important new resource for our OHV community.

Sincerely,


 Zack Scrivner, Chairman
 Kern County Board of Supervisors

cc: Governor Brown
 Senator Jean Fuller
 Senator Michael Rubio
 Assemblyman David Valadao
 Assemblywoman Shannon Grove
 Assemblywoman Connie Conway

FW: Eastern Kern County Acquisition

From: Lorelei H. Oviatt [<mailto:LORELEIO@co.kern.ca.us>]
Sent: Wednesday, October 24, 2012 3:10 PM
To: OHVINFO
Subject: Eastern Kern County Acquisition

Please put the Kern County Planning and Community Development Department on the all CEQA and planning notifications at the address below. To date we have received no notifications including the NOP or an invitation to the focus group decisions. As the entire project is within Kern County we would appreciate being included in the process.

Sincerely,

Lorelei H.Oviatt, AICP
Director
Kern County Planning and Community Development Department
2700 "M" Street Bakersfield, Ca 93301
(661)862-8866 Fax (661) 862-8601

Unfiled Notes Page 1

**PLANNING AND COMMUNITY
DEVELOPMENT DEPARTMENT**

Lorelei H. Oviatt, AICP, Director
2700 "M" STREET, SUITE 100
BAKERSFIELD, CA 93301-2323
Phone: (661) 862-8600
FAX: (661) 862-8601 TTY Relay 1-800-735-2829
E-Mail: planning@co.kern.ca.us
Web Address: www.co.kern.ca.us/planning



DEVELOPMENT SERVICES AGENCY

Planning and Community Development
Engineering, Surveying and Permit Services
Roads Department

November 9, 2012

FILE: Eastern Kern County
Acquisition EIR

California Department of Parks and Recreation
Off-Highway Motor Vehicle Recreation Division
Attn: Dan Canfield
1725 23rd Street, Suite 200
Sacramento, California 95816

**RE: Comments on Notice of Preparation of the Eastern Kern County
Acquisition Environmental Impact Report (EIR)**

Dear Mr. Canfield,

The Kern County Planning and Community Development Department appreciates the opportunity to provide comments on the Notice of Preparation of the Eastern Kern County Acquisition Environmental Impact Report. The entire 28,500 acres is located in eastern Kern County and was originally part of the Rudnick Ranch holdings. Kern County is very supportive of expanded opportunities for recreational use in our desert areas, including motorized recreation and appreciates the efforts to establish a new OHV area. The following comments are provided for the record.

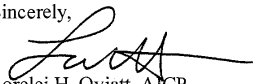
1. The Notice of Preparation does not provide any details on how much of the acquisition will be managed for OHV use and how the remainder of the land will be managed. The EIR must include a clear project description that details the conceptual areas and proposed uses to provide for informed comment. While a general plan is not part of the CEQA process, under CEQA, all members of the public hold a "privileged position" in the process and certainly users of the area and the county have a fundamental right to know if and how the project will impact them, what are the impacts on the surrounding environment and how can they participate in the formulation of feasible alternatives and appropriate mitigation. "[A] paramount consideration is the right of the public to be informed in such a way that it can intelligently weigh the environmental consequences of any contemplated action and have an appropriate voice in the formulation of any decision." (Environment Planning and Information Council v. County of El Dordo (3d Dist. 1982) 131 Cal App.3d) The foundation of the CEQA process is an accurate project description that provides for meaningful public participation.

2. This area has historically been used for grazing and mining exploration. These uses need to be discussed in the EIR and accommodations made to include grazing as a permitted and encouraged use in the management of the acquired lands. This project is the acquisition of private property which currently pays taxes to benefit Kern County residents. After acquisition, while a portion will be used for recreational use, it is unclear if the remainder will be set aside for conservation purposes which limit the benefits to Kern County.
3. A full discussion of the impacts on fire, sheriff, and county-wide protection (emergency services and coroner) is required by CEQA for service levels, response times and possible fiscal impacts to the county.
4. Jawbone Canyon Road is a county maintained road and provides access for a number of existing wind projects as well as the entrance to already established recreational areas. Impacts to the county road system and possible fiscal impacts to the county need to be discussed in the EIR and appropriate mitigation proposed.

Notification

Please provide the Kern County Planning and Community Development Department with all informational notices and documents and notices required under CEQA. Thank you for the opportunity to provide comment.

Sincerely,

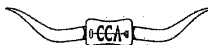

Lorelei H. Oviatt, AICP
Director

cc: Kern County Board of Supervisors
CAO
County Counsel
Kern County Roads Department
Kern County Engineering and Survey Permit Services
Kern County Fire Department
Kern County Parks and Recreation
Grand Jury

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www.calcattlemen.org

Mr. Dan Canfield
Planning Manger
California Department of Parks and Recreation
Off-Highway Motor Vehicle Recreation Division
1725 23rd Street, Suite 200
Sacramento, CA 95816

Dear Mr. Canfield,

The California Cattlemen's Association (CCA) is writing to comment on the Notice of Preparation (NOP) that was issued by the Off-Highway Motor Vehicle Recreation (OHMVR) Division regarding the Eastern Kern County Acquisition Environmental Impact Report. As a statewide association with over 2,000 members who graze over 32 million acres of both private and public lands, we are concerned that the NOP makes no mention of the grazing that is currently occurring on the parcels which OHMVR is in the process of acquiring.

While the Eastern Kern County Acquisition web page mentions that the OHMVR has been working with the Bureau of Land Management (BLM) and interested parties to ensure transparency through the acquisition process, it seems incongruent that the NOP has no mention of the grazing that has been taking place on the property for over 100 years.

The NOP lists 5 anticipated categories of activities; ongoing visitor activities, maintenance and operations, natural and cultural resource management, special projects, and special events, but grazing is not mentioned under any of these topics. The notable absence therefore begs the question of whether or not the EIR will reflect these current practices and explain if and how grazing will continue to be a compatible use on this property.

The current permittee has a ranching operation that depends not only upon the forage on his BLM permit, but on the Renewable Resources Group private land as well, which provides facilities and water and is slated to become OHMVR property. Should grazing be discontinued on this property, the permittee will be unable to continue his grazing on BLM ground; ending a century of history, tradition and livelihood.

CCA hopes that the OHMVR recognizes the importance of addressing grazing in the EIR and decides to continue to allow these sound management practices to occur. We look forward to reviewing the EIR and working with OHMVR as this process progresses.

Sincerely,

Margo Parks
Director of Government Relations

KEVIN KESTER
PRESIDENT
PARKFIELD

JACK HANSON
TREASURER
SUSANVILLE

BILLY GATLIN
EXECUTIVE VICE-PRESIDENT
HERALD

DARRELL WOOD
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BRAWLEY

LAWRENCE DWIGHT
SECOND VICE PRESIDENT
MCKINLEYVILLE

BILL BRANDENBERG
FEEDER COUNCIL VICE CHAIR
EL CENTRO

Eastern Kern County Acquisition

-----Original Message-----

From: Lucy Clark [<mailto:lucyg391@gmail.com>]
 Sent: Sunday, November 11, 2012 5:14 PM
 To: Canfield, Dan
 Subject: Eastern Kern County Acquisition

Dan Canfield, Planning Manager
 California Dept. of Parks and Recreation Off-Highway Motor Vehicle Recreation Division
 1725 23rd Street, Suite 200
 Sacramento, CA 95816
 November 11, 2012

The Kern Chapter of the California Native Plant Society appreciates the opportunity, and herein submits its comments on the NOP for the EIR for the proposed "Eastern Kern County Acquisition" for an OHVRA.

First, this is a botanically understudied area, as evidenced by the North Sky River Project and the Jawbone Wind Energy Project DEIR. The surveys done there revealed rare plants not included in the CNDDDB, including one un-described species. Plant Surveys during all four seasons, and possibly for more than one year, must be completed on all 28,500 acres for all listed plants and plant species of concern, for which the area contains potential habitat(s).

As outdoor people, we are concerned about the invasion of the Pacific Crest National Scenic Trail by OHVs, currently and in the future. The Trail has been in the past a place of peaceful contemplation, enjoyment of nature (including the investigation of native plants), and personal testing. It's natural sounds; views, close and far; and air quality (including that smell of sage) should be thoroughly protected in the EIR.

The damage already done in our State Park, Red Rock Canyon, by OHV's intrusions, has not been prevented, nor have the damages been restored. The current destruction of native plants and habitats is irreparable within three lifetimes. The State Parks Department must complete and approve the General Plan for RRCSP, before an adjacent OHMVR is considered. This is the only way to begin to protect RRCSP.

The RRCSP's peacefulness, plant communities, and air quality have been quite degraded since the opening of Jaw Bone Canyon to OHVs. The funding of the restoration and protection of Red Rock Canyon from OHVs should not be required of CA tax payers. This money should come from your budget, and be included in the General Plan.

The foundations of our concerns are:

1. The inherent destruction of the natural environment by OHVs, 2. The seeming enjoyment or entitlement taken by bike riders in going off trail, cutting fences, removal/changing locations of signs, i.e. destroying the environment,
3. The inability of the OHMVRD to enforce regulations to stay on trail, and to punish those who do not.

Your own two page NOP infers that riders are currently trespassing on private and BLM (our) lands. The fact that the Division has not carried out the study mandated by SB 742, for using large, viewable IDs for every vehicle, is documented failure to comply with existing state law and does not bode well, in our

EKCA Scoping Comments Page 1

minds, for strict enforcement of on trail only regulations in this huge area. The EIR should include specific and realistic methods of surveillance. Perhaps drones can be used to increase monitoring effectiveness, identification, arrest, and perhaps, as on state lakes, the confiscation of the transport of law-breakers. (If drones are being used to track migrating birds, they might be useful in tracking OHVs.) The OHMVRD should include plans for financial assistance for helping the BLM in defending their parcels. U.S. Taxpayers should not be required to do this.

Again, the protection and maintenance of the native plant habitats, whether desert, spring, riparian, etc. are our central concerns, as all of the resident critters of this huge area depend on the plants and their environment for their livelihood. We request that one of the land use Alternatives in the EIR be "no development."

Please add my name to all future announcements and mailings for this current, and future, OHV issues.

Lucy Clark
Conservation Committee
Kern Chapter of CNPS
HC 3 Box 88
Bakersfield, CA
93308-9124

NATIONAL PUBLIC LANDS. NEWS
941 E. RIDGECREST BOULEVARD
RIDGECREST, CALIFORNIA 93555

November 10, 2012
dcanfield@parks.ca.gov

Mr. Dave Canfield,

We support the acquisition of the Renewable Resources (aka the Rudnick/Onyx Ranch) lands for sale within and near BLM's Jawbone facility, only if certain conditions are met.

1. There needs to be an Interim Memorandum of Understanding (MOU) for most of the acquisition. The Interim MOU should be between State Parks OHMVR Division, Bureau of Land Management (BLM), Friends of Jawbone (FOJ) and Kern County and should be made a part of the EIR/EIS, which evaluates the direct and indirect consequences. This Interim MOU should become a public document and then, with whatever modifications are made, should become a part of the General Plan EIR/EIS. (We suggest the County of Kern at some level be involved in this process; especially as the county has recently begun to develop a county wide road and trails plan.)
2. The Notice of Preparation, page 3, alludes to a continuation of activities and access, however it fails to mention a number of on-going activities. Assurances must be provided that all activities currently happening on the proposed acquisition lands must be allowed to continue. (Some missing from the list are: Ranching (historic and present families' livelihood) recreating, hunting, mining, rock hounding, ballooning, rock climbing, geo-caching, kite flying, photography, filming, and star gazing.)
3. The lease(s) for cattle grazing should be signed immediately after the acquisition takes place to insure historic cattle ranching.
4. Assurances need to be in writing and included within the EIR/EIS that no part of the acquisition lands will be granted or added to Red Rock Canyon State Park or gifted to Sequoia National Forest.
5. Red Rock Canyon State Park has not had the money to manage their area. FOJ has contributed immensely to the operation of Red Rock State Park and would like to continue with the acquisition lands, as they believe in the multi-use principle that governs the BLM lands and these private lands.
6. The acquisition is merely an exchange with no direct environmental consequences of itself. However, An EIR/EIS will be completed which covers the indirect and potential direct consequences of the acquisition. NPLNews believes that this should be an EIS because of the intermingling of BLM lands and the multiple-use concept as noted above.

7. There are two federally listed animal species (the Desert Tortoise and the California Condor, which make these acquisition lands their home and hunting grounds, as well as a number of migratory birds which are listed but only pass through.) and one state listed animal species (Mojave Ground Squirrel). Complete listings of animal and plant species, both federal and state, need to be included in the EIS.

8. Red Rock Canyon's General Plan has yet to be completed after a dozen years of non-compliance. It would make fiscal and environmental sense to give California OHMVR Division a role in assisting the General Plan to include the Acquisition Lands.

9. The Notice of Preparation, page 3, alludes to a number of activities that are expected to increase. The BLM, the FOJ and the Kern County Sheriff's Department and their Search and Rescue Group have been providing law enforcement and safety to the public and are expected to continue to do so. The OHMVR Division of State Parks will provide an extra endorsement.

10. It would be wise for the OHMVR Division of State Parks to continue to contract with the FOJ, as they already know many of the areas requiring protection for natural and cultural resource management activities.

11. The State Parks OHMVR Division proposes to issue permits for special activities "which are themselves potentially subject to separate CEQA review". The level of activities that trigger this special permit should be provided in this EIS/EIR and again in the General Plan. The responsible party for issuing the permit(s) should be included in the MOU's.

In conclusion, NPLNews.com supports this acquisition only if the eleven points are considered.

Sophia Anne Merk (Sam), Director
samnplnews@yahoo.com

cc: Kern County Planning Department
Friends of Jawbone
BLM, Carl Symons
Ridgecrest City Council



ORV Watch Kern County
<http://www.orvwatchkerncounty.com>
661-878-7838

November 9, 2012
Dan Canfield
Planning Manager
OHMR Division

Subject: Comments on OHMVR Scoping process, Kern County land acquisition

Dear Mr. Canfield;

We attended OHMVR's Lancaster meeting on October 17, 2012 regarding the scoping process for acquisition of 28,000 acres in Kern County. Following our review of online maps and meeting comments, we are submitting additional comments.

Red Rock Canyon State Park will be directly affected by the OHMVR land acquisition. Completion of the Red Rock Canyon General Plan was suspended in 2009 due to budgetary issues. The Division must put first things first. The RRC General Plan must be addressed, assessed, and completed *prior* to expenditure of funds for procurement of proposed adjacent OHV Park lands.

The crown jewel in our National Park Trail System, the Pacific Crest Trail, has been under siege by illegal dirt bike riders. Even though legal OHV opportunities are located in Kern County within minutes of the PCT, lawless riders choose to destroy public and private lands.

Law enforcement officers from multiple disciplines have complained about insufficient funds and personnel for patrolling the impacted areas to date. What plan will the Division implement to fund and staff additional LEOs to mitigate ineluctable intrusion of additional rogue riders onto private and public lands in Kern County?

It needs to be pointed out once again, that the OHMVR Division has not complied with SB742 which mandated that a study be conducted regarding large, visible IDs for OHVs. It is imperative that this study be conducted *in advance* of expanding OHV opportunities in Kern County. Division personnel need to take an honest look at the direct association between OHV trespass and the lack of visible rider/vehicle identification. OHMVR Division needs to participate in an honest dialogue about conflict between quiet recreation and OHV use *before* additional off-road riding opportunities are developed.

Hikers and equestrians will feel the adverse effects of noise and dust, and inevitable trespass from parcels adjacent to the Pacific Crest Trail. That being said, the parcels in question could be developed to potentially conform and harmonize with quiet recreation *if* they are judiciously

utilized. For example these sections could accommodate primitive camping areas and/or rest sites for hikers and equestrians, replete with livestock pens and water for horses.

The following APNs represent sections which adversely impact the Pacific Crest Trail:

153-01-203
 153-01-207
 153-05-103
 153-08-008
 153-070-02
 153-070-03
 153-070-07
 153-070-05

These parcels which are located in Caliente are problematic:

APN 442-03-001
 APN 442-02-020
 APN 442-04-001

These sections in particular, should not be considered for OHV use; off-road vehicle activity within the Caliente community is in direct conflict with rural residents' lifestyle, horse and cattle ranching, and cattle grazing. We strongly object to these parcels being utilized for OHV activities. We have listened to members of the off-road community indicate that the OHMVR Division hopes to ultimately link these Caliente sections with dirt bike trails to and from Jawbone Canyon. At the October 17th OHMVR meeting in Lancaster, you stated, Mr. Canfield, that these parcels specifically will "ensure OHV recreation for future generations". We object to these parcels being used as placeholders for future cross country dirt bike trails from Jawbone Canyon to Caliente.

OHMVR's mission statement indicates that quality recreational opportunities remain available for future generations by *providing for education, conservation, and enforcement efforts that balance OHV recreation impact with programs that conserve and protect cultural and natural resource.* We bring to your attention, Mr. Canfield, the OHMVR's mission statement does not bring to mind images of dirt bike trails emanating from Jawbone Canyon and proliferating through the Piute Mountains, Caliente and beyond. Balance is needed here.

We are concerned about protection and preservation of the Butterbredt ACEC lands.

In the September 23, 2012 issue of 'The Wall Street Journal Sunday', the lead article warns, "Valley Fever costs mount for patients, taxpayers". The Health Collaborative author goes on to say that Valley Fever cases are soaring in the southwest, causing taxpayers millions of dollars.

What plan does the OHMVR Division have in place to address the tremendous amount of dust that will be raised and spread as a direct result of heavy OHV use in the high desert?

All these issues need to be addressed before a genuine stakeholder process can begin.

Sincerely,

Mesonika Piecuch
Executive Director
ORV WATCH KERN COUNTY



November 2, 2012

Mr. Dan Canfield
Planning Manager
California Department of Parks and Recreation (OHMVR)
1725 23rd Street
Suite 200
Sacramento, CA 95816

Dear Mr. Canfield,

This letter is reference to the Notice of Preparation of the Eastern Kern County Acquisition Environmental Impact Report and is in reference to the project's potential implications to the Pacific Crest National Scenic Trail (PCT) which traverses the northern and western project areas.

I am writing on behalf of the Pacific Crest Trail Association (PCTA). Our 9,000-member organization is the primary private partner with the United States Forest Service, Bureau of Land Management, National Park Service, and California State Parks in the management and protection of the Pacific Crest National Scenic Trail (PCNST) from Mexico to Canada. Last year alone, programs organized under PCTA's leadership provided 115,000 hours of volunteer labor to manage the PCNST on the ground and we have participated in dozens of planning processes from the national to the local level.

PCTA has partnered with the U.S. Forest Service, BLM, California State Parks, Kern County Sheriff's Office and local stakeholders to protect the PCT from illegal motorized trail use in the Tehachapi area of Kern County. This collaborative effort has been critical to our success in protecting the trail corridor in that area.

It is important to reflect upon the nature and purpose of the PCT when it was designated a National Scenic Trail by Congress in 1968. The nature and purpose of the PCT is to provide high-quality, scenic, primitive hiking and equestrian experiences, and to conserve natural, scenic, historic, and cultural resources along the PCT corridor. Further, in the National Trails System Act (P.L. 90-543) and under 36 CFR 261.20, motorized use is prohibited on the PCT. I understand that the project proposal does not specifically address motorized or mechanized trail development, however I would be remiss if I didn't specifically address this issue, as motorized trails are not compatible with the nature and purpose of the PCT and approximately 4,500 acres of the proposed project area are within 1 mile of the PCT.

The EIR references a collaborative effort with the BLM regarding the future management of lands. It is important to note that the BLM Manual Policy Direction 6250 for National Scenic and Historic Trails directs the Bureau to safeguard the nature and purposes of National Trails to provide for maximum compatible outdoor recreation potential, and protection, conservation and



Pacific Crest Trail Association
1331 Garden Highway · Sacramento, CA 95833
(916) 285-1846 (Phone) · (916) 285-1865 (Fax) · www.pcta.org



enjoyment of the nationally significant scenic, historic, natural, and cultural qualities of the areas and associated settings through which such trails may pass, as well as the primary use or uses of the trail. Similarly, there are about 4,000 acres of BLM lands that prove concerning since they could provide motorized access within 1 mile of the PCT.

Please let me know if you have any questions.
Sincerely,

A handwritten signature in black ink that reads "Anitra I. Kass". The signature is fluid and cursive, with a long horizontal line extending to the right.

Anitra I. Kass
Southern California Regional Representative
Pacific Crest Trail Association
akass@pcta.org
951-257-4100



Pacific Crest Trail Association
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November 13, 2012

Dan Canfield
Planning Manager
OHMR Division
1725 23rd Street
Sacramento, CA 95816

dcanfield@parks.ca.gov

Subject: Comments on OHMVR Scoping process, Kern County land acquisition

Dear Mr. Canfield:

We submit the following comments in response to the Notice of Preparation (NOP) of the Eastern Kern County Acquisition EIR, dated September 26, 2012.

We know the OHMVR Division has wanted to acquire these lands for many years; and while this acquisition could indeed benefit recreation of all kinds and provide opportunities for better management of natural and cultural resources, we are skeptical of that actually happening. The OHMVR Division's past record of providing resource protection in lands within its SVRAs has not, in our experience, been a good one. Carnegie and Ocotillo Wells State Vehicular Recreation Areas (SVRAs) provide examples of where unique and extremely rare resources continue to suffer damage from OHV recreation.

Red Rock Canyon State Park – First and foremost among our concerns with this acquisition is our concern for the future management of Red Rock Canyon State Park (RRCSP). For years now, the California Department of Parks and Recreation (DPR) has inexcusably delayed the General Plan process for RRCSP. That delay has resulted in increasing OHV use within the park and ongoing damage to irreplaceable natural and cultural resources, as documented by DPR's own archaeologists.¹ In addition to

¹ Samson, Michael P. Associate State Archaeologist, California State Parks. The Effects of Off-Highway Vehicles on Archaeological Sites and Selected Natural Resources of Red Rock Canyon State Park. June 2007

important archaeological sites, uplifted lake beds in Red Rock Canyon hold preserved important vertebrate fossils over 60 million years of age. This fossil assemblage is important because the Paleocene epoch is poorly recorded in the west.²

At the September 2012 OHV Commission in Placerville, Phil Jenkins, in answer to a question about access to the new parcels, responded that access could be through RRCSP. This would be absolutely unacceptable. Existing OHV use in the park needs to be stopped, in order to protect the incredibly important natural and cultural resources therein. The OHV Division, through the interference by former Deputy Director Daphne Greene, succeeded in preventing both the General Plan process and interim protection for RRCSP resources.

Red Rock's "Last Chance Addition" lands were given to DPR by the Bureau of Land Management (BLM) in the Wilderness Act Of 1994 to manage as part of Red Rock Canyon State Park "for maximum protection" of their resources. DPR's response has been to allow damaging OHV use to dominate the landscape, with excuse after excuse for neither protecting the lands nor completing the General Plan that could provide the means for evaluating and protecting them. These new lands pose new and additional threats to resources at RRCSP. Accordingly, we must oppose this acquisition until OHV use is completely removed from Red Rock and protection for park resources is assured. If DPR has funds to acquire 28,500 acres of new lands for OHV use, it should have the money to complete the General Plan for Red Rock.

Similarly, BLM lands adjacent to Ocotillo Wells SVRA are managed by the OHMVR Division under a Memorandum of Understanding, wherein vehicle travel on the lands is required to be restricted to designated routes. However, Supervisors and law enforcement personnel at the SVRA allow open riding on the BLM lands, as well as in the rest of the SVRA.

The proposed acquisition lands must be surveyed and assessed for natural, cultural and paleological resources such as those in RRCSP and fully evaluated in the EIR.

With DPR's history of big promises but dismal record with regard to resource protection, the EIR must provide very convincing evidence that DPR and OHMVR Division have both the resources and the will to tackle the management challenges presented by the proposed acquisition parcels. The EIR must spell out in detail how DPR will succeed in its lofty management goals.

Virtually all but 10 acres of the proposed acquisition are within the boundaries of the Jawbone-Butterbredt Area of Critical Environmental Concern (JBACEC) which was designated by the BLM to protect wildlife and the Native American values in the area.

² Schoenherr, Allan A., A Natural History of California. University of California Press. 1992. P. 55

For decades much of the proposed acquisition area was and currently is in a checkerboard public and private land ownership pattern and is currently about half of the area is designated as closed to public access. This management strategy has maintained a robust and environmentally intact landscape that any acquisition should maintain. Opening up the areas to new OHV activities will quickly and irrevocably deteriorate the environment due to direct and indirect impacts from OHV recreation, including fragmentation of habitat, spread of non-native plants, degradation of soils and cryptobiotic crusts and other impacts associated with off-road vehicle recreation. Because of the current recognition of the wildlife habitat and Native American values for which the JBACEC was established, the acquisition and use of the area for off-road activities appears to immediately set up a conflict between conservation values and off-road vehicle access. The EIR must fully explore the impacts to the acquisition areas.

The acquisition parcels include a world-renowned migratory bird stopover spring – Butterbrecht Springs.³ This unique location has been recognized and managed specifically for conservation purposes for decades cooperatively between the private land owner and the Bureau of Land Management. The values of this crucial spring is already being impacted by wind farm development in the area, and further impacts through management changes to accommodate off-road vehicle access could further threaten the spring area and the migratory birds that use these critical springs. This issue needs to be clearly addressed in the EIR

The proposed acquisition parcels also harbor numerous springs and wells that are of great value to wildlife, including Measles Spring, Green Spring, Quail Spring, Whitney Well, Butterbrecht Well, Schoolhouse Well, Gold Peak Well, a well near San Antonio Mine, In addition, the acquisitions could give access to Road Well which is currently located on BLM lands but is inaccessible to the public because it is in the closed area. The acquisition lands also include Landers Meadow, which is a higher elevation southern Sierra meadow and has great wildlife habitat value. These areas should be identified as being off-limits to any off road access in the EIR. While springs/seeps/wells can often be a desirable destination point for vehicles, they disrupt the habitat and impact the species that rely on these critical water resources.

The proposed acquisition parcels also include many ephemeral and perennial streams and creeks that are likely “waters of the state” and could be highly impacted by off-road vehicle activities. The EIR must comprehensively evaluate these issues.

Numerous rare, threatened and endangered species have potential to occur in the acquisition lands. We request that thorough, seasonal surveys be performed for sensitive plant species and vegetation communities, and animal species under the direction and supervision of the US Fish and Wildlife Service and the California

³ http://www.kern.audubon.org/Butterbrecht_birding.htm

Department of Fish and Wildlife. Full disclosure of survey methods and results to the public and other agencies without limitations imposed by the agency must be implemented to assure full CESA/CEQA compliance.

Surveys for the plants and plant communities should follow California Native Plant Society (CNPS) and California Department of Fish and Wildlife (CDFW) floristic survey guidelines⁴ and should be documented as recommended by CNPS⁵ and California Botanical Society policy guidelines. A full floral inventory of all species encountered needs to be documented and included in the environmental review. Surveys for animals should include an evaluation of the California Wildlife Habitat Relationship System's (CWHR) Habitat Classification Scheme. All rare species (plants or animals) need to be documented with a California Natural Diversity Data Base form and submitted to the California Department of Fish and Wildlife using the CNDDDB Form⁶ as per the State's instructions⁷.

We request that the vegetation maps be at a large enough scale to be useful for evaluating the landscape and any potential impacts. Vegetation/riparian/wash habitat mapping should be at such a scale to provide an accurate accounting of riparian or wash areas and adjacent habitat types that will be directly or indirectly affected by the proposed activities. A half-acre minimum mapping unit size is recommended, such as has been used for other development projects. Habitat classification should follow CNPS' Manual of California Vegetation (Sawyer et. al. 2009).

Adequate surveys must be implemented, not just a single season of surveys, in order to evaluate the existing on-site conditions. Due to unpredictable precipitation, arid-adapted organisms have evolved to survive in harsh conditions and if surveys are performed at inappropriate times or year or in particularly dry years many plants that are in fact on-site may not be apparent during surveys (ex. annual and herbaceous perennial plants).

Because the project site is located within an identified California Essential Habitat Connectivity corridor⁸, a thorough and independent evaluation of the acquisition lands and how they currently function for wildlife movement is essential. The environmental review must evaluate all the wildlife movement corridors, both terrestrial and aerial. The analysis should cover movement of large mammals, as well as other taxonomic groups, including small mammals, birds, reptiles, amphibians, invertebrates, and

⁴ <http://www.cnps.org/cnps/rareplants/inventory/guidelines.php> and http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf

⁵ <http://www.cnps.org/cnps/archive/collecting.php>

⁶ http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDDB_FieldSurveyForm.pdf

⁷ http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp

⁸ <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18366>

vegetation communities. The review should first evaluate habitat suitability within the analysis window for multiple species, including all listed and sensitive species. The habitat suitability maps generated for each species should then be used to evaluate the size of suitable habitat patches in relation to the species average territory size to determine the appropriate size and location of linkages and that they provide both live-in and move-through habitat. The analyses should also evaluate if suitable habitat patches are within the dispersal distance of each species. The environmental review should address both individual and intergenerational movement (i.e., will the linkages support metapopulations of smaller, less vagile species). In addition, the environmental review should consider how wildlife movement will be affected by other planned approved, and proposed development in the region as part of a cumulative analysis of the environmental threats in the area.

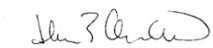
Clearly the two and one quarter sections in T30S R34E (Sections 9, 15 and the southern quarter of 10) are inappropriate for any off-road vehicle activity because they are surrounded by private lands and include key headwaters of Caliente Creek through Hugh Mann Canyon.

Please add us on the list of interested public with regards to notices for any meetings or documents associated with this acquisition.

Sincerely,



Karen Schambach
California Field Director
Public Employees for Environmental Responsibility
P.O. Box 4057
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capeer@peer.org
530-333-2545



Ilene Anderson
Biologist/Public Lands Desert Director
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November 8, 2012

Mr. Dan Canfield, Planning Manager
 California Department of Parks and Recreation,
 Off-Highway Motor Vehicle Recreation Division
 1725 23rd Street, Suite 200
 Sacramento, CA 95816

Dear Mr. Canfield,

The following are the scoping comments of the Kern-Kaweah Chapter for the Notice of Preparation of the EIR for the "Eastern Kern County Acquisition," as conducted by the lead agency, the California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division (OHMVR).

We understand that the OHMVR is proposing to acquire up to 60 privately owned parcels (approximately 28,500 acres) in eastern Kern County, from the Renewable Resources Group.

This vast open space is a biologically rich transition zone between the Western Mojave Desert and the Southern Sierra Nevada Range. Located within this large area are: the Jawbone-Butterbredt Area of Environmental Concern, parcels of land within the Sequoia National Forest boundary, and the well-known Butterbredt Springs, a designated "Important Birding Area." In short, these acquisition lands contain large tracts of native vegetation, important springs, sensitive riparian areas, cultural sites and wildlife resources, which deserve the highest levels of protection.

I. BIOLOGICAL RESOURCES -The EIR must include a thorough and detailed analysis, during all four seasons of the year, for potential impacts to all biological resources located within the acquisition lands:

A. Native Wildlife – The EIR must consider baseline studies of existing populations, migration corridors, and foraging areas of wildlife species.

B. Avian Species – Many of the canyons provide migration corridors for passerine bird species in the fall and spring. In addition, there must be a baseline study for local raptor populations. This information must document known raptor nesting, foraging, and migration patterns.

C. Bats – Many species of bats live in the Western Mojave Desert Canyon and Southern Sierra Nevada Range. A baseline study of bat populations living in the proposed acquisition area must be conducted.

D. Soils and Hydrology – Fragile and erodible soils and drainages are vulnerable to development pressures such as road building and new trails. The potential for fugitive dust impacts must be thoroughly addressed.

E. Habitat Fragmentation – The NOP states that anticipated activities would fall into five broad categories of visitor use. The EIR must adequately address the impacts these proposed activities would incur on further fragmenting wildlife habitat in this region. Consideration must include wildlife habitat that has already been impacted by fragmentation in adjacent lands, both private and public.

II. RED ROCK CANYON STATE PARK – The EIR must adequately address any impacts to adjacent Red Rock Canyon State Park. Currently, there is no Red Rock Canyon General Plan in place. This important guidance document *must be completed* prior to the expenditure of funds for procurement of proposed OHV Park lands, so that Red Rock Canyon SP is afforded the protection that is necessary.

III. PACIFIC CREST NATIONAL SCENIC TRAIL - The Pacific Crest Trail (PCT) stretching for over 2600 miles from our borders with Mexico and Canada, is an internationally known hiking/equestrian path. Impacts to trail resources from illegal OHV trespass must be considered in the EIR.

IV. ADJACENT BLM PARCELS - The proposed acquisition area is checkerboarded with BLM lands. The EIR must consider the natural resources of adjacent BLM parcels, and the potential impacts of any proposed development.

V. LAW ENFORCEMENT and MONITORING – The proposed acquisition area of 28,500 acres will need additional law enforcement staff to both patrol the property and dispatch offenders. Adjacent Red Rock Canyon has suffered for years from a lack of adequate law enforcement personnel. As a result, natural resources have been degraded. What permanent and reliable funding will be allocated for an appropriate law enforcement staff to monitor the acquisition lands?

VI. COMPLETE SET OF ALTERNATIVES – The EIR must include a complete set of alternatives that thoroughly discuss all possible development scenarios, including “no development,” for land use in the acquisition area.

Protection of the natural resources in the remaining open space of Eastern Kern County must be a priority. The combination of wind energy development and unauthorized OHV trails have already impacted the lands north of Highway 58 and east of Highway 14 in Eastern Kern County. We believe there must be a balance between development and protecting valuable open space for the health of both wildlife and future generations.

Please add my name to future mailings and announcements for this issue.

Sincerely,

Georgette Theotig, Chair (gtheotig@sbcglobal.net)
Kern-Kaweah Chapter, Sierra Club
P.O. Box 38
Tehachapi, CA 93581

Western Rockhound Association
941 East Ridgecrest Blvd.
Ridgecrest, CA 93555

November 10, 2012

ATT: Mr. Dan Canfield, Planning Manager

1. We support the acquisition of the Renewable Resources (aka the Rudnick/Onyx Ranch) lands for sale within and near BLM's Jawbone facility, if certain conditions are met.
2. Assurances that NOT one square inch of the acquisition lands will be granted or added to Red Rock Canyon State Park or gifted to Sequoia National Forest. (We understand that the legislature can do whatever it wishes. These assurances should be in writing; possibly included within the EIR, and come from State Parks.)
3. Assurances that neither environmental NGOs nor some park management business will be contracted to manage/operate the acquisition lands, as has happened with a significant number of State Parks.
4. We recognize the acquisition is merely an exchange of paper having no direct environmental consequences in and of itself. However, from that point on there may be environmental consequences and as all the lands are private an EIR must be completed which covers the indirect and potential direct consequences of the acquisition. However, WRA believes that a very good case can be made that there should also be an EIS because of the intermingling of Bureau of Land Management lands, as well.

Additionally, there are two listed animal species (the Desert Tortoise and the California Condor, which make these acquisition lands their home (tortoise) and hunting grounds (California Condor), as well as a number of migratory birds which are on some list or another, but only pass through. And one state listed animal species, which the federal government refuses to list. The Mojave Ground Squirrel is that specie. We are unsure of the total number of listed plant species. This list changes often.

5. There will have to be an **Interim MOU** for most of the acquisition and that Interim MOU should be between State Parks OHMVR Division, Bureau of Land Management (BLM) and Friends of Jawboned and possibly the County of Kern and should be part of the EIR which evaluates the direct and indirect consequences. There should be a second MOU between State Parks OHMR Division, the National Forest and the Friends of Jawbone and possibly the County of Kern, The Interim MOUs should be public documents and then with whatever modifications are made, should become a part of the General Plan EIR/EIS. (We suggest the County of Kern at some level be involved in this process; especially as the county has recently begun to develop a county wide road and trails plan. This is the justification for including them as possible participants in the MOUs.
6. It makes really good sense for State Parks to give Red Rock Canyon State Park to the OHMVR Division to include its management in a MOU with BLM and the Friends of Jawbone and in the General Plan and EIR/EIS. (And possibly the County of Kern.)

BLM, Friends of Jawbone, and some SVRAs have been providing maintenance and other help for Red Rock Canyon State Park for years. WRA does not believe Red Rock Canyon's General Plan has been completed and if given to the OHMVR Division a General Plan could be completed at the same time as the one for the acquisition. Again, it just makes good sense. (Should State Parks conclude this would be to controversial they could enter into a MOU with the County of Kern which could then contract through a MOU with the OHMVR Division of State Parks, the Bureau of Land Management and Friends of Jawbone for its operation. Or the State of California could give up the state park and the lands would revert back to BLM which could then enter into a MOU with all parties. Then the Friends of Jawbone could go in to the area and do its usual great job of rehabilitation. Environmentally, it makes sense.

7. Page 3, the first bullet point of the Notice of Preparation speaks to continuation of activities and access however it fails to mention a number of on-going activities. Assurances must be provided that all activities currently happening on the proposed acquisition lands must continue. (To name just a few of those missing from the list: Ranching (this is these families livelihood; we are recreating), hunting, shooting, mining, rockhounding, ballooning, rock climbing, geocaching, Grand Prix's, kite flying, radio controlled automobiles and or aircraft, photography, filming, star gazing, and others we are not aware of)

8) The lease(s) for the cattle grazing should be signed 1 minute after the sale is completed or acknowledged in some way.

9) Page 3, the second bullet point of the Notice of Preparation speaks to a number of activities which are expected to increase. They probably will. It must be pointed out that the BLM, the Friends of Jawbone and the Kern County Sheriff's Department and their Search and Rescue Group have been providing all of the named categories of maintenance and operations and are expected to continue to do so. The OHMVR Division of State Parks will provide an extra needed presence.

10) Natural and cultural resource management activities are being provided to approximately 28,500 acres of private land; receiving care and protection from the land owners through a MOU with the Friends of Jawbone. It would be wise for the OHMVR Division of State Parks to continue to contract with the Friends of Jawbone as they already know many of the areas requiring protection.

11) The State Parks OHMVR Division proposes to issue permits for special activities "which are themselves potentially subject to separate CEQA review". The level of activities which trigger this special permit should be provided in this EIR and again in the General Plan. The responsible party for issuing the permit(s) should be included in the MOUs.

The EIR and the General Plan should address how it will handle those activities which have already been through a BLM review (EA or EIS). Will it be necessary to review them again?

12) The EIR should evaluate the potential for several single track loops which would be signed only for use by motorcycles and bicycles.

Thank you for the opportunity to comment,

Sincerely,

Marie Brashear, Land Use Coordinator

Eastern Kern County Acquisition Comments

From: Beze, Norman L. [<mailto:norman.l.beze@boeing.com>]
Sent: Sunday, November 11, 2012 4:57 PM
To: Canfield, Dan
Subject: Eastern Kern County Acquisition Comments

Dear Mr. Dan Canfield,

My simple comments to the proposal I witnessed from the OHMVR on Tuesday, 10/16/12 are as follows:

I would only support the acquisition of land by the state if there existed substantial evidence that the intention of the OHMVR was to support significant development of OHV access to the areas over and above existing dirt road system. There needs to be increased single-track two-wheeled recreation to satisfy the majority of dirt riders that frequent the area.

Norman L. Beze
2205 N. Dora Ct.
Simi Valley, CA 93063

Comments upon the Notice of Preparation and Scoping of the EIR for the SP/OHMVR in Eastern Kern County of 28,500 acres.

First – this is a huge document and difficult to get through. I do request an extension for at least one month of the comment period.

Here is a quick summary of my concerns which either are not addressed, or inadequately addressed in my opinion.

1. The direct effect on the land by the destruction of land and vegetation. The many vehicles tearing up the soil will cause erosion, loss of water retaining ability, and destruction of air quality because of the dust.
2. Direct biological impacts destroying the habitat for many creatures, mice, lizards, bats, skunks, raccoons, deer, coyotes, bears, and all kinds of birds, including those protected by the Migratory bird act.
3. Impacts upon surrounding areas. Already the ORVs that enter through Jawbone Canyon BLM off-road area are causing damage to all areas surrounding this riding area. This includes:

Private landowners – who have already had to post their land with signs like “Trespassers will shot”

The Pacific Crest Trail – which passes through this proposed development and near Jawbone Canyon and is blatantly used by OHV riders, causing trail damage and disturbance to hikers.

Surrounding wilderness areas, BLM and National Forest –rogue riders are already cutting tracks into designated wilderness, destroying the wilderness values and creating headaches for the governing agencies.

Red Rock Canyon State Park seems to be treated as an OHV area by that community. It is not. It needs a Specific Plan stating that it is a state park, not an OHV area.

4. Direct impact upon the major migratory bird corridor down from Lake Isabella to Butterbrecht Springs, and including Butterbrecht Springs in this sacrifice area. This spring is a major source of water for migrants on this dry area of the migratory corridor, and is vital for their survival.
5. There is an existent Jawbone Canyon ACEC. How is an OHV area compatible with it?
6. How will the State agency enforce limits and regulations upon the users of an open area, given the already proven record of non-compliance by many within that community? Where will it get the millions of dollars necessary for enforcement, as well as the determination to do so? Where is any protection for those affected by the noise, dust, erosion, trash, toxic products, intrusiveness, and other impacts dumped indiscriminately upon local plant, animal, and human lives already utilizing this area?

7. Cumulative impacts are an important part of any EIR. Already a huge impact has hit this area with the development of miles of wind farms. The cumulative impacts of wind farms and OHVers must be considered for this southeastern part of the Sierra Nevada range, from Hwy 179 to the Tejon Ranch Conservancy.

Please include my input in your scoping comments received, and addresses these concerns.

Sincerely,

Louise M. French
14140 Chimney Rock Road
Paso Robles, California 93446
805-239-7338

lettyfrench@gmail.com

November 11, 2012, 4:00pm

HAFENFELD RANCH LLC

P.O. BOX 58

WELDON, CA. 93283

760-378-2747

10-30-12

Mr. Dan Canfield, Planning Manager

CDPR OHMVR Division,

1725 23rd St., Suite 200

Sacramento, Ca. 95816

Ref: NOP Eastern Kern County

Acquisition EIR

Dear Mr. Canfield;

We are the livestock operator that utilizes the checkerboard of lands that are both BLM and fee title that is part of your proposed acquisition. We currently lease all the fee title lands that are in the acquisition proposal and hold the BLM grazing allotment within the checkerboard and additional 230,000 acres of BLM and 30,000 acres of USFS lands. The parcels proposed for acquisition provide stock water facilities for cattle, the only receiving, holding, gathering and shipping facilities, meadows and employee camp for the whole grazing operation. These facilities and land base are vital to the operation and if restricted or withdrawn from the "system" so to speak, will make it impossible for us to continue our operation on the federal grazing lands. We run both stocker cattle and cows and calves utilizing over 6000 animal unit month preference AUM's. We produce enough beef to feed thousands of people and are a certified organic producer.

As we have stated in your public meetings, we need assurance that we will have continued uninterrupted use as well as access if the acquisition is completed. The checkerboard is integrated into a federal grazing allotment and managed through the BLM under terms and conditions of that allotment. Three parcels are absolutely essential to our overall operation - Kelso Camp, where we maintain a cabin, corrals, barn and hay lot, School House Meadow and Landers Meadow. We do question why OHV would even want to purchase these parcels or how OHV would even use them? The

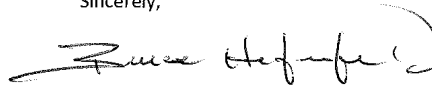
appraisal that OHV has done is beyond our affordable capacity for agricultural value and has prevented us from making a viable offer to purchase the parcels from ReNU. The livestock use is certainly a very historic and cultural use that has been ongoing for over 100 years.

Your NOP (public notice) summaries of activities that would occur if purchased did not include grazing. My fear is that if grazing is not part of the acquisition scoping for CEQA, the day you do acquire, grazing on state purchased parcels may not be a legitimate use, and we have a conflict and problem! We therefore request that you include grazing in the scoping and in the CEQA document for purchase. We also request assurance that the grazing operation continue and then included in the general plan CEQA for the operation of the lands acquired.

Under CEQA guidelines appendix G (Environmental checklist form, Item 2, Agricultural Resources) ... (i) in determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the LESA model prepared by the California Department of Conservation in use in assessing impacts on agriculture. (CCR, 2006 a.)

To this point, we have not opposed the acquisition for we have been told by staff that the grazing would continue and included in the management plans. We look forward to working with you in the future.

Sincerely,



Bruce Hafenfeld

Cc: California Cattlemen's Association

U.S. Rep. Kevin McCarthy, House Majority Whip

State Senator Jean Fuller

State Assembly Member Shannon Grove

1st District Supervisor John McQuiston-Kern County

FW: Scoping Comments-East Kern County Acquisition

From: Brendan Hughes [<mailto:hugajoshuatree@gmail.com>]
Sent: Thursday, October 11, 2012 3:26 AM
To: Canfield, Dan
Subject: Scoping Comments-East Kern County Acquisition

Hello. My name is Brendan Hughes and I would like to provide scoping comments for CA State Parks' East Kern County Acquisition. I fully support this acquisition, which will consolidate management and protect resources.

If CA State Parks acquires this land, they should observe a few restrictions on the land. First, OHV routes should not be expanded on the properties intermixed with BLM limited use lands. There are currently many miles of OHV routes and opportunities on this land, and in the adjacent OHV open areas, so State Parks should be focused on repairing impacts to these lands that go off of the BLM designated routes. Also, State Parks should not allow renewable energy development on ANY of these parcels. This is a scenic recreation area, an ACEC, and a national treasure for its unique transition zone qualities. This land should be left as is for human recreation and wildlife protection. Also, renewable energy development in the area has proven disastrous for the golden eagle. Additionally, State Parks should work with BLM to retire grazing allotments in this area. Cattle are very hard on the land in this area, and proper management for ecosystem health would require cattle to be removed. Finally, State Parks should protect the precious water resources in this area from development or degradation. The water resources in this area are critical for migratory and resident birds, as well as other wildlife, and should be fully and energetically protected.

Thank you for your consideration.

Brendan Hughes
61093 Prescott Trail
Joshua Tree, CA 92252

FW: Eastern Kern County Acquisition

From: Mark McGuire [<mailto:mamcgu@hughes.net>]
Sent: Friday, September 28, 2012 9:33 AM
To: Canfield, Dan
Subject: Eastern Kern County Acquisition

Mr. Canfield:

I wish to inform you of my opposition to any more lands set aside or purchased for the purpose of motorized vehicle recreation. This form of diversion is already responsible for extreme environmental degradation in Kern and other Southern California Counties. We do not need more land devoted to this, but less.

This form of recreation should be restricted to perhaps 20 acre parcels near landfills and other high traffic areas so as not to degrade further the little open land left.

Sincerely,
Mark McGuire
POB 53
20543 Cap Canyon Road
Onyx CA 93255
760-378-4800

EKCA Scoping Comment

From: Pam Nelson [<mailto:pamela05n@yahoo.com>]
Sent: Wednesday, November 07, 2012 9:24 AM
To: Canfield, Dan
Subject: Comments on OHMVR Scoping process, Kern County land acquisition

Dear Mr. Canfield;

I have many concerns about this acquisition. There are ongoing vehicular impacts to adjacent areas that have not been addressed. Acquiring more land for OHV use will only cause more destruction and illegal use to this region. Air and water quality and habitat degradation is already at stake. Making larger areas susceptible to vehicles will only make these problems increase on a larger scale.

Law Enforcement officers have complained about insufficient funds and personnel for patrolling the impacted areas to date. What plan will the Division implement to fund and staff additional LEOs to mitigate the existing and additional intrusions onto private and public lands in Kern County? The OHMVR Division has not complied with SB742 which mandated that a study be conducted regarding large, visible IDs for OHVs. It is imperative that this study be conducted in advance of expanding OHV opportunities in Kern County. OHMVR Division needs to participate in a dialogue about conflict between quiet recreation and OHV use before more off-road riding opportunities are developed.

Red Rock Canyon State Park will be directly affected by the OHMVR land acquisition. Completion of the Red Rock Canyon General Plan was suspended in 2009 due to budgetary issues. The Division must put first things first. The RRC General Plan must be addressed, assessed, and completed *prior* to expenditure of funds for procurement of proposed adjacent OHV Park lands.

The Pacific Crest Trail, has been under siege by illegal dirt bike riders. Even though legal OHV opportunities are located in Kern County within minutes of the PCT, lawless riders choose to destroy public and private lands. Hikers and equestrians will feel the adverse effects of noise and dust, and inevitable trespass from parcels adjacent to the Pacific Crest Trail. These parcels should not be considered for acquisition. A large buffer of parcels is needed to protect this important trail.

Many of the existing communities, such as the Caliente community, find OHV use in direct conflict with rural residents' lifestyle, horse and cattle ranching, and cattle grazing. Again, large buffering parcels are needed to protect their quality of life.

The only valid use of off-road vehicles on public lands is for the enjoyment and appreciation of our lands, not to destroy them. This means that using vehicles for touring and access to trails, campgrounds and non-grading activities are a priority. Allowing destruction of the land, air and water quality, habitat and human quality of life by a high impact activity is not valid.

So, if acquisition of more lands for OHV use is to be considered, a detailed plan for more law enforcement, buffers around the PCT and local residents and use of the designated roads for valid activities (touring and access) must be well prescribed. If OHV play and racing is part of this plan it should be on contained private parcels with mitigations in place.

Unfiled Notes Page 1

Sincerely,
Pam Nelson
38723 Hwy 79
Warner Springs, CA 92086

Unfiled Notes Page 2

FW: EKCA Scoping Comment

From: scotts4hire@aol.com [<mailto:scotts4hire@aol.com>]

Sent: Tuesday, December 11, 2012 8:02 AM

To: Jones, Peter

Subject: Re: EKCA Scoping Comment

Dear Dan, thanks for the opportunity to comment on the proposed EKCA. I and many others look forward to the possibility of this area being opened for public use in the Jawbone Canyon region. As you know, off road recreational opportunities in the Mojave Desert have been greatly reduced in the last few years for a variety of reasons. Yet, even with a weak economy, families go in search of places to go that are within reasonable driving distance from Los Angeles. The Jawbone Canyon area has been a favorite destination for many of these folks, but with the closing of hundreds of "illegal" trails, many of these campers have quit coming. I have owned and operated the Jawbone Canyon Store for 10 years, and although we work very hard at getting and keeping our customers, the current system of high speed roads with a few scattered trails does not appeal to many families. It is not safe for little ones, and offers few challenges for experienced off roaders. I believe the acquisition of the proposed additional property to Jawbone could create a much needed trail system, possibly graded the way ski areas are. I have many ideas to carefully develop this property with minimal impact to the land [and animals]. I would encourage study of other off road riding areas that use more cost effective volunteer groups for trail maintenance, instead of heavy machinery. I believe the heavy use of fencing and excessive signing greatly detracts from any off road experience. The economic impact of adding this area to what exists must also be considered. The trail closures of the past few years have hurt the many small businesses that depend on tourist dollars. Some have closed, others are barely hanging on. The adding of a well planned area to what exists could make this what I have always thought it could be, a world class off road area, unlike any other.

Sincerely, Scott Spencer

FW: Eastern Kern County Land Acquisition

From: George Stavaris [<mailto:george.stavaris@trinitipartners.com>]
Sent: Wednesday, October 24, 2012 8:33 AM
To: Canfield, Dan
Subject: Eastern Kern County Land Acquisition

Dear Dan:

As the past President of the City of Los Angeles North Valley Area Planning Commission for over 6 years, I know the difficult decisions you are faced. This one is rather simple. As an avid off-road motorcycle rider finding safe open area to ride is becoming more and more scarce. Your agency's decision to acquire more land to increase the trail system is a sound decision.

The current trail system is dangerously inadequate for the ever-increasing number of users. Now that many of the trails in the limited use area have been graded flat and widened to accommodate trucks, the likelihood of head on accidents with vehicles that take up the majority of the trail's width has increased dramatically. By increasing the trail system by adding low speed trails (difficult), this added capacity will reduce head on accidents.

OHV monies should always and as promised be spent on OHV areas, to increase the land and to protect the tax payers whom pay into the fund. I hope you can see this point of view and make the right decision.

Should you have any questions for me, please feel free to call or email.

George Stavaris
Partner
Triniti Partners, Inc.
15260 Ventura Boulevard | Suite 1200
Sherman Oaks | California 91403
T 818.788.3800 | F 818.302.2320 | C 818.429.9412
george.stavaris@trinitipartners.com | www.trinitipartners.com | Lic. 01267454

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Unfiled Notes Page 1

FW: Eastern Kern County Acquisition Response



From: Craig Weisman [<mailto:craigw@told.com>]
Sent: Monday, October 22, 2012 5:34 PM
To: Canfield, Dan
Subject: Eastern Kern County Acquisition Response

Mr Dan Canfield,

As an avid off-road motorcycle rider, I am all for your agency acquiring this land to increase the trail system for motorized use. The current trail system is dangerously inadequate for the ever-increasing number of users. Now that many of the trails in the limited use area have been graded flat and widened to accommodate trucks, the likelihood of head on accidents with vehicles that take up the majority of the trail's width has increased dramatically. By increasing the trail system by adding low speed trails (difficult), this added capacity will reduce head on accidents.

Should your agency uses funds earmarked for OHV recreation, I hope that they act in the best interests of the group, instead of giving in to the unrealistic demands of the city dwelling environmentalists.

Please see the attached article.

Craig Weisman

Senior Partner

D.R.E. #01104478



TOLD CA DRE #01132455
5940 Variel Avenue
Woodland Hills, CA 91367
Office (818) 466-0258
Fax: (818) 593-3850

Unfiled Notes Page 1

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JAY L. CLENDENIN Los Angeles Times

HIKERS USE the Hastain Trail in Franklin Canyon Park in Los Angeles. The pathway continues onto adjacent land, whose owner talked last year about plans to build six or seven houses on the ridgeline.

L.A. developer is ordered to let hikers use trail on his land

A judge tells the owner to remove all items, including fences, from the path.

By ANN M. SIMMONS

A Los Angeles real estate developer must allow hikers to use the popular Hastain Trail across his private property in Franklin Canyon, a judge has tentatively ruled.

Mohamed Hadid, who has designed and built more than a dozen Ritz-Carlton hotels and many Beverly Hills mega-mansions, has been ordered to stop "interfering with the public recreational use" of the trail, which runs across nearly half of the 97 acres he owns next to Franklin Canyon Park between the San Fernando Valley and Beverly Hills.

Tuesday's tentative decision by Los Angeles County Superior Court Judge Yvette M. Palazuelos directed Hadid and his companies Coldwater Development LLC and Lydda Lud LLC to "remove all items," including fences and equipment, from the portion of the trail that traverses Hadid's land and leads to a peak with sought-after views.

"All of us just felt that it was the right thing that this land should be saved," said Ellen Scott, whose grassroots group, Friends of Hastain Trail, sued Hadid's companies.

Hadid did not return calls to his cellphone seeking comment. One of his attorneys, Matthew Pahl, said Thursday that he was not ready to comment in detail. "We're naturally disappointed by what it appears the tentative judgment is," Pahl said. "We need to review it a

little more before we decide what our next step will be, if there will be one."

In an interview last year, Hadid told The Times that he wanted to build six or seven houses on the ridgeline and envisioned a mix of luxury Mediterranean and contemporary-style homes, structured to blend into the mountainside. He brought in bulldozers, erected barriers and essentially blocked hikers from walking the complete 2.3-mile loop that climbs on a fire road through lush shrub-land to the ridge.

Environmentalists, hikers and mountain bikers argued that the section of trail that crossed Hadid's land had been used by the public for decades. Eric Edmunds, attorney for the Mountains Recreation and Conservation Authority, which joined Scott's group in the lawsuit, said private property could be presumed to be for public use if members of the public

had been using it unimpeded for five consecutive years before 1972, when a state law changed the rule.

During the trial, several so-called legacy hikers testified about how their use of the trail went back decades, and, critical to the plaintiffs' argument, preceded the 1972 legal change. James Goller, 55, testified that he had used the trail since he was about 7 years old, hiking with fellow Cub Scouts and having time with his father. Today, he mountain bikes there each morning.

Judge Palazuelos also toured the trail at the request of the plaintiffs' lawyers. Edmunds said he believed the outing was pivotal.

"Once she actually saw the trail, once she saw the panoramas and views, she knew right away what was at stake here," Edmunds said.

ann.simmons@latimes.com

10 of 1

California State Parks
Off-Highway Motor Vehicle Recreation Division

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

Will Lebscher
NAME
NPL News
ORGANIZATION / AFFILIATION
Oclp@live.com
E-MAIL ADDRESS

757 Red Mountain
ADDRESS
16 Oct 2012: Ridgecrest

Comment:

I spoke with Dan about this. Please consider ORV Routes of ingress and egress. Between our 3 towns Red Mountain, Randsburg and Johannesburg; and the added activity from Jawbone, Dove Springs, and the New JBACEC. I also think connectors need to be considered into the El Pasos. I suspect a pathway/trail E of Hwy 14, and N of John Dry Lake, and connecting with something going south up the Fremont Valley to Randsburg; either an existing trail or a new one. Where and how ORV's cross Hwy 14 may be a new issue, and very important. One "under the road" passage may be all that's necessary for R/R Park, The El Pasos, and along John Dry Lake towards Randsburg. We already see many ORV's from Jawbone and Dove Springs for food & fuel, in our 3 towns, and access could be improved.

- Q * Would Mgt. Funds for this New Area come from existing Grant Funds, or separately?
- Q * Ed - is Pro Rallye run within these areas? What events are now run there?
- Q * ^{Thank You} Whom issues permits to use this New Area.
- Q * ^{OHMVR Division} How will this Area differ from R/R Park, E of Hwy 14?
- Q * Stress Addnl Law Enforcement EARLY ON - Species Monitoring Early On

California State Parks
Off-Highway Motor Vehicle Recreation Division

F05 meet
10/17/12

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

Will Lrebscher
NAME

757 Red Mountain 93558
ADDRESS

Public
ORGANIZATION /AFFILIATION

17 Oct 2012 - Sanborn

oclipa@live.com
E-MAIL ADDRESS

Comment:

Dan, could you include in your Purchase agreement that these New Properties be: exempted into perpetuity: From ever being included in Red Rock Cyn State Park, regardless of State Legislature Future "Laws" Thank Will

Could you put me in touch with the Tehachapi or Bakersfield "New Kiosk" people you mentioned last night in R/C? Thank

Also: Are you carrying a SureFire Flashlight/Lazer combination For Display Screen/TV Pointing? where do I get one? Thank Will.

Thank You
OHMVR Division

California State Parks
Off-Highway Motor Vehicle Recreation Division

F&J Meet
10/17/12

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

Janet Burgess
NAME

7930 Ironwood Av
ADDRESS

Tamara Compton
ORGANIZATION /AFFILIATION

California City Ca
93505

Redsidest@verizon.net
E-MAIL ADDRESS

Comment:

My main concern is the cattle grazing with
the OHV crowd.

The cows are creating trails - that OHV's are
using.

Thank You
OHMVR Division

Lancaster, CA

Rec'd 10/17/12

California State Parks
Off-Highway Motor Vehicle Recreation Division

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

Ed Waldhrem
NAME
Friends of Lowbrey
ORGANIZATION /AFFILIATION
EdWaldhrem@sol.com.
E-MAIL ADDRESS

PO Box 1902
ADDRESS
Cantil. CA 93505

Comment:

Page 3. Sublet Points Are As if there is no management -
a) BLM staffing of the area is limited -
Wrong. Foj has maintained this area for 4 yrs and
thing has see. was done by us w/ OUV funds w/ BLM
approval.
b) Enforcement is missing that is what OHMVR needs to
bring to the table
c) Resource legend include Fence etc.
Wrong. Foj has done more than any other agency of
taking an area w/ 1986 PLAN, never implemented to
see what we have today. OHMVR does not have to
reinvent the wheel.
d) Installation of Restrooms
Wrong. We do not need more Restrooms
e) OUV Competition
Wrong. BLM will not allow this - Just spend
Paper year competitive etc.

Thank You
OHMVR Division

(1)

Lanaster, CA

Road 1017112

California State Parks
Off-Highway Motor Vehicle Recreation Division

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

ED Waldhem
NAME
Friends of Jawine
ORGANIZATION /AFFILIATION
EDWaldhem@AOL.com
E-MAIL ADDRESS

P.O. Box 1702
ADDRESS
Crested ca 93501

Comment:

What is Needed

- 1) Low en/percent Agree 100%.
- 2) Stalling as long as FOJ get \$ From OHMVR Div either Grant or Suppl we do job a lot more efficient and cost effective than State can ever do.
- 3) We do not want SVRA Type h/m/t so expensive this has to be a cooperative project w/ BLM / FOJ
- 4) we do not need 4x4-Quad Trails.
- 5) We need Simple Tract Trails with Restrooms to Vehicle
- 6) Funding for FOJ either Grants or Suppl Budget w/ cooperative agent of BLM.
- 7) Management West of Jawine Canyon Rd & Kelso Valley Rd should carefully checked - NO OHV NOW -
- 8) Transo KVR - Piv into Rd & st John Ridge Need Trails Simple Tract. Sit How to manage

Thank You
OHMVR Division

(2)

Lancaster CA

Recd 10/17/12

California State Parks
Off-Highway Motor Vehicle Recreation Division

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

Ed Waddheim
NAME
Friends of Louisa
ORGANIZATION /AFFILIATION
EdWaddheim@aol.com
E-MAIL ADDRESS

P.O. Box 1902
ADDRESS
Corral, Ca 93505

Comment:

- 9) LEO can use BLM Visitor Center office that BLM Does not use as much.
- 10) state equipment work w/ FOJ on shop, if any equipment will even be necessary.
- 11) Permits always w/ BLM as lead agency.
- 12) Gracing allotment Review and Resource impact part of Plan.
- 13) Project if we do not presently use, need to be evaluated very carefully if we even want OHV use.
- 14) Link w/ segovia needs to be resolved, no green sticker now
- 15) agreement w/ OHMVR + state we want to be part of discussion.
- 16) Need to know what other interest groups have special interest in this, so we do not get surprised
- 17) Need to get Kern County, Roads and Planning involved
- 18) we do not want Red Rock to get hold of any of this level, we need to see how we can manage Red Rock.

Thank You
OHMVR Division

(3)

Lancaster, CA

Revd 10/17/12

California State Parks
Off-Highway Motor Vehicle Recreation Division

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

Ed Waldhem
NAME
Friends of Jawbone
ORGANIZATION /AFFILIATION
EdWaldhem@aol.com
E-MAIL ADDRESS

P.O. Box 1902
ADDRESS
Canby CA 95001

Comment:

- 19) Need to have Paula visit Area with FOJ staff to understand what FOJ does in this Project.
- 20) Shooting No in SVERA, how will you deal with this since BLM it is allowed.
- 21) General Plan, what Budget do you anticipate to have here.
- 22) if a bird habitat would you limit OHMVR to state owned land or will you look at it as one project.
- 23) Hunting, allowed now how will OHMVR deal with this.
- 24) We have Rally car Racing on Jawbone Canyon Rd once a year, Permit from Kern County Road. OHMVR issue with this?
- 25) Any idea of charging a Fee for us to have sustainable income.
- 26) Buy the land
- 27) Acquire Property of EP 15 and HW 14 For inter change before Hwy 14 is widened
- 28) NO solar or wind in riding area

Thank You
OHMVR Division

(4)

Lancaster, CA

Rad 10/17/12

California State Parks
Off-Highway Motor Vehicle Recreation Division

Eastern Kern County Acquisition
EIR Scoping Meeting

Comment Card

TERRY WORE
NAME
CORVA
POINT MUSEUM 4X4 CLUB
ORGANIZATION/AFFILIATION

4565 WEST AVE M14
ADDRESS
QUARTZ HILL
CA, 93536

TWORE@YAHOO.COM
E-MAIL ADDRESS

Comment:

Question on the definition of Special Events.
one of the definitions is a organized trail ride.
I asked this of the Benton office as they
stated that this could be "Any" Club riding
if it is deemed "Organized" - What is
the full and true definition? Will Clubs
(4x4 ROCKHOODS) now be required to get a
permit and insurance?
if this is true this could hurt all outdoor
recreation!

And why do most of your presentations only
show motorcycles?

Thank You
OHMVR Division

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Summary of Hopes, Concerns, Issues Organized by Subject – Proposed Eastern Kern County Acquisition Focus Group Meeting

Hopes	Concerns	Related Issues
Recreation Opportunity		
Expand well managed and well maintained OHV recreation	Loss of hunting opportunities	
Expand OHV opportunities, including 4X4 trails, open areas	Overly restrictive uses of trails; route, trail, and open area closures	
Focus on adding single track trails; the area has very few for motorized use	Trail density and destination oriented route opportunities for OHV	
Reduce “useless” trail maintenance; fewer dirt freeways	Have trails already been decided on? Will public be notified/included on these plans?	
Keep existing trails in Jawbone/Dove Springs Open Areas	Loss of existing routes and trails	
Additional open areas		
Biological Resources		
If the entire property under consideration is purchased, will it help with habitat connectivity	Funds may be insufficient to protect riparian areas	
Wildlife habitat and bird migration pathway is well protected and managed	Protect black butterflies	
Development of wildlife interpretive areas and programs	Protect Butterbredt Spring and adjacent area	
Cultural Resources		
Ensure Native American land and artifacts are protected, including surveys and monitoring to ensure protection and recognition of sites	Can cultural resources be adequately protected?	
Ensure sites are respected during construction/maintenance	Given the large number of acres to be surveyed for cultural resources, some sites may be missed	
Provide sufficient resources to include culturally affiliated and experienced Native American consultants in the preliminary and final cultural resource surveys for CEQA	Will there be adequate resources for Native American consultant surveys?	

Proposed Eastern Kern County Acquisition Focus Group Meeting (August 2, 2012)

1

Other Resources		
	Will there be adequate funding for protection of highly erodible soils in special areas?	
	Will water rights be obtained?	
	Need flexibility regarding water development	
General Resource Management		
Become a showcase example of sustainable multiple use	Will appropriate management be available?	How will BLM-OHMVR Division checkerboard be managed?
Interpretive signage in areas of interest or with sensitive resources; these could be a teaching tool to public that may encourage their understanding and desire to support protection of these areas	Will there be adequate education? We need maps, and interpretation to explain why people should stay out of protected areas. Education is a critical part of this.	
Provide better education/information on how to experience this sensitive area without damaging it and why it needs protection and preservation. Present this information on Friends of Jawbone map and all OHV/BLM handouts	Natural resource protection must be done in a manner that makes the resource sustainable	
Sustain and potentially increase OHV motorized recreation with reduced impacts to resources as a result of a well thought out and implemented management plan	Environmentally sensitive areas should not allow motorized recreation	
Protect sensitive resources	Need adequate resources to protect communities and Pacific Crest Trail from illegal OHV use	
Ensure acquisition areas are adequately and continually monitored		
Hope the area acquired is not developed more than it already is. It's a fantastic piece of original California – rare these days. Preference is to leave it as wild as it can be.		
Ensure areas of critical concern are protected and off limits to any OHV use		

Proposed Eastern Kern County Acquisition Focus Group Meeting (August 2, 2012)

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Park Operations/Management		
State Parks and BLM will develop a Memorandum of Understanding (MOU), which allows state to manage as a lead agency	Concern regarding management with conjunction of BLM and OHMVR Division. Who is in charge? Who will acquire, who will manage, and how?	
Improved management of lands through greater partnership between state and BLM	What happens if long-term management/ operations dollars don't materialize	
OHMVR Division will bring management resources – patrol and enforcement, outreach and education, restoration and monitoring – to benefit this area	Ensure enforcement practices are well defined and fully funded	
Recognize that management is currently occurring in OHV usage areas and hope that State Parks will draw on this local expertise and provide resources to support it	Can OHMVR Division maintain/protect this vast area? Expand partnerships with special interest groups and those now involved.	Partnership with Friends of Jawbone.
Include communication with stakeholders to work through the issues that will arise	That Friends of Jawbone can continue to do what it has been doing without reinventing what it's doing.	
Provide adequate enforcement funding	Can open areas co-exist with other uses?	
Implement buffer zones	What is being done with property outside existing OHV area?	
Continue all existing land uses	Friends of Jawbone/BLM collaboration on Jawbone and Dove Springs	
No further development; leave it as wild as possible. Ideally it would be less developed.	BLM's mandate is to protect natural resources while at the same time provide for multiple use of the lands it administers; the acquisition must bear this in mind	
Use Hungry Valley SVRA as a model	Maps should delineate areas that should be off limits; must educate	
	OHMVR Division has spotty record. It points with pride to Hungry Valley omitting mention of Ocotillo Wells/Cahuilla [Truckhaven] area, a complete disaster, causing great concern.	

Livestock/Agriculture		
Include an agricultural plan in planning effort	Loss of grazing. Documents do not address agricultural production capacity for local ranching business. There will be an economic loss to local agricultural businesses. California Cattlemen's Assoc. and Farm Bureau are concerned about reducing availability of land which removes the ability to produce for the consumer	
Maintain successful grazing where it currently exists	Federal grazing permits require landowners wishing to exclude cattle to fence them out. How will OHMVR Division handle fencing and will it be an adequate addition to the plan?	
Continue to develop and spread water on desert for cattle and wildlife resource management	How can OHMVR Division mitigate the loss of water sources for grazing land?	
	There is an important facility at Kelso camp, which is critical to business and shipping and receiving. Will this remain?	
	Can grazing remain a viable financial enterprise given a new management paradigm?	
	Why acquire certain parcels, e.g., Kelso Camp, School House, that are extremely important to the grazing operation on BLM and USFS permits?	
Planning/CEQA Processes		
Have management plans ready prior to acquisition	Planning and CEQA process is being rushed	If resource issues are identified during EIR, then it would be good to see mitigation, such as reroutes, included in the same plan. This would eliminate the cost of additional EIRs.
Include everyone in plan development, not just OHV representatives	Need better maps, e.g., topographical maps clearly marking water	Consult, consult, consult
Balance recreation with conservation, i.e., project becomes a win-win for environmental concerns vs. recreation opportunities	Does OHMVR Division have a well-defined baseline of areas that need to be protected or know what exactly exists on the ground now? Without baseline of areas you can't assess where you are going.	

Proposed Eastern Kern County Acquisition Focus Group Meeting (August 2, 2012)

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Don't use a CEQA statement of overriding consideration	Mitigation plan has a high priority	
Complete and implement project area plans in a timely manner	Landowners should be completely informed on all plans	
Need better communication – state with local land owners and ranches.		
Implement a consensus driven process	EIR must lay out trail design/management plans	
Energy Development		
Project will abate threat of wind energy and other renewable energy development	What are the long-term plans? Will wind or solar be permitted on park lands or interspersed on BLM lands?	
OHMVR Division will not lease back lands for future energy development on new land or allow transmission to land locked BLM parcels for future energy extraction by current applications.	Will lands be leased back, sold, or traded for alternative energy?	
	Are the ridgelines reserved (or zoned) for wind energy development in the future?	
	Influx/inclusion of alternative energy in area	
	Confused about developer's decision to sell the land at this time. Factors include appraisal price, zoning change, transmission currently being brought into area, covenant recorded between City of Vernon and Kern County, etc. Doesn't make sense.	
Other		
Friends of Jawbone endorses visible identification to aid law enforcement response to illegal riding	Land is never enough; users always want more – any use, not only OHV	
Buy City of Vernon land parcel	Where does the money come from?	
	Will there be money available for management, operations, and maintenance well into the future, especially given the difficult economy?	
	What did OHMVR Division learn from trying to acquire land outside of Bakersfield?	

	How would general plan affect existing 1986 BLM plan?	
	Who else is actively involved in trying to purchase the lands? Is there an alternative buyer with a competing offer?	
	Acquisition of rest of Onyx (northern end) as mitigation	
	The subsidized bailout of ReNu is the face of the failure of the extension of Production Tax Credits	

Agencies, Organizations, and Businesses Represented:

- AMA District 37
- BLM
- California Off-Road Vehicle Association (CORVA)
- Desert Advisory Council
- Friends of Jawbone
- Friends of Piute Mountain Communities
- Hafenfeld Ranch, LLC
- Kern Valley Indian Council
- ORV Watch
- ReNu Resources
- Stewards of the Sequoia
- The Nature Conservancy
- U.S. Marine Corps
- USFS
- Individual members of the public

Proposed Eastern Kern County Acquisition Focus Group Meeting (August 2, 2012)

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APPENDIX B

**PARCEL SIZE AND CHARACTERISTICS
TRA Environmental Sciences, Inc.**

Table B-1. Eastern Kern County Property Acquisition Project Parcels Parcel Size and Characteristics				
APN and Parcel ID Code	Acres	Parcels with Designated OHV Routes*	Parcels with Street-Legal Only Roads	Roads and Other Known Features
153-012-03 L-1	122.9		X	Piute Mountain Road, in Sequoia National Forest, corral, next to Pacific Crest Trail
153-012-05 L-2	41.4			In Sequoia National Forest, spring-fed creek into pond
153-012-07 L-3	81.3			In Sequoia National Forest
153-080-02 K-1	322.5			Volunteer trail observed, trough
153-080-08 K-2	322.2			Volunteer trail observed
153-070-03 K-3	40			
153-070-02 K-4	321.1	X		Butterbrecht Canyon Road (SC123), Pacific Crest Trail crosses parcel
153-080-05 K-5	160			Volunteer trail observed
153-080-04 K-6	640		X	S. Kelso Valley Road, volunteer trail observed
153-070-07 K-7	640			
153-030-05 K-8	640	X		Sorrel Peak Road (National Forest System Road), Sorrel Peak, meteorological tower, next to Sequoia National Forest
153-100-03 K-9	640			Volunteer trail observed
153-090-01 K-10	640			Volunteer trail observed
153-090-03 K-11	640			Volunteer trail observed
153-100-13 K-12	603.3			Spring
153-100-10 K-13	640		X	Kelso Valley Road, Kelso Cabin, active corrals, Green Spring, wetland/pond near springs

Table B-1. Eastern Kern County Property Acquisition Project Parcels Parcel Size and Characteristics				
APN and Parcel ID Code	Acres	Parcels with Designated OHV Routes*	Parcels with Street-Legal Only Roads	Roads and Other Known Features
153-090-05 K-14	640			Volunteer trail observed
153-051-03 K-15	634.5		X	Jawbone Canyon Road, Cottonwood Creek runs through parcel, next to Sequoia National Forest
153-120-02 K-16	640			Water storage for cattle grazing, Quail Spring
153-120-04 K-17	120			Volunteer trail observed
153-110-01 K-18	632.3		X	Jawbone Canyon Road, Kelso Valley Road, volunteer trail observed
153-110-03 K-19	634		X	Jawbone Canyon Road, BLM range fencing
153-120-07 K-20	512.7		X	Jawbone Canyon Road, Kelso Valley Road, Schoolhouse Well, windmill near well, livestock features
153-070-05 B-1	631.5	X		Butterbredt Canyon Road (SC123), SC124, next to Pacific Crest Trail, water storage, trough
153-140-08 B-2	317.2	X		Butterbredt Canyon Road (SC123), pipeline
153-140-07 B-3	320	X		Butterbredt Canyon Road (SC123), pipeline, water storage, trough
153-160-02 B-4	635.9	X		Butterbredt Canyon Road (SC123), Butterbredt Well, small old depression, camp, volunteer trail observed, pipeline
153-160-06 B-5	323			
153-160-04 B-6	638.8	X		Butterbredt Canyon Road (SC123), volunteer trail observed
153-180-04 B-7	200			Road from Butterbredt Spring Area, volunteer trail observed
153-180-02 B-8	80			
153-180-12 B-9	80			Butterbredt Canyon Road (SC123), Butterbredt Spring, camp, trough

Table B-1. Eastern Kern County Property Acquisition Project Parcels Parcel Size and Characteristics				
APN and Parcel ID Code	Acres	Parcels with Designated OHV Routes*	Parcels with Street-Legal Only Roads	Roads and Other Known Features
153-170-01 B-10	640			Volunteer trail observed, Old mine shaft filled with debris
153-130-01 D-1	640.2	X		Dove Springs Canyon Road (SC103), OHV camps, meteorological tower
153-130-03 D-2	639.6	X		Dove Springs Canyon Road (SC103), SC129, volunteer trail observed, Gold Peak Well, pipelines, trough, camp, next to Dove Springs Open Area
153-130-05 D-3	640	X		SC99, SC103, SC180, volunteer trail observed
153-150-04 D-4	640	X		SC99, SC173, volunteer trail observed
153-140-05 A-1	640	X		Alphie Springs Rd (SC 176)
153-150-02 A-2	400	X		Alphie Springs Rd (SC 176), volunteer trail observed, Small pit 4' deep, meteorological tower
153-150-06 A-3	280	X		Alphie Springs Rd (SC 176), SC171, water storage, old pond, well, corral, trough
153-170-03 A-4	640			Fenced in water tank with abandoned lines, , OHV camps, volunteer trail observed, pipeline, buildings and small cemetery adjacent
153-170-06 A-5	640	X		Alphie Springs Road (SC 176), volunteer trail observed, Alphie Spring, pond
153-170-04 A-6	600			Volunteer trail observed
444-070-05 A-7	476.7			Open pits, volunteer trail observed
444-070-09 A-8	640	X		Alphie Springs Road (SC 176), SC251, volunteer trail observed, OHV camps
153-240-12 S-1	616.9	X		LA Aqueduct adjacent, SC175, volunteer trail observed, water storage, trough, well
153-240-14 S-2	127			LA Aqueduct adjacent, unauthorized trails on the parcel,

Table B-1. Eastern Kern County Property Acquisition Project Parcels Parcel Size and Characteristics				
APN and Parcel ID Code	Acres	Parcels with Designated OHV Routes*	Parcels with Street-Legal Only Roads	Roads and Other Known Features
153-240-16 S-3	327.5	X		Powerline road, volunteer trail observed, powerlines, next to Red Rock Canyon State Park
181-020-02 S-4	611.5	X		SC262, powerlines
181-020-11 S-5	613.1	X		LA1&2, LA Aqueduct, Sugarloaf Peak, cattle guard
181-020-13 S-6	622	X		SC262, Powerline Road, powerlines, next to Red Rock Canyon State Park
444-090-04 J-1	640	*		Volunteer trail observed, restroom facilities, camp, partially in Jawbone Canyon Open Area
181-080-32 J-2	614.4	X*		LA1&2, LA Aqueduct, partially in Jawbone Canyon Open Area
181-080-11 J-3	582.4	X*		Jawbone Canyon Road, LA2, SC2, LA Aqueduct, fire pits, scattered trash, restrooms, camp areas, in Jawbone Canyon Open Area, powerlines
181-080-30 J-4	549.6	X*		Jawbone Canyon Road, Powerline Road, LA2, SC 3, LA Aqueduct, powerlines, camp areas, in Jawbone Canyon Open Area
181-190-02 J-5	480	X*		LA2, in Jawbone Canyon Open Area
442-020-20 C-1	640		X	Sequoia Springs Rd, ranch and residential buildings, farm equipment, Hugh Mann Canyon, tributary of Weaver Creek
442-010-10 C-2	160		X	Sequoia Springs Rd, Hugh Mann Canyon, tributary of Weaver Creek
442-030-01 C-4	640		X	Weller Road
TOTAL	28,275			
* denotes parcels with Open Riding				
Note: Parcel C-3, APN 442-040-01, is no longer part of this acquisition project				

APPENDIX C

GRAZING PERMITS

U.S. Bureau of Land Management, Ridgecrest Field Office

U.S. Forest Service, Kern River Ranger District

CASE FILE COPYAUTH NUMBER: 0403503
DATE PRINTED: 12/10/2009Form 4130-2a
(February 1999)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GRAZING PERMIT

STATE CA
OFFICE LLCAD05000
AUTH NUMBER 0403503
PREFERENCE CODE 03
DATE PRINTED 12/10/2009
TERM 12/16/2009 TO 02/28/2018BUREAU OF LAND MANAGEMENT
RIDGECREST FO
300 S RICHMOND RD
RIDGECREST CA 93555-4436HAFENFELD; BRUCE AND SYLVIA
P.O. BOX 58
WELDON CA 93283

THIS GRAZING PERMIT IS OFFERED TO YOU UNDER 43 CFR PART 4100 BASED ON YOUR RECOGNIZED QUALIFICATIONS. YOU ARE AUTHORIZED TO MAKE GRAZING USE OF LANDS, UNDER THE JURISDICTION OF THE BUREAU OF LAND MANAGEMENT AND COVERED BY THIS GRAZING PERMIT, UPON YOUR ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS GRAZING PERMIT AND PAYMENT OF GRAZING FEES WHEN DUE. CONTACT YOUR LOCAL BLM OFFICE AT 760-384-5400 IF YOU HAVE QUESTIONS.

MANDATORY TERMS AND CONDITIONS

ALLOTMENT	PASTURE	LIVESTOCK		GRAZING PERIOD		% PL TYPE USE	AUMS
		NUMBER	KIND	BEGIN	END		
05008 RUDNICK COMMON		739	CATTLE	03/01	08/31	76 ACTIVE	3398
		738	CATTLE	09/01	02/28	76 ACTIVE	3338

OTHER TERMS AND CONDITIONS:

THE FOLLOWING TERMS AND CONDITIONS FOR GRAZING ON THE RUDNICK COMMON ALLOTMENT, NO.05008 IS THE RESULT OF THE ENVIRONMENTAL ANALYSIS EA. NO. CA-650-2004-38 FOR GRAZING PERMIT RENEWAL AND THE FIELD MANAGERS NOTICE OF FINAL GRAZING DECISION DATED SEPTEMBER 28,2007 AND AMENDED BY DNA CA-D05000-200¹²~~9~~-018.

THE KIND OF LIVESTOCK SHALL REMAIN CATTLE. THE SEASON OF USE FOR THE RUDNICK COMMON ALLOTMENT IS MARCH 1 THROUGH FEBRUARY 28.

FLOAT VALVES SHALL BE INSTALLED IN WATER TROUGHS, WHERE NECESSARY, TO CONTROL WATER LOSS.

ALL MINERAL SUPPLEMENTS SHALL BE PLACED UPON DISTURBED AREAS AND LOCATED AT LEAST 1/4 MILE OR GREATER FROM WATER.

CATTLE CARCASSES WITHIN 300 FEET OF A ROAD OR WATERING SOURCE SHALL BE REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER (I.E. NOT BURIED) WITHIN TWO (2) DAYS OF DISCOVERY OR, IF THIS IS NOT PRACTICABLE, SUCH REASONABLE TIME AS IS ACCEPTABLE TO THE BLM AUTHORIZED OFFICER. CARCASSES FOUND FURTHER THAN 300 FEET FROM THE ROAD OR WATERING SOURCE SHALL REMAIN UNLESS DETERMINED TO BE A HAZARD FOR REASONS OF HEALTH AND SAFETY.

BEST PASTURE GRAZING ROTATION SHALL GOVERN THE MANAGEMENT OF PERENNIAL GRAZING ON THE ALLOTMENT. CATTLE WILL BE ROTATED THROUGH AVAILABLE PASTURES. ONCE A PASTURE HAS BEEN GRAZED IT SHALL NOT BE GRAZED AGAIN UNTIL IT HAS PASSED THROUGH THE NEXT GROWING SEASON (MARCH THROUGH MAY). SHEEP TROUGHS PASTURE WILL BE INCLUDED IN THE PASTURE ROTATION SCHEDULE AND IS NOT TO BE GRAZED YEAR-LONG.

CONTINUOUS, YEAR-LONG GRAZING OF ANY PASTURE IS PROHIBITED.

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LIVESTOCK UTILIZATION LEVEL OF KEY PERENNIAL SPECIES IN THE MOJAVE DESERT RANGE TYPE SHALL NOT EXCEED 40 PERCENT ON RANGES THAT ARE GRAZED DURING THE DORMANT SEASON AND ARE MEETING STANDARDS. RANGELANDS THAT ARE GRAZED DURING THE ACTIVE GROWING SEASON AND ARE NOT MEETING STANDARDS SHALL NOT EXCEED 25 PERCENT UTILIZATION OF KEY FORAGE SPECIES EXCEPT AS DESCRIBED IN THE ALLOTMENT MANGEMENT PLANS, DECISIONS OR OTHER MANAGEMENT DOCUMENTS WITH A SPECIFIC GRAZING STRATEGY WITH A PRESCRIBED LEVEL OF PERENNIAL FORAGE CONSUMPTION.

EPHEMERAL FORAGE ALLOCATIONS SHALL BE BASED ON ANNUAL FORAGE PRODUCTION GREATER THAN 230 POUNDS (AIR-DRY MATTER) PER ACRE. WHEN EPHEMERAL PRODUCTION DROPS BELOW 230 POUNDS PER ACRE ALL EPHEMERAL AUTHORIZATIONS WILL TERMINATE. EPHEMERAL GRAZING ON THE ALLOTMENT SHALL NOT EXTEND BEYOND JUNE 15TH OF EACH YEAR.

TO ACHIEVE RANGELAND HEALTH STANDARDS AND PROPERLY FUNCTIONING CONDITION OF RIPARIAN AREAS THE FOLLOWING MEASURES SHALL BE IMPLEMENTED. GRAZING SHALL BE SUSPENDED DURING CRITICAL SPRING SEASON OF GROWTH (3/1-5/31) WHERE CATTLE HAVE ACCESS TO RIPARIAN HABITAT THAT DOES NOT MEET PROPER FUNCTIONING CONDITION.

PROPER USE FACTORS (MAXIMUM UTILIZATION LEVELS BASED ON CURRENT YEAR'S GROWTH BY WEIGHT, AS MEASURED DURING THE GRAZING SEASON) SHALL BE MAINTAINED FOR ALL KEY FORAGE PLANTS IDENTIFIED ON THE ALLOTMENT. WHERE FORAGE UTILIZATION LEVELS REACH OR EXCEED THESE IDENTIFIED THRESHOLDS, LIVESTOCK SHALL BE REMOVED FROM THE AREA OR PORTIONS OF THE ALLOTMENT AND NOT ALLOWED TO RETURN FOR THE REMAINDER OF THE GRAZING SEASON.

SALT GRASS	130%
SEDGES	30%
RUSHES	30%
WILLOW	10%
COTTONWOOD	10%

THE PROPER USE FACTORS (PUFS) FOR THESE SPECIES SHALL ACT AS THRESHOLDS, WHEN MET OR EXCEEDED WILL TRIGGER THE REMOVAL OF LIVESTOCK FROM THE AREA.

MITIGATING MEASURES AND THE TERMS AND CONDITIONS FOUND WITHIN THE WEST MOJAVE PLAN (2006) AND BIOLOGICAL OPINION FOR THE DESERT TORTOISE WILL APPLY TO THIS GRAZING AUHTORIZATION.

ONLY QUALIFIED PERSONNEL SHALL BE ALLOWED TO HANDLE DESERT TORTOISES, CONDUCT CLEARANCE SURVEYS AND MONITOR FOR DESERT TORTOISE COMPLIANCE. THE LESSEE IS PROHIBITED FROM HANDLING OF ANY DESERT TORTOISE.

THE PERMITTEE SHALL NOTIFY THE RIDGECREST FIELD OFFICE IMMEDIATELY UPON ANY INSTANCE OF "TAKE" (AS DEFINED BY THE ENDANGERED SPEICES ACT) OF A DESERT TORTOISE.

IF A DESERT TORTOISE IS FOUND BY THE GRAZING PERMITTEE OR HIS/HER EMPLOYEES, INJURED OR KILLED THE PERMITTEE SHALL CONTACT THE RIDGECREST OFFICE IMMEDIATELY. GRAZING MAY CONTINUE PENDING A REVIEW OF THE INCIDENT BY THE BLM AND THE US FISH AND WILDLIFE SERVICE, PROVIDED ALL OTHER STIPULATIONS OF THE PERMIT HAVE BEEN ADHERED TO.

EPHEMERAL GRAZING SHALL BE AUTHORIZED IN DESERT TORTOISE HABITAT ONLY WHEN EPHEMERAL FORAGE PRODUCTION EXCEEDS 230 POUNDS PER

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DATE PRINTED: 12/10/2009

ACRE (AIR-DRY MATTER) (FWS B.O. (1-8-03-F-58, PG 26 AND WMP 2.2.5.3.2, PG 2-126)).

ALL EXISTING CATTLEGUARDS WITHIN DESERT TORTOISE HABITAT SHALL BE MODIFIED TO PROVIDE ESCAPE OPPORTUNITIES FOR TORTOISES THAT MAY BECOME TRAPPED FROM FALLING THROUGH THE GRATE OPENINGS.

ANY HAZARDS TO DESERT TORTOISES, NOT LIMITED TO; TRENCHES, EXCAVATIONS AND AUGER/POST HOLES THAT MAY BE CREATED BY THE PERMITTEE, WORK CREW, AND/OR CONTRACTOR FOR THE PERMITTEE MUST BE ELIMINATED PRIOR TO LEAVING THE SITE.

NO MOTORIZED/MECHANIZED EQUIPMENT IS AUTHORIZED WITHIN DESIGNATED WILDERNESS AREAS WITHOUT SITE SPECIFIC NEPA REVIEW AND PRIOR WRITTEN APPROVAL FROM THE RIDGECREST OFFICE.

ALLOT NO CONDITIONS

CA 05008

THE FOLLOWING TERMS AND CONDITIONS IS THE RESULT OF THE ENVIRONMENTAL ANALYSIS CA-650-2004-38 AND THE FIELD MANAGERS NOTICE OF FINAL GRAZING DECISION OF 2007.

FLOAT VALVES SHALL BE INSTALLED IN WATER TROUGHS, WHERE NECESSARY, TO CONTROL WATER LOSS.

CATTLE CARCASSES WITHIN 300 FEET OF A ROAD OR WATERING SOURCE SHALL BE REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER (I.E. NOT BURIED) WITHIN TWO (2) DAYS OF DISCOVERY OR, IF THIS IS NOT PRACTICABLE, SUCH REASONABLE TIME AS IS ACCEPTABLE TO THE BLM AUTHORIZED OFFICER. CARCASSES FOUND FURTHER THAN 300 FEET FROM THE ROAD OR WATERING SOURCE SHALL REMAIN UNLESS DETERMINED TO BE A HAZARD FOR REASONS OF HEALTH AND SAFETY.

BEST PASTURE GRAZING ROTATION SHALL GOVERN THE MANAGEMENT OF PERENNIAL GRAZING ON THE ALLOTMENT. CATTLE WILL BE PLACED IN ONE HERD AND ROTATED THROUGH AVAILABLE PASTURES. ONCE A PASTURE HAS BEEN GRAZED IT SHALL NOT BE GRAZED AGAIN UNTIL IT HAS PASSED THROUGH THE NEXT GROWING SEASON (MARCH THROUGH MAY).

CONTINUOUS, YEAR-LONG GRAZING OF ANY PASTURE IS PROHIBITED.

EPHEMERAL FORAGE ALLOCATIONS SHALL BE BASED ON EPHEMERAL FORAGE PRODUCTION GREATER THAN 230 POUNDS (AIR-DRY MATTER) PER ACRE. WHEN EPHEMERAL PRODUCTION DROPS BELOW 230 POUNDS PER ACRE ALL EPHEMERAL AUTHORIZATIONS WILL TERMINATE. THE EPHEMERAL GRAZING SEASON FOR LIVESTOCK ON THE ALLOTMENT SHALL NOT EXCEED JUNE 15TH EACH YEAR.

MITIGATING MEASURES AND THE TERMS AND CONDITIONS FOUND WITHIN THE WEST MOJAVE PLAN (2006) AND BIOLOGICAL OPINION FOR THE DESERT TORTOISE WILL APPLY TO THIS GRAZING AUTHORIZATION.

ONLY QUALIFIED PERSONNEL SHALL BE ALLOWED TO HANDLE DESERT TORTOISES, CONDUCT CLEARANCE SURVEYS AND MONITOR FOR DESERT TORTOISE COMPLIANCE. THE PERMITTEE IS PROHIBITED FROM HANDLING OF ANY DESERT TORTOISE.

THE PERMITTEE SHALL NOTIFY THE RIDGECREST FIELD OFFICE IMMEDIATELY UPON ANY INSTANCE OF "TAKE" (AS DEFINED BY THE ENDANGERED SPECIES ACT) OF A DESERT TORTOISE.

IF A DESERT TORTOISE IS FOUND BY THE GRAZING PERMITTEE OR HIS/HER EMPLOYEES, INJURED OR KILLED THE PERMITTEE SHALL CONTACT THE RIDGECREST OFFICE IMMEDIATELY. GRAZING MAY CONTINUE PENDING A REVIEW OF THE INCIDENT BY THE BLM AND THE US FISH AND WILDLIFE SERVICE, PROVIDED ALL OTHER STIPULATIONS OF THE PERMIT HAVE BEEN ADHERED TO.

CASE FILE COPYAUTH NUMBER: 0403503
DATE PRINTED: 12/10/2009

EPHEMERAL GRAZING SHALL BE AUTHORIZED IN DESERT TORTOISE HABITAT ONLY WHEN EPHEMERAL FORAGE PRODUCTION EXCEEDS 230 POUNDS PER ACRE (AIR-DRY MATTER). (FWS B.O. (1-8-03-F-58, PG 26 AND WMP 2.2.5.3.2, PG 2-126)).

ALL EXISTING CATTLEGUARDS WITHIN DESERT TORTOISE HABITAT SHALL BE MODIFIED TO PROVIDE ESCAPE OPPORTUNITIES FOR TORTOISES THAT MAY BECOME TRAPPED FROM FALLING THROUGH THE GRATE OPENINGS.

ANY HAZARDS TO DESERT TORTOISES, NOT LIMITED TO; TRENCHES, EXCAVATIONS AND AUGER/POST HOLES THAT MAY BE CREATED BY THE PERMITTEE, WORK CREW, AND/OR CONTRACTOR FOR THE PERMITTEE MUST BE ELIMINATED PRIOR TO LEAVING THE SITE.

LIVESTOCK UTILIZATION LEVEL OF KEY PERENNIAL SPECIES IN THE MOJAVE DESERT RANGE TYPE SHALL NOT EXCEED 40 PERCENT ON RANGES THAT ARE GRAZED DURING THE DORMANT SEASON AND MEETING STANDARDS. RANGELANDS THAT ARE GRAZING DURING THE ACTIVE GROWING SEASON AND NOT MEETING STANDARDS SHALL NOT EXCEED 25 PERCENT UTILIZATION OF KEY FORAGE SPECIES EXCEPT AS DESCRIBED IN THE ALLOTMENT MANAGEMENT PLANS, DECISIONS OR OTHER MANAGEMENT DOCUMENTS WITH A SPECIFIC GRAZING STRATEGY WITH A PRESCRIBED LEVEL OF PERENNIAL FORAGE CONSUMPTION.

TO ACHIEVE RANGELAND HEALTH STANDARDS AND PROPERLY FUNCTIONING CONDITION OF RIPARIAN AREAS THE FOLLOWING MEASURES SHALL BE IMPLEMENTED. GRAZING SHALL BE SUSPENDED DURING CRITICAL SPRING SEASON OF GROWTH (3/1-5/31) WHERE CATTLE HAVE ACCESS TO RIPARIAN HABITAT THAT DOES NOT MEET PROPER FUNCTIONING CONDITION.

PROPER USE FACTORS (MAXIMUM UTILIZATION LEVELS BASED ON CURRENT YEAR'S GROWTH BY WEIGHT, AS MEASURED DURING THE GRAZING SEASON) SHALL BE MAINTAINED FOR ALL KEY FORAGE PLANTS IDENTIFIED ON THE ALLOTMENT. WHERE FORAGE UTILIZATION LEVELS REACH OR EXCEED THESE IDENTIFIED THRESHOLDS, LIVESTOCK SHALL BE REMOVED FROM THE AREA OR PORTION OF THE ALLOTMENT AND NOT ALLOWED TO RETURN FOR THE REMAINDER OF THE GRAZING SEASON. UTILIZATION ON THE FOLLOWING KEY RIPARIAN FORAGE PLANTS AND THEIR ASSIGNED PROPER USE FACTORS SHALL BE ADDED TO THE LIST OF KEY SPECIES ALREADY IDENTIFIED FOR THE RUDNICK COMMON ALLOTMENT.

SALT GRASS	30%
SEDGE	30%
RUSHES	30%
WILLOW	10%
COTTONWOOD	10%

THE PROPER USE FACTORS (PUFS) FOR THESE SPECIES SHALL ACT AS THRESHOLDS WHEN MET OR EXCEEDED SHALL TRIGGER THE REMOVAL OF LIVESTOCK FROM THE AREA.

NO MOTORIZED/MECHANIZED EQUIPMENT IS AUTHORIZED WITHIN DESIGNATED WILDERNESS AREAS WITHOUT SITE SPECIFIC NEPA REVIEW AND PRIOR WRITTEN APPROVAL FROM THE RIDGECREST OFFICE.

RANGE IMPROVEMENT PROJECTS AND FACILITIES WITHIN THE ALLOTMENT WILL BE MAINTAINED IN ACCORDANCE WITH THE APPROPRIATE COOPERATIVE AGREEMENT(S) OR RANGE IMPROVEMENT PERMIT(S). ALL PROJECTS SHALL BE MAINTAINED IN GOOD WORKING ORDER AND FUNCTIONAL CONDITION OR REMOVED.

RANGE READINESS OF CURRENT YEAR PRODUCTION OF EPHEMERAL AND/OR PERENNIAL FORAGE PLANTS (AS APPROPRIATE FOR THE ALLOTMENT AND/OR ECOLOGICAL SITE) SHALL BE USED TO DETERMINE TURNOUT DATES FOR LIVESTOCK.

ACTUAL USE REPORTS ARE TO BE SUBMITTED PROMPTLY BY THE OPERATOR WITHIN 15 DAYS AFTER THE GRAZING PERIOD CONCLUDES. ACTUAL USE REPORTS SHALL LIST THE NUMBER OF LIVESTOCK AND DURATION OF GRAZING USE (ON & OFF DATES) FOR EACH PASTURE USED.

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GRAZING FEES SHALL BE PAID WITHIN 15 DAYS OF DUE DATE. AN ADDITIONAL LATE FEE ASSESSMENT WILL BE CHARGED FOR THOSE PAYMENTS RECEIVED AFTER THE DUE DATE. FAILURE TO MAKE PAYMENT WITHIN 30 DAYS OF THE DUE DATE MAY RESULT IN ADVERSE ADMINISTRATIVE ACTION.

LIVESTOCK SHALL BE MANAGED IN A MANNER THAT PROTECTS CULTURAL RESOURCES.

THE REGIONAL STANDARDS FOR PUBLIC LAND HEALTH AND GUIDELINES FOR LIVESTOCK MANAGEMENT WERE APPROVED UNDER THE WEST MOJAVE PLAN IN MARCH 2006. IMPLEMENTATION OF THE STANDARDS AND GUIDELINES CANNOT OCCUR UNTIL THE SECRETARY OF THE INTERIOR APPROVES THEM. UNTIL THAT TIME, THE NATIONALLY DEVELOPED FALLBACK STANDARDS AND GUIDELINES SHALL CONTINUE AS THE BASIS FOR PUBLIC LAND HEALTH. THE REGIONAL STANDARDS AND GUIDELINES SHALL BE INCORPORATED AND MADE PART OF THE TERMS AND CONDITIONS OF THIS PERMIT (REPLACING THE FALLBACK STANDARDS AND GUIDELINES) ONCE APPROVED BY THE SECRETARY OF THE INTERIOR, WITHOUT FURTHER NOTICE.

ALLOTMENT SUMMARY (AUMS)

<u>ALLOTMENT</u>	<u>ACTIVE AUMS</u>	<u>SUSPENDED AUMS</u>	<u>TEMP SUSPENDED AUMS</u>	<u>GRAZING PREFERENCE</u>
05008 RUDNICK COMMON	6735	18867	0	25,602

CASE FILE COPYAUTH NUMBER: 0403503
DATE PRINTED: 12/10/2009

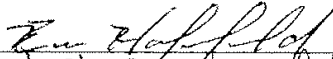
1. Grazing permit or lease terms and conditions and the fees charged for grazing use are established in accordance with the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.
2. They are subject to cancellation, in whole or in part, at any time because of:
 - a. Noncompliance by the permittee/lessee with rules and regulations.
 - b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
 - c. A transfer of grazing preference by the permittee/lessee to another party.
 - d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
 - e. Repeated willful unauthorized grazing use.
 - f. Loss of qualifications to hold a permit or lease.
3. They are subject to the terms and conditions of allotment management plans if such plans have been prepared. Allotment management plans **MUST** be incorporated in permits or leases when completed.
4. Those holding permits or leases **MUST** own or control and be responsible for the management of livestock authorized to graze.
5. The authorized officer may require counting and/or additional or special marking or tagging of the livestock authorized to graze.
6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.
7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the authorized officer.
8. Livestock grazing use that is different from that authorized by a permit or lease **MUST** be applied for prior to the grazing period and **MUST** be filed with and approved by the authorized officer before grazing use can be made.
9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.
10. Grazing fee payments are due on the date specified on the billing notice and **MUST** be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of \$25 or 10 percent of the amount owed but not more than \$250) will be assessed.
11. No Member of, or Delegate to, Congress or Resident Commissioner, after his/her election of appointment, or either before or after he/she has qualified, and during his/her continuance in office, and no officer, agent, or employee of the Department of the Interior, other than members of Advisory committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App. 1) and Sections 309 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise therefrom; and the provision of Section 3741 Revised Statute (41 U.S.C. 22), 18 U.S.C. Sections 431-433, and 43 CFR Part 7, enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

THIS GRAZING PERMIT:

1. CONVEYS NO RIGHT, TITLE OR INTEREST HELD BY THE UNITED STATES IN ANY LANDS OR RESOURCES
2. IS SUBJECT TO (A) MODIFICATION, SUSPENSION OR CANCELLATION AS REQUIRED BY LAND PLANS AND APPLICABLE LAW; (B) ANNUAL REVIEW AND MODIFICATION OF TERMS AND CONDITIONS AS APPROPRIATE; AND (C) THE TAYLOR GRAZING ACT, AS AMENDED, THE FEDERAL LAND POLICY AND MANAGEMENT ACT, AS AMENDED, THE PUBLIC RANGELANDS IMPROVEMENT ACT, AND THE RULES AND REGULATIONS NOW OR HEREAFTER PROMULGATED THEREUNDER BY THE SECRETARY OF THE INTERIOR.

ACCEPTED:

SIGNATURE OF PERMITTEE:

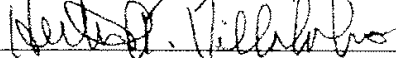


DATE:

12-14-09

APPROVED

BLM AUTHORIZED OFFICER:



DATE:

12/16/09



AN-09-2013 11:07 FROM:HAFENFELD RANCH

7603784525

TO:18316383208

P.1/4

USDA-Forest Service

FS-2200-10 (12/99)

TERM GRAZING PERMIT - PARTS 1 AND 2 (Reference FSM 2230)	Page 1 of 14
	Permittee Number 54-45
	Permit Number 54-45A

PART 1

Hafenfeld Ranch, LLC of P.O. Box 58, Weldon, CA 93283 hereinafter
(Name of Permittee) (Post Office Address, Including Zip)

called the permittee, is hereby authorized to graze livestock owned by the permittee upon designated lands administered by the Forest Service within the Sequoia
 National Forest National Grassland under the following terms and conditions:

1. Description of range. The livestock shall be grazed only upon the area described as follows: ~~described on attached page and/or~~ delineated on the attached map dated 08/2010, which is part of this permit.

2. The number, kind, and class of livestock, period of use, and grazing allotment on which the livestock are permitted to graze are as follows, unless modified by the Forest Service in the Bill for Collection:

LIVESTOCK			PERIOD OF USE		GRAZING ALLOTMENT
NUMBER	KIND	CLASS	FROM	TO	
70	Cattle	Cow/Calf	03/01	06/30	Scodie
70	Cattle	Cow/Calf	06/01	09/30	Piute

3. It is fully understood and agreed that this permit may be suspended or cancelled, in whole or in part, after written notice, for failure to comply with any of the terms and conditions specified in Parts 1, 2, and 3 hereof, or any of the regulations of the Secretary of Agriculture on which this permit is based, or the instructions of Forest officers issued thereunder; or for knowingly and willingly making a false statement or representation in the permittee's grazing application, and amendments thereto; or for conviction for failure to comply with Federal laws or regulations or State and local laws relating to livestock control and to protection of air, water, soils and vegetation, fish and wildlife, and other environmental values when exercising the grazing use authorized by the permit. This permit can also be cancelled, in whole or in part, or otherwise modified, at any time during the term to conform with needed changes brought about by law, regulation, Executive order, allotment management plans, land management planning, numbers permitted or seasons of use necessary because of resource conditions, or the lands described otherwise being unavailable for grazing. Any suspension or cancellation action may be appealed pursuant to 36 CFR 251, Subpart C.

4. This permit supersedes permit issued 09/23/2010 to ReNu Resources, LLC, c/o Renewable Resources Group

I HAVE REVIEWED AND ACCEPT THE TERMS OF THIS PERMIT

SIGNATURE OF PERMITTEE OR HIS AUTHORIZED AGENT			DATE
			06/01/11
SIGNATURE OF FOREST OFFICER	NAME (PRINT)	TITLE	DATE
	RICK LARSON	District Ranger	6/3/11

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SEP 11 2011

Kern County FSA

JAN-09-2013 11:07 FROM:HAFENFELD RANCH

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P.2/4

PART 2 - GENERAL TERMS AND CONDITIONS

1. Validation of Permit. The issuance of a Bill for Collection, payment of fees and actual turning on at least 90 percent of livestock the first grazing season after the permit is issued will validate this permit for the number, kind, and class of livestock, grazing allotment, and period of use for the particular year.

2. Bill for Collection. Each year, after validation and prior to the beginning of the grazing season, the Forest Service will send the permittee a Bill for Collection specifying for the current year the kind, number, and class of livestock allowed to graze, the period of use, the grazing allotment, and the grazing fees. This bill, when paid, authorizes use for that year and becomes part of this permit.

3. Payment of Fees. The permittee will not allow owned or controlled livestock to be on Forest Service-administered lands unless the fees specified in the Bill for Collection are paid.

4. Administrative Offset and Credit Reporting. Pursuant to 31 USC 3716 and CFR Part 3, Subpart B, any monies that are payable or may become payable from the United States, under this permit, to any person or legal entity not an agency or subdivision of a State or local government may be subject to administrative offset for the collection of a delinquent debt the person or legal entity owes to the United States. Information on the person's or legal entity's responsibility for a commercial debt or delinquent consumer debt owed the United States shall be disclosed to consumer or credit reporting agencies.

5. Interest, Penalty, and Administrative Costs. Pursuant to 31 USC 3717 and 7 CFR Part 3, Subpart B, interest shall be charged on any payment or fee amount not paid within 30 days from the date the payment was due. Interest shall be charged using the most current rate prescribed by the United States Department of the Treasury Fiscal Requirements Manual (TFRM-6-8020.20). Interest shall accrue from the date the payment was due. In addition, in the event the account becomes delinquent, administrative costs may be assessed. A penalty of 6 percent per year shall be assessed on any payment or fee amount overdue in excess of 90 days from the date the first billing was due. Payments will be credited on the date received by the designated collection officer or deposit location. If the due date(s) for any of the above payments falls on a non-workday, the charges shall not apply until the close of business on the next workday.

6. Term of Permit. This permit is effective until 12/31/2020 unless waived, cancelled, or otherwise terminated as provided herein. The permittee has first priority for receipt of a new permit at the end of the term subject to modification deemed necessary by the Forest Service.

In order to update terms and conditions, this permit may be cancelled at **any time provided a new permit is issued** to the existing permit holder for a new term of 10 years **following this update**.

7. Ownership Requirement

(a) Only livestock owned by the permittee are authorized to graze under this permit. To exercise use of the permit, the permittee will furnish all evidence of ownership requested by the Forest Service. Livestock purchased and subsequently sold back to the original owner, or to an agent, assignee, or anyone representing or acting in concert with the original owner, within a 24-month period without prior written approval by the Forest officer in charge will not be considered valid ownership of the livestock.

(b) Base property owned and used by the permittee to qualify for a term grazing permit must meet minimum base property requirements approved by the officer in charge.

Page 2 of 14

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Kern County FSA

INFRA NO.	MAP NO.	Type of Improvement	No./ Units	Location T, R, Sect.	Year Const.	Cost \$	Last Inv.	Remarks (who maintains, etc)
7445W02	8	Steve Springs Spring & Trough	1 Ea.	T28S., R34E. Sect. 9 SE ¼	1970	\$500	8/2010	Permittee
7445F02	9	Woolstaff Meadow Fence	1 Mi.	T28S., R34E. Sect. 4, E1/2 Sect. 3, W1/2	1970	\$4,000	8/2010	Permittee Severe damage from 08 Piute Fire. No grazing within Meadow.
7445W03	10	Cortez Spring & Trough	1 Ea.	T28S., R34E. Sect. 11 NW ¼ of SW ¼	1970	\$500	5/2006	Permittee Reconstruction needed.
7445W04	11	Harris Grade Spring & Trough	1 Ea.	T28S., R34E. Sect. 36 SE ¼ of NE ¼	1970	\$500	8/2010	Permittee
7445F01	12	Landers Meadow Pasture Fence	0.8 Mi.	T29S., R34E. Sect. 2 NE ¼	1960	\$4,000	8/2010	Permittee
7445W08	13	Landers Camp Spring & Trough	1 Ea.	T28S., R34E. Sect. 34 NE ¼ of SW ¼	1970	\$4,000	8/2010	FS & Permittee. Old FS water system with trough at upper end of mdv.

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JAN-09-2013 11:07 FROM: HAFENFELD RANCH

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TO: 18316383208

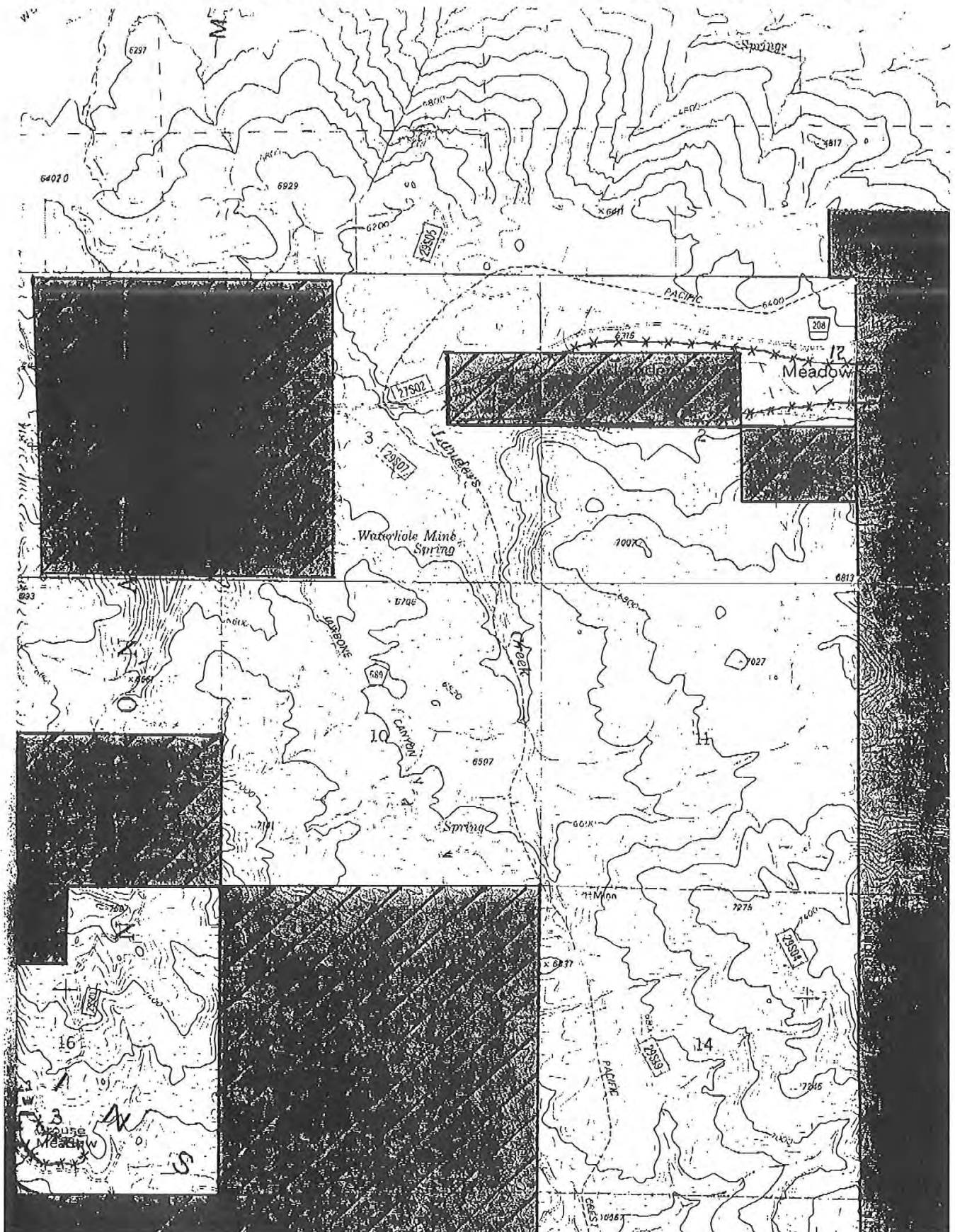
P. 3/4

JAN-09-2013 11:07 FROM:HAFENFELD RANCH

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TO:18316383208

P.4/4



APPENDIX D

**AIR QUALITY AND GREENHOUSE GAS DATA
TRA Environmental Sciences, Inc.**

1/29/13

Almanac Emission Projection Data

ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2009)

2010 Estimated Annual Average Emissions

KERN COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

[Download these results \(as a comma delimited file\).](#)[Download more detailed data \(as a comma delimited file\).](#)[Start a new query.](#)

KERN COUNTY COUNTY - MOJAVE DESERT AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION								
COGENERATION	0.32	0.03	0.25	0.55	0.01	0.10	0.10	0.10
MANUFACTURING AND INDUSTRIAL	0.03	0.02	0.15	1.13	0.21	0.12	0.10	0.12
FOOD AND AGRICULTURAL PROCESSING	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00
SERVICE AND COMMERCIAL	0.04	0.01	0.59	0.45	0.08	0.05	0.05	0.05
OTHER (FUEL COMBUSTION)	0.02	0.01	1.14	0.35	0.04	0.01	0.01	0.01
* TOTAL FUEL COMBUSTION	0.41	0.08	2.14	2.51	0.34	0.29	0.26	0.28
WASTE DISPOSAL								
SEWAGE TREATMENT	-	-	-	-	-	-	-	-
LANDFILLS	7.09	0.05	-	-	-	0.02	0.01	0.01
INCINERATORS	-	-	0.00	0.00	-	0.00	0.00	0.00
OTHER (WASTE DISPOSAL)	0.00	0.00	-	0.00	0.00	0.12	0.03	0.02
* TOTAL WASTE DISPOSAL	7.09	0.05	0.00	0.00	0.00	0.14	0.04	0.03
CLEANING AND SURFACE COATINGS								
LAUNDERING	0.00	0.00	-	-	-	-	-	-
DEGREASING	0.58	0.54	-	-	-	-	-	-
COATINGS AND RELATED PROCESS SOLVENTS	0.20	0.19	-	-	-	0.02	0.01	0.01
PRINTING	0.00	0.00	-	-	-	-	-	-
ADHESIVES AND SEALANTS	0.06	0.05	-	-	-	0.00	0.00	0.00
OTHER (CLEANING AND SURFACE COATINGS)	0.01	0.01	-	-	-	-	-	-
* TOTAL CLEANING AND SURFACE COATINGS	0.85	0.79	-	-	-	0.02	0.01	0.01
PETROLEUM PRODUCTION AND MARKETING								
PETROLEUM REFINING	0.01	0.01	0.00	0.00	-	-	-	-
PETROLEUM MARKETING	0.21	0.21	-	-	-	-	-	-
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.00	0.00	-	-	-	-	-	-
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.22	0.22	0.00	0.00	-	-	-	-
INDUSTRIAL PROCESSES								
CHEMICAL	0.00	0.00	0.01	0.00	-	0.00	0.00	0.00
MINERAL PROCESSES	0.10	0.09	5.30	15.54	3.26	8.32	5.18	1.99
METAL PROCESSES	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
WOOD AND PAPER	-	-	-	-	-	0.01	0.00	0.00
OTHER (INDUSTRIAL PROCESSES)	0.03	0.03	4.01	2.79	0.03	2.07	1.15	0.22
* TOTAL INDUSTRIAL PROCESSES	0.14	0.11	9.33	18.34	3.29	10.41	6.35	2.22
** TOTAL STATIONARY SOURCES	8.71	1.24	11.47	20.85	3.63	10.86	6.66	2.54
AREAWIDE SOURCES								
SOLVENT EVAPORATION								

www.arb.ca.gov/app/errmiss/emssumcat_query.php?F_YR=2010&F_DIV=0&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=15&F_COAB=Y#8

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1/29/13

Almanac Emission Projection Data

CONSUMER PRODUCTS	1.06	0.90	-	-	-	-	-	-
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.37	0.36	-	-	-	-	-	-
PESTICIDES/FERTILIZERS	0.28	0.28	-	-	-	-	-	-
ASPHALT PAVING / ROOFING	0.07	0.07	-	-	-	-	-	-
* TOTAL SOLVENT EVAPORATION	1.77	1.61	-	-	-	-	-	-
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	0.37	0.16	2.61	0.27	0.01	0.39	0.36	0.35
FARMING OPERATIONS	2.55	0.20	-	-	-	12.61	5.75	0.89
CONSTRUCTION AND DEMOLITION	-	-	-	-	-	2.94	1.44	0.14
PAVED ROAD DUST	-	-	-	-	-	3.98	1.82	0.27
UNPAVED ROAD DUST	-	-	-	-	-	10.21	6.07	0.61
FUGITIVE WINDBLOWN DUST	-	-	-	-	-	10.58	4.88	0.83
FIRES	0.00	0.00	0.03	0.00	-	0.00	0.00	0.00
MANAGED BURNING AND DISPOSAL	0.20	0.12	1.23	0.04	0.00	0.17	0.17	0.15
COOKING	0.02	0.02	-	-	-	0.07	0.05	0.03
* TOTAL MISCELLANEOUS PROCESSES	3.15	0.50	3.87	0.31	0.01	40.94	20.54	3.28
** TOTAL AREAWIDE SOURCES	4.92	2.11	3.87	0.31	0.01	40.94	20.54	3.28
MOBILE SOURCES								
	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	0.84	0.77	8.58	0.80	0.01	0.07	0.07	0.04
LIGHT DUTY TRUCKS - 1 (LDT1)	0.72	0.67	7.95	0.80	0.00	0.04	0.04	0.02
LIGHT DUTY TRUCKS - 2 (LDT2)	0.55	0.49	6.10	0.81	0.00	0.05	0.05	0.04
MEDIUM DUTY TRUCKS (MDV)	0.25	0.22	3.13	0.45	0.00	0.02	0.02	0.02
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.14	0.13	1.08	0.19	0.00	0.00	0.00	0.00
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.06	0.06	0.50	0.07	0.00	0.00	0.00	0.00
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.09	0.09	0.79	0.09	0.00	0.00	0.00	0.00
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.10	0.09	1.67	0.23	0.00	0.00	0.00	0.00
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.01	0.01	0.07	0.24	0.00	0.00	0.00	0.00
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.01	0.01	0.06	0.22	0.00	0.00	0.00	0.00
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.03	0.03	0.25	0.64	0.00	0.03	0.03	0.03
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	1.51	1.32	5.44	17.16	0.02	0.74	0.74	0.64
MOTORCYCLES (MCY)	0.79	0.74	8.57	0.23	0.00	0.01	0.01	0.01
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.00	0.00	0.00	0.01	-	0.00	0.00	0.00
HEAVY DUTY GAS URBAN BUSES (UB)	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00
SCHOOL BUSES (SB)	0.01	0.01	0.09	0.15	0.00	0.01	0.01	0.01
OTHER BUSES (OB)	0.01	0.01	0.15	0.06	0.00	0.00	0.00	0.00
MOTOR HOMES (MH)	0.03	0.03	0.70	0.11	0.00	0.00	0.00	0.00
* TOTAL ON-ROAD MOTOR VEHICLES	5.17	4.68	45.12	22.27	0.04	1.00	1.00	0.81
OTHER MOBILE SOURCES								
AIRCRAFT	4.14	3.70	17.78	2.15	0.30	2.87	2.80	2.78
TRAINS	0.77	0.65	2.09	4.74	0.06	0.22	0.22	0.20
RECREATIONAL BOATS	0.29	0.27	1.67	0.09	0.00	0.02	0.02	0.01
OFF-ROAD RECREATIONAL VEHICLES	0.20	0.18	0.53	0.00	-	0.00	0.00	0.00
OFF-ROAD EQUIPMENT	0.83	0.73	4.71	3.52	0.00	0.17	0.17	0.15
FARM EQUIPMENT	0.19	0.16	0.94	0.81	0.00	0.05	0.05	0.04
FUEL STORAGE AND HANDLING	0.07	0.07	-	-	-	-	-	-
* TOTAL OTHER MOBILE SOURCES	6.49	5.76	27.72	11.30	0.37	3.33	3.26	3.19

www.arb.ca.gov/app/ems/invemssumcat_query.php?F_YR=2010&F_DIV=0&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=15&F_COAB=Y#8

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Almanac Emission Projection Data

** TOTAL MOBILE SOURCES	11.65	10.44	72.84	33.57	0.41	4.33	4.25	4.00
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES								
<u>BIOGENIC SOURCES</u>	23.59	22.50	-	-	-	-	-	-
<u>WILDFIRES</u>	4.47	2.74	40.63	1.27	0.39	4.30	4.13	3.50
* TOTAL NATURAL SOURCES	28.06	25.24	40.63	1.27	0.39	4.30	4.13	3.50
** TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	28.06	25.24	40.63	1.27	0.39	4.30	4.13	3.50
TOTAL KERN COUNTY IN MOJAVE DESERT	53.34	39.03	128.82	56.00	4.44	60.43	35.58	13.33

KERN COUNTY COUNTY - SAN JOAQUIN VALLEY AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION								
<u>ELECTRIC UTILITIES</u>	2.07	0.19	2.66	4.59	0.73	1.03	0.95	0.91
<u>COGENERATION</u>	2.45	0.34	2.22	3.60	0.24	0.67	0.60	0.56
<u>OIL AND GAS PRODUCTION (COMBUSTION)</u>	19.83	6.83	6.83	9.39	1.76	1.61	1.61	1.61
<u>PETROLEUM REFINING (COMBUSTION)</u>	1.69	0.57	1.13	1.61	0.30	0.42	0.40	0.39
<u>MANUFACTURING AND INDUSTRIAL</u>	0.19	0.03	0.36	0.55	0.17	0.07	0.05	0.04
<u>FOOD AND AGRICULTURAL PROCESSING</u>	0.41	0.24	1.19	3.20	0.03	0.16	0.14	0.14
<u>SERVICE AND COMMERCIAL</u>	1.05	0.15	1.48	1.57	0.90	0.32	0.30	0.29
<u>OTHER (FUEL COMBUSTION)</u>	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00
* TOTAL FUEL COMBUSTION	27.71	8.36	15.88	24.56	4.13	4.27	4.06	3.93
WASTE DISPOSAL								
<u>SEWAGE TREATMENT</u>	0.03	0.01	0.03	0.01	0.00	0.00	0.00	0.00
<u>LANDFILLS</u>	20.80	0.14	0.01	0.01	0.00	0.01	0.00	0.00
<u>INCINERATORS</u>	0.01	0.00	0.03	0.02	0.00	0.01	0.00	0.00
<u>SOIL REMEDIATION</u>	0.01	0.01	0.03	0.01	0.00	0.00	0.00	0.00
<u>OTHER (WASTE DISPOSAL)</u>	0.12	0.08	-	-	-	-	-	-
* TOTAL WASTE DISPOSAL	20.96	0.24	0.10	0.05	0.01	0.02	0.01	0.01
CLEANING AND SURFACE COATINGS								
<u>LAUNDERING</u>	0.01	0.01	-	-	-	-	-	-
<u>DEGREASING</u>	0.39	0.36	-	-	-	-	-	-
<u>COATINGS AND RELATED PROCESS SOLVENTS</u>	0.82	0.80	0.00	-	-	0.00	0.00	0.00
<u>PRINTING</u>	0.25	0.25	-	-	-	-	-	-
<u>ADHESIVES AND SEALANTS</u>	0.15	0.14	-	-	-	-	-	-
<u>OTHER (CLEANING AND SURFACE COATINGS)</u>	0.00	0.00	-	-	-	-	-	-
* TOTAL CLEANING AND SURFACE COATINGS	1.63	1.55	0.00	-	-	0.00	0.00	0.00
PETROLEUM PRODUCTION AND MARKETING								
<u>OIL AND GAS PRODUCTION</u>	44.41	25.19	0.72	0.32	0.07	0.02	0.02	0.02
<u>PETROLEUM REFINING</u>	1.56	1.20	0.34	0.08	0.14	0.20	0.13	0.12
<u>PETROLEUM MARKETING</u>	23.09	2.21	-	-	-	0.00	0.00	0.00
<u>OTHER (PETROLEUM PRODUCTION AND MARKETING)</u>	0.00	0.00	0.00	0.00	-	-	-	-
* TOTAL PETROLEUM PRODUCTION AND MARKETING	69.07	28.60	1.06	0.40	0.21	0.23	0.16	0.15
INDUSTRIAL PROCESSES								
<u>CHEMICAL</u>	0.55	0.46	0.00	0.00	0.00	0.16	0.10	0.06
<u>FOOD AND AGRICULTURE</u>	1.46	1.33	-	-	0.01	3.70	2.33	1.25
<u>MINERAL PROCESSES</u>	0.08	0.08	0.08	0.07	0.03	0.87	0.51	0.30
<u>METAL PROCESSES</u>	-	-	-	-	-	0.01	0.01	0.01

www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_YR=2010&F_DIV=0&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=15&F_COAB=Y#8

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Almanac Emission Projection Data

WOOD AND PAPER	0.00	0.00	-	-	-	0.01	0.01	0.01
GLASS AND RELATED PRODUCTS	-	-	-	-	-	0.00	0.00	-
OTHER (INDUSTRIAL PROCESSES)	0.24	0.20	-	-	0.02	0.24	0.12	0.07
* TOTAL INDUSTRIAL PROCESSES	2.33	2.07	0.08	0.08	0.06	5.00	3.08	1.69
** TOTAL STATIONARY SOURCES	121.70	40.81	17.12	25.09	4.40	9.52	7.31	5.78
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION								
CONSUMER PRODUCTS	4.90	4.17	-	-	-	-	-	-
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	1.72	1.68	-	-	-	-	-	-
PESTICIDES/FERTILIZERS	6.02	6.02	-	-	-	-	-	-
ASPHALT PAVING / ROOFING	0.58	0.50	-	-	-	-	-	-
* TOTAL SOLVENT EVAPORATION	13.22	12.37						
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	1.84	0.81	13.62	1.06	0.04	1.75	1.64	1.58
FARMING OPERATIONS	59.20	4.74	-	-	-	17.80	8.44	1.72
CONSTRUCTION AND DEMOLITION	-	-	-	-	-	2.58	1.26	0.13
PAVED ROAD DUST	-	-	-	-	-	20.22	9.25	1.39
UNPAVED ROAD DUST	-	-	-	-	-	13.83	8.72	0.82
FUGITIVE WINDBLOWN DUST	-	-	-	-	-	12.47	5.78	0.98
FIRES	0.02	0.01	0.14	0.00	-	0.02	0.02	0.02
MANAGED BURNING AND DISPOSAL	2.11	1.20	12.55	0.91	0.03	1.58	1.55	1.47
COOKING	0.17	0.12	-	-	-	1.07	0.75	0.45
OTHER (MISCELLANEOUS PROCESSES)	-	-	-	-	-	0.03	0.02	0.01
* TOTAL MISCELLANEOUS PROCESSES	63.33	6.87	26.31	1.97	0.08	71.35	37.42	8.56
** TOTAL AREAWIDE SOURCES	76.55	19.24	26.31	1.97	0.08	71.35	37.42	8.56
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	3.03	2.76	27.91	2.42	0.03	0.26	0.25	0.15
LIGHT DUTY TRUCKS - 1 (LDT1)	0.95	0.87	9.33	0.93	0.01	0.07	0.07	0.04
LIGHT DUTY TRUCKS - 2 (LDT2)	1.90	1.73	18.31	2.31	0.02	0.19	0.19	0.13
MEDIUM DUTY TRUCKS (MDV)	1.32	1.18	14.44	1.91	0.02	0.13	0.12	0.08
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.74	0.70	5.58	0.96	0.01	0.02	0.02	0.01
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.14	0.13	0.96	0.18	0.00	0.00	0.00	0.00
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.38	0.36	3.60	0.43	0.00	0.00	0.00	0.00
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.16	0.15	2.79	0.41	0.00	0.00	0.00	0.00
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.04	0.04	0.20	0.76	0.00	0.01	0.01	0.01
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.03	0.03	0.12	0.51	0.00	0.01	0.01	0.01
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.14	0.13	1.18	4.13	0.01	0.15	0.15	0.14
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	6.05	5.32	21.82	72.68	0.08	3.05	3.05	2.64
MOTORCYCLES (MCY)	1.17	1.10	12.54	0.29	0.00	0.01	0.01	0.01
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.02	0.01	0.07	0.36	0.00	0.01	0.01	0.01
HEAVY DUTY GAS URBAN BUSES (UB)	0.02	0.02	0.20	0.04	-	0.00	0.00	0.00
SCHOOL BUSES (SB)	0.05	0.04	0.46	0.47	0.00	0.02	0.02	0.02
OTHER BUSES (OB)	0.05	0.04	0.48	0.15	0.00	0.00	0.00	0.00
MOTOR HOMES (MH)	0.04	0.04	0.98	0.17	0.00	0.00	0.00	0.00
* TOTAL ON-ROAD MOTOR VEHICLES	16.24	14.66	120.97	89.11	0.17	3.95	3.94	3.25
OTHER MOBILE SOURCES								
AIRCRAFT	1.00	0.89	25.88	0.32	0.11	0.10	0.10	0.10

www.arb.ca.gov/app/ems/in/emssumcal_query.php?F_YR=2010&F_DIV=0&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=15&F_COAB=Y#8

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Almanac Emission Projection Data

TRAINS	0.37	0.31	0.96	4.10	0.01	0.12	0.12	0.11
RECREATIONAL BOATS	1.21	1.15	7.19	0.38	0.00	0.08	0.07	0.05
OFF-ROAD RECREATIONAL VEHICLES	0.54	0.52	1.38	0.01	0.00	0.01	0.01	0.00
OFF-ROAD EQUIPMENT	3.59	3.16	20.52	15.63	0.01	0.76	0.76	0.69
FARM EQUIPMENT	0.78	0.67	3.76	3.41	0.00	0.20	0.20	0.19
FUEL STORAGE AND HANDLING	0.35	0.35	-	-	-	-	-	-
* TOTAL OTHER MOBILE SOURCES	7.85	7.04	59.70	23.86	0.15	1.27	1.25	1.14
** TOTAL MOBILE SOURCES	24.09	21.70	180.67	112.97	0.31	5.22	5.19	4.39
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES								
BIOGENIC SOURCES	20.16	17.67	-	-	-	-	-	-
GEOGENIC SOURCES	0.46	0.20	-	-	-	-	-	-
WILDFIRES	1.88	1.12	17.09	0.55	0.17	1.82	1.75	1.48
* TOTAL NATURAL SOURCES	22.50	18.99	17.09	0.55	0.17	1.82	1.75	1.48
** TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	22.50	18.99	17.09	0.55	0.17	1.82	1.75	1.48
TOTAL KERN COUNTY IN SAN JOAQUIN VALLEY	244.84	100.74	241.20	140.59	4.96	87.92	51.66	20.22
GRAND TOTAL FOR KERN COUNTY	298.18	139.78	370.02	196.59	9.40	148.35	87.24	33.55

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: T:\CASE\Env\EOHK-EOHL\OnyxRanch_EOHL-32\CEQA\ADEIR\AQ Data\ADT.urb924

Project Name: Onyx

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.05	0.16	0.84	0.00	0.26	0.05	178.70

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.05	0.16	0.84	0.00	0.26	0.05	178.70

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: T:\CASE\Env\EOHK-EOHL\OnyxRanch_EOHL-32\CEQA\ADEIR\AQ Data\ADT.urb924

Project Name: Onyx

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	0.24	0.79	4.67	0.01	1.45	0.28	1,027.70

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	0.24	0.79	4.67	0.01	1.45	0.28	1,027.70

California Greenhouse Gas Inventory for 2000-2009
 — by Category as Defined in the Scoping Plan

million tonnes of CO₂ equivalent - (based upon IPCC Second Assessment Report's Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Transportation	171.71	174.79	181.28	179.39	183.18	186.07	186.64	187.08	177.97	172.92
On Road	159.34	162.16	168.61	166.42	169.64	171.14	171.43	172.45	164.27	160.14
Passenger Vehicles	126.85	129.28	135.63	133.06	134.64	134.81	134.70	134.92	129.44	127.75
Heavy Duty Trucks	32.49	32.88	32.98	33.36	35.00	36.33	36.73	37.53	34.83	32.39
Ships & Commercial Boats	3.27	3.04	3.33	3.49	3.48	3.75	3.81	3.78	3.69	3.48
Aviation (Intrastate)	3.84	3.64	3.92	3.77	4.27	4.74	4.90	5.13	5.09	4.99
Rail	1.86	1.87	2.48	2.83	2.89	3.32	3.50	3.15	2.56	1.94
Unspecified	3.41	4.08	2.94	2.88	2.90	3.11	3.00	2.56	2.36	2.38
Electric Power	105.96	122.90	109.70	113.69	116.27	109.02	105.72	115.08	121.22	103.58
In-State Generation	60.07	63.89	50.75	49.14	50.24	46.21	51.04	55.28	55.40	55.53
Natural Gas	51.06	55.44	42.16	40.94	42.41	38.21	43.21	47.20	48.07	48.90
Other Fuels	6.92	6.38	6.39	6.02	5.62	5.81	5.66	5.90	5.17	5.28
Fugitive and Process Emissions	2.08	2.06	2.20	2.19	2.21	2.19	2.16	2.19	2.16	1.36
Imported Electricity	45.90	59.01	58.96	64.55	66.02	62.80	54.68	59.80	65.82	48.05
Unspecified Imports	14.27	25.42	26.92	32.05	32.90	30.02	27.96	32.72	37.92	14.99
Specified Imports	31.63	33.59	32.04	32.50	33.12	32.78	26.72	27.07	27.90	33.06
Commercial and Residential	42.92	40.99	42.96	41.32	42.67	41.04	41.66	41.92	41.54	42.95
Residential Fuel Use	30.12	28.61	28.77	28.31	29.34	28.08	28.40	28.60	28.13	28.61
Natural Gas	28.51	27.34	27.45	26.58	27.29	25.89	26.47	26.64	25.79	26.30
Other Fuels	1.61	1.27	1.32	1.72	2.04	2.19	1.93	1.96	2.34	2.32
Commercial Fuel Use	11.69	11.32	13.12	12.76	12.71	12.56	12.84	12.83	13.03	13.41
Natural Gas	10.24	10.07	11.86	11.34	11.13	10.90	11.58	11.45	11.22	11.41
Other Fuels	1.45	1.25	1.26	1.41	1.59	1.66	1.26	1.38	1.82	2.00
Commercial Cogeneration Heat Output	1.11	1.05	1.07	0.26	0.62	0.40	0.42	0.49	0.37	0.92
Industrial	96.62	93.34	94.29	91.58	93.49	92.75	92.31	89.78	87.09	81.36
Refineries	29.30	29.83	29.98	30.63	29.80	30.93	32.05	31.68	31.18	28.71
General Fuel Use	22.57	21.04	22.46	18.61	19.05	18.16	18.00	16.95	16.59	17.18
Natural Gas	17.12	14.58	15.14	11.93	12.76	12.68	12.35	11.52	10.83	11.05
Other Fuels	5.45	6.46	7.32	6.68	6.29	5.47	5.65	5.43	5.76	6.13
Oil & Gas Extraction [1]	17.60	17.03	15.86	16.82	16.48	15.35	13.98	14.60	13.95	13.40
Fuel Use	16.91	16.19	15.13	16.08	16.11	15.00	13.21	13.80	13.16	12.61
Fugitive Emissions	0.69	0.83	0.73	0.74	0.37	0.35	0.77	0.80	0.79	0.79
Cement Plants	9.40	9.50	9.60	9.70	9.80	9.90	9.73	9.13	8.64	5.72
Clinker Production	5.43	5.52	5.60	5.68	5.77	5.85	5.80	5.55	5.31	3.60
Fuel Use	3.96	3.98	4.00	4.02	4.03	4.05	3.93	3.58	3.33	2.12
Cogeneration Heat Output	11.96	10.60	10.71	10.68	13.00	12.52	12.27	11.23	10.50	10.22
Other Fugitive and Process Emissions	5.78	5.34	5.68	5.13	5.36	5.89	6.28	6.19	6.23	6.12
Recycling and Waste	6.55	6.65	6.61	6.71	6.68	7.00	7.09	7.06	7.26	7.32
Landfills [2]	6.13	6.21	6.14	6.23	6.17	6.47	6.54	6.49	6.66	6.70
Composting	0.42	0.44	0.46	0.48	0.51	0.53	0.55	0.57	0.60	0.62

California Greenhouse Gas Inventory for 2000-2009
 — by Category as Defined in the Scoping Plan

million tonnes of CO₂ equivalent - (based upon IPCC Second Assessment Report's Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
High GWP	10.76	11.29	11.89	12.59	13.34	13.88	14.54	14.81	15.77	16.32
Ozone Depleting Substance (ODS) Substitutes	8.55	9.25	10.02	10.77	11.53	12.14	12.71	13.08	13.95	14.51
Electricity Grid SF₆ Losses [3]	1.25	1.24	1.16	1.14	1.13	1.12	1.07	1.01	1.03	1.03
Semiconductor Manufacturing [2]	0.97	0.80	0.71	0.68	0.68	0.62	0.76	0.73	0.78	0.78
Agriculture [4]	28.95	29.10	32.26	30.67	32.34	32.61	33.75	32.91	33.68	32.13
Livestock	16.43	17.10	17.63	16.27	17.58	18.19	18.52	19.72	19.90	19.64
Enteric Fermentation (Digestive Process)	8.24	8.40	8.65	8.32	8.68	8.97	9.05	9.47	9.45	9.30
Manure Management	8.18	8.69	8.98	7.95	8.90	9.22	9.47	10.26	10.45	10.35
Crop Growing & Harvesting	8.70	8.20	10.26	10.05	10.26	9.82	9.92	9.40	9.91	9.84
Fertilizers	7.25	6.96	8.87	8.67	8.80	8.38	8.30	7.97	8.53	8.44
Soil Preparation and Disturbances	1.37	1.18	1.34	1.31	1.40	1.37	1.55	1.36	1.31	1.32
Crop Residue Burning	0.08	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.07	0.07
General Fuel Use	3.82	3.81	4.37	4.35	4.50	4.60	5.30	3.78	3.87	2.65
Diesel	2.51	2.68	3.02	3.09	3.15	3.38	3.85	2.66	2.98	1.77
Natural Gas	1.00	0.75	0.94	0.85	0.82	0.69	0.88	0.79	0.72	0.70
Gasoline	0.31	0.38	0.41	0.41	0.52	0.52	0.57	0.33	0.17	0.17
Other Fuels	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Forestry	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Wildfire (CH₄ & N₂O Emissions)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Total Gross Emissions	463.65	479.25	479.18	476.14	488.16	482.54	481.89	488.83	484.72	456.77
Forestry Net Emissions	-4.49	-4.30	-4.16	-4.16	-4.16	-4.03	-3.87	-3.94	-3.84	-3.80
Total Net Emissions	459.17	474.95	475.02	471.98	484.00	478.52	478.02	484.89	480.88	452.97

[1] Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions

[2] These categories are listed in the Industrial sector of ARB's GHG Emission Inventory sectors

[3] This category is listed in the Electric Power sector of ARB's GHG Emission Inventory sectors

[4] Reflects use of updated USEPA models for determining emissions from livestock and fertilizers

APPENDIX E

BOTANICAL RESOURCES REPORT

Barbara Leitner

BOTANICAL RESOURCES REPORT
EASTERN KERN COUNTY ACQUISITION PROJECT

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Summary

Reconnaissance-level vegetation mapping and special-status plant surveys were carried out in March-May 2012 in the 28,275-acre Eastern Kern County Acquisition (EKCA) project area. The EKCA project area encompasses a considerable geographic and elevational range, although the geology is primarily granitic in origin. The most impressive physical features are the seeps, springs and wetlands arising in Kelso Valley from the watershed of Piute Mountain and in Alphia Canyon from the Jawbone Fault.

Vegetation resources. Eleven major vegetation types were mapped in the project area. The name, approximate acreage and percentage of total acreage of these vegetation types are presented below:

Major Vegetation Type	Acreage¹	Percent
Barren, herb dominated, or very sparse shrubs	1,159.1	4.1%
Blackbrush scrub	5,262.3	18.6%
Creosote bush-white bursage scrub	3,689.3	13.1%
Desert wash and terrace scrub	1,801.6	6.4%
Developed	1.0	>0.1%
Wetland and riparian	362.7	1.3%
Lower Mojave mixed woody scrub	1,715.8	6.1%
Upper Mojave mixed woody scrub	2,197.9	7.8%
California juniper woodland	1,435.5	5.1%
Joshua tree woodland	7,735.9	27.4%
Oak forest and woodland	1,556.9	5.5%
Pine forest and woodland	1,336.6	4.7%
Total	28,254.6	100.0%

Within these major vegetation types, 51 vegetation types were identified and mapped. To the extent possible, these corresponded with Manual of California Vegetation alliances and, when extensively represented, sometimes associations. Sensitive vegetation types were defined as alliances ranked by the California Natural Diversity Database (CNDDDB) as S3, and locally rare or unique vegetation types, such as wetland and riparian types.

Examples of sensitive riparian and wetland habitats included the following:

- A quarter-mile long reach of desert riparian and scrub vegetation along Dove Spring Canyon in Parcel D-2 in the Dove Spring area;
- A complex of nine seeps and springs with desert riparian and seep vegetation in Parcel A-5 in the Alphia Canyon area;
- Butterbredt Springs and an interrupted series of smaller meadow, seep and desert riparian habitats along Butterbredt Canyon in Parcels B-9 and B-10 in the Butterbredt area;
- Smaller seeps and springs, such as Water Canyon in Jawbone Canyon Parcel J-5; mesquite woodland on Sugarloaf Peak in Parcel S-5; and small seeps in tributary washes in Alphia Canyon Parcels A-4 and A-6;

¹ The acreage total presented here is derived from GIS mapping. This total is about 0.1% less than the total in the legal description, which may be due to different treatment for easements compared with fee title, and due to the exclusion of developed areas from the total presented here.

- Green Spring and associated marshes and springs, occupying several hundred acres in Kelso Valley Parcels K-13, K-17, and K-20;
- Perennial springs and streams on the western side of Kelso Valley, including Esperanza Canyon, Water Canyon, Cottonwood Creek, and other unnamed watercourses in Parcels K-8, K-9, K-12, K-15, and K-16.

Examples of other sensitive vegetation types included the following:

- Scalebroom desert wash scrub
- Blackstem rabbitbrush desert wash scrub
- Desert olive scrub
- California coffeeberry scrub
- Wright's buckwheat scrub
- Joshua tree woodland

Special-status plants. Special-status plants were defined as species listed as rare, threatened or endangered, or candidate for listing, by the California Department of Fish and Game or U.S. Fish and Wildlife Service, and species assigned a California Rare Plant Rank (CRPR) of 1 through 4 (equivalent to the California Native Plant Society rank). Out of 52 species initially considered on the basis of California Natural Diversity Database and California Native Plant Society queries, 39 species were considered to have at least moderate potential to occur within the survey area. Ten special-status species were observed or have been reported from the following EKCA parcels:

- Palmer's mariposa-lily (*Calochortus palmeri* var. *palmeri*; CRPR Rank 1B.2), Kelso Valley (Parcel K-9) and Landers Meadow (assumed to be parcels L-1 and L-2);
- Alkali mariposa-lily (*Calochortus striatus*; CRPR 1B.2), Kelso Valley (Parcel K-13);
- Mojave paintbrush (*Castilleja plagiotoma*; CRPR 4.3), Kelso Valley (Parcel K-13) and Landers Meadow (parcels L-1 and L-2);
- Death Valley sandmat (*Chamaesyce vallis-mortae*; CRPR 4.3), Sugarloaf (Parcel S-1), Dove Spring (Parcel D-4), Alphie Canyon (parcels A-4, A-6 and A-7), Butterbredt (parcels B-9 and B-10), and Kelso Valley (parcels K-1, K-2, K-4, K-13, K-16, K-17, and K-20);
- Mojave spineflower (*Chorizanthe spinosa*, CRPR 4.2), Sugarloaf (Parcel S-6);
- Desert cymopterus (*Cymopterus deserticola*; CRPR 1B.2), Alphie Canyon (Parcel A-3);
- Kelso Creek monkeyflower (*Mimulus shevockii*; CRPR 1B.2), Kelso Valley (parcels K-9 and K-14);
- Charlotte's phacelia (*Phacelia nashiana* ; CRPR 1B.2), Jawbone Canyon (Parcel J-3), and Alphie Canyon (Parcel A-5);
- Mojave fish hook cactus (*Sclerocactus polyancistrus*; CRPR 4.3), Alphie Canyon (Parcel A-5); and
- San Bernardino aster (*Symphyotrichum defoliatum*; CRPR 1B.2), Landers Meadow (assumed to be parcels L-1 and L-2)

Because of the low rainfall in 2011-2012, the large size of the EKCA acquisition, and the reconnaissance nature of the surveys, more intensive surveys would be required to determine the full extent of these and other special-status plants that may occur in the EKCA area. Such surveys are recommended as part of the development of the management plan for the EKCA project where soil or vegetation disturbance is anticipated.

1 Introduction and Purpose

The California Department of Parks and Recreation (CDPR), Off-Highway Motor Vehicle Recreation Division (OHMVR Division) is proposing to acquire from ReNu Resources, LLC. (ReNu) 59 parcels totaling 28,275 acres in eastern Kern County, California. This project is known as the Eastern Kern County Acquisition Project, or EKCA. This botanical resource report was prepared to support California Environmental Quality Act (CEQA) analysis of the impacts of acquisition of the EKCA parcels. The purpose of this report is to characterize the vegetation present in the project area, to assess the known and potential occurrence of special-status plants, and to identify sensitive vegetation types. Information on the observed nature and extent of human-caused disturbance in each parcel is also provided.

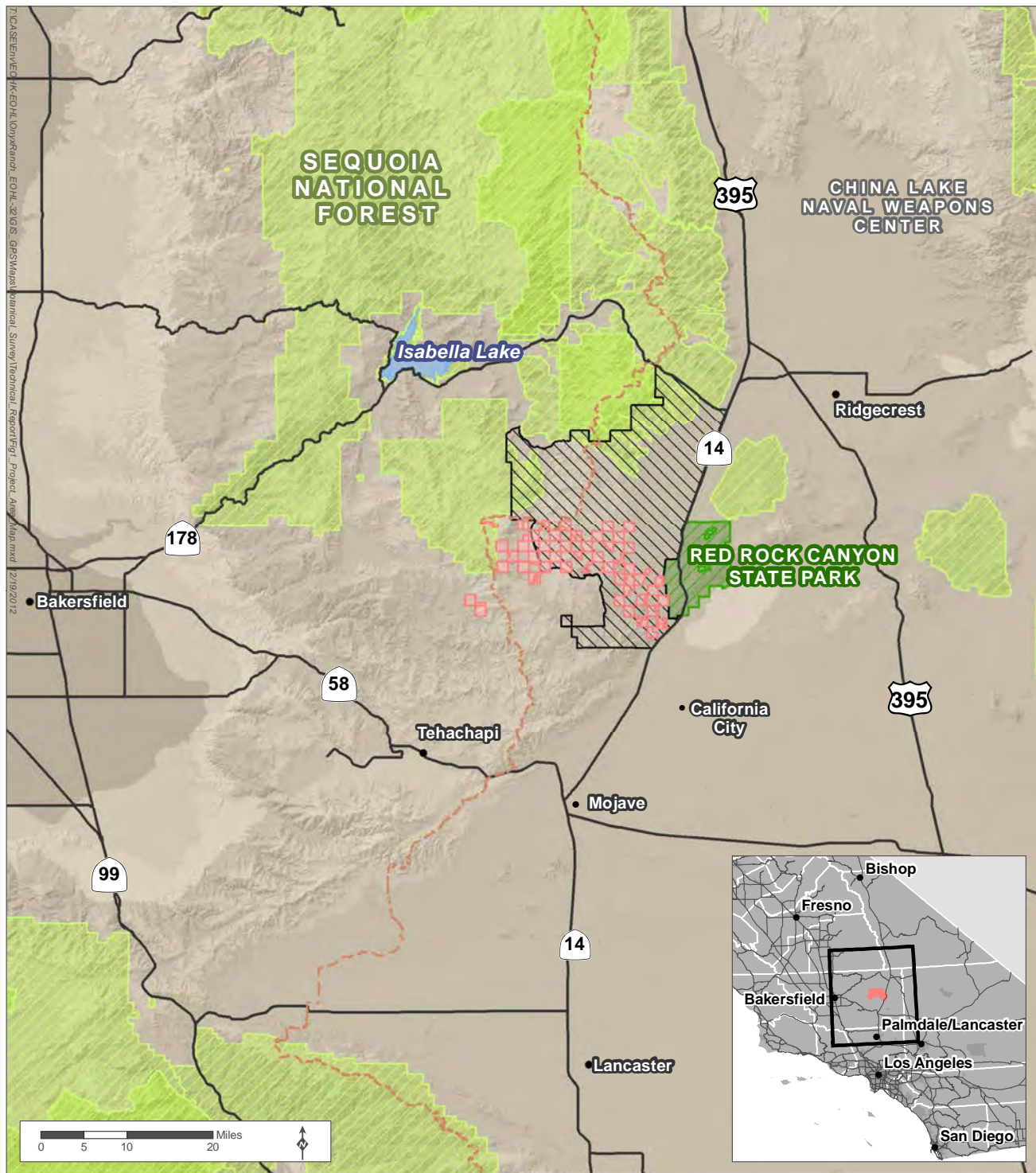
The Draft EIR will analyze only the physical environmental effects of the property purchase by the OHMVR Division, including any proposed short-term changes in land use and management to protect the natural and cultural resources on the acquired parcels. Should the OHMVR Division keep and become the management entity of some or all of the lands, a general plan would eventually be prepared for its properties, but a general plan is not part of the current EIR. Preparation and approval of a general plan would be an action separate from this project and would be subject to separate environmental review.

1.1 Location of Survey Area

The 59 parcels comprising the EKCA project area and the botanical resource survey area are located primarily in the northwestern Mojave Desert, southwest of Ridgecrest, California (see **Figure 1**). The area containing the parcels is generally bounded by Jawbone Canyon on the south, Highway 14 and Red Rock Canyon State Park on the east, Dove Spring Canyon on the north and Piute Mountain on the west. Elevations range from 2,170 feet above sea level at the mouth of Jawbone Canyon in the eastern part of the acquisition area to 7,700 feet on Sorrell Peak in the western part of the area. The area is located at the transition between the Mojave Desert and the eastern and southern slope of the Sierra Nevada. The vegetation communities are also influenced by proximity to the Great Basin.

The majority of the survey area is located within the Bureau of Land Management's (BLM) 211,000-acre Jawbone-Butterbrecht Area of Critical Environmental Concern (ACEC; see Figure 1). The parcels are interspersed in a checkerboard pattern with parcels owned by the BLM and managed by its Ridgecrest Field Office. The parcels are within an area frequently referred to as the Onyx or Rudnick Ranch. Current uses include cattle ranching, off-highway vehicle use, and non-consumptive recreation.

The lands are mostly undeveloped although there is an extensive system of dirt roads that passes through or near most of the parcels. There is fencing and limited water development used for cattle grazing. In addition to cattle grazing, portions of the acquisition area are regularly used for off-highway vehicle (OHV) recreation and camping, particularly in proximity to the Dove Springs Open Area in the north and Jawbone Canyon Open Area in the south. **Figure 2** shows these open areas with lighter shading and diagonal blue crosshatching. Open areas are designated areas where OHV use and camping may occur anywhere. Elsewhere, vehicle use is restricted to designated trails or roads. Some roads are for street-legal vehicles only, while some trails are designated for both street-legal vehicles and registered OHVs, known as "green sticker" vehicles. BLM discourages off-designated route travel but cannot enforce violations on private lands. In addition, BLM cannot repair or restore lands disturbed by OHVs on private lands. It is hoped that the acquisition of EKCA parcels by the CDPR OHMVR Division will facilitate more coordinated management in the Jawbone-Butterbrecht ACEC.

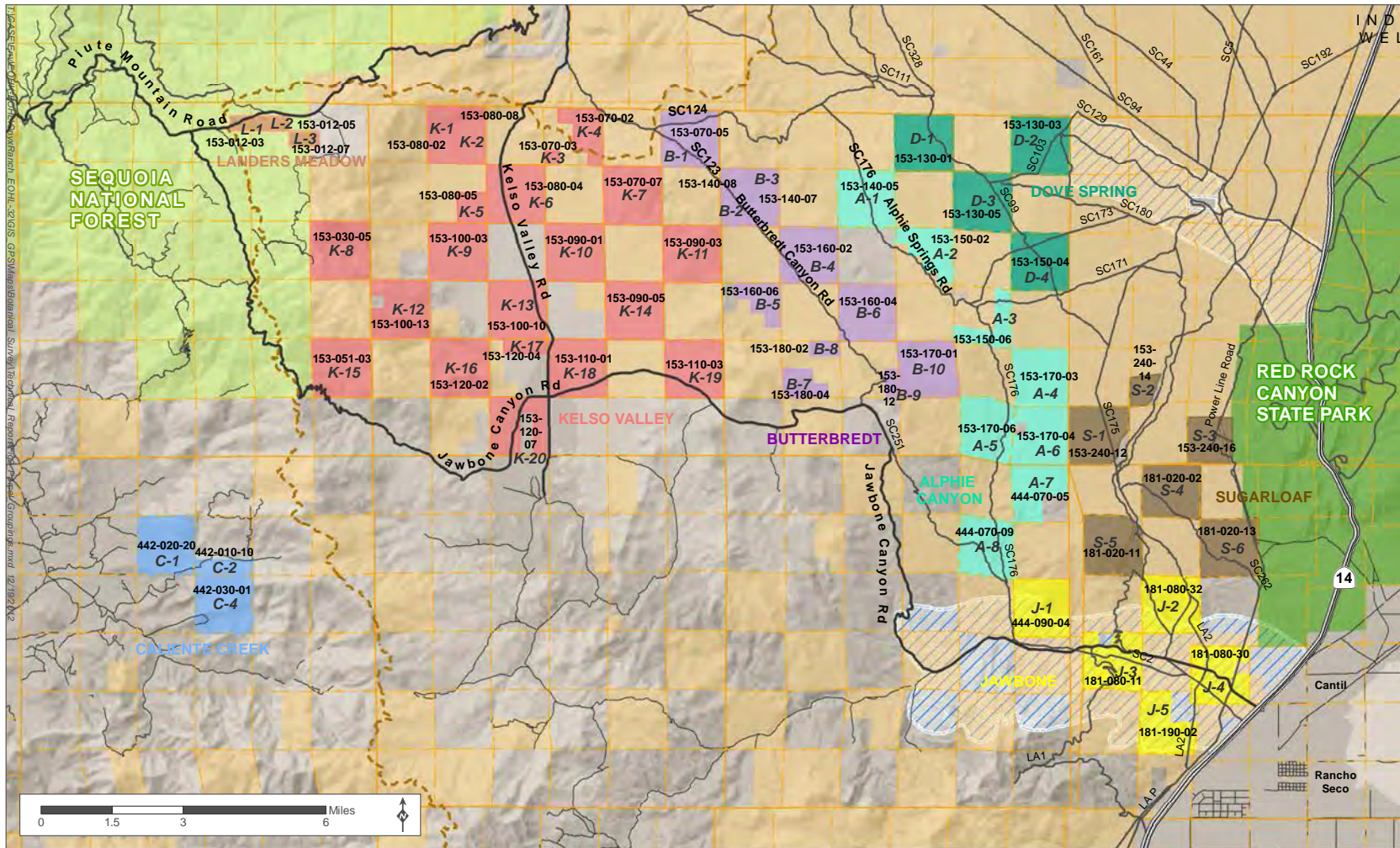


Source: BLM, ESRI, CA State Parks

- Major Roads
- - - Pacific Crest Trail
- ▨ Jawbone/Butterbred ACEC
- Project Parcels
- ▨ US Forest Service
- ▨ California State Parks

Figure 1 Project Location





Source: Bureau of Land Management, CalTrans, TRA, Kern County, California Department of Recreation

- | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> == State Route — Local Roads — Other Local Roads — 4WD & OHV Designated Routes — Pacific Crest Trail (USFS 2008) ▨ Open Riding Area | <ul style="list-style-type: none"> California State Parks Bureau of Land Management US Forest Service Public Lands Sections | <p>Project Parcel Groupings*</p> <ul style="list-style-type: none"> Alphie Canyon Butterbredt Caliente Creek | <ul style="list-style-type: none"> Dove Spring Jawbone Kelso Valley Landers Meadow Sugarloaf |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|

* Labeled by APN and Parcel ID Code



Figure 2 Parcel Groupings, Parcel Codes and APNs

A total of 33 parcels are within the green sticker travel area (areas where registered OHVs are allowed); the area containing these parcels is termed the eastern acquisition area. Twenty-six parcels are closed to green sticker vehicles, although street legal vehicles are allowed on designated roads; the area containing these parcels is termed the western acquisition area.

For purposes of describing the botanical resources, the eastern and western acquisition areas were further divided into smaller groups, mostly based on watershed boundaries. **Table 1** presents the parcel groups, parcel codes, assessor's parcel number, acreage, identified habitat features, and the status of existing roads and trails. They are presented in a sequence beginning with the eastern acquisition area. The eastern acquisition area includes the Jawbone Canyon, Sugarloaf, Dove Spring, Alphie Canyon, and Butterbrecht parcel groups. The western acquisition area includes the Kelso Valley, Landers Meadow and Caliente Creek parcel groups. Figure 2 shows the location of each parcel and parcel group.

Table 1. Parcel group, parcel code, assessor's parcel number, acreage, special habitat features, and status of existing roads and trails in the botanical survey area.

Parcel Code	APN	Acreage	Identified Habitat Features	Status of Designated Roads and Trails*
EASTERN ACQUISITION AREA				
<u>Jawbone Canyon Parcel Group (Cinco 7.5' quadrangle)</u>				
J-1	444-090-04	640	Wash	-- (G, O)
J-2	181-080-32	614	Wash	LA1, LA2 (G, O)
J-3	181-080-11	582	Wash, spring	Jawbone Canyon Rd., LA1 (O)
J-4	181-080-30	550	Wash	Jawbone Canyon Rd., LA2, LA Power Line Rd. (O)
J-5	181-190-02	480	Water Canyon, spring	-- (O)
<u>Sugarloaf Parcel Group (Cinco and Dove Spring 7.5' quadrangles)</u>				
S-1	153-240-12	617	Wash	LA2, SC 175 (G)
S-2	153-240-14	127	Wash	LA2 (G)
S-3	153-240-16	327	Wash	LA Power Line Rd (G)
S-4	181-020-02	612	Wash	SC 162 (G)
S-5	181-020-11	613	Wash	LA1, LA2 (G)
S-6	181-020-13	622	Springs	SC 162 (G)
<u>Dove Spring Parcel Group (Dove Spring 7.5' quadrangle)</u>				
D-1	153-130-01	640	Wash	SC 103 (G)
D-2	153-130-03	640	Springs	SC103 (G)
D-3	153-130-05	640	Wash	SC 99, 103, 180 (G)
D-4	153-150-04	640	Wash	SC 99, 173 (G)
<u>Alphie Canyon Parcel Group (Pinyon Mountain, Dove Spring and Cinco 7.5' quadrangles)</u>				
A-1	153-140-05	640	Wash	Alphie Springs Road (SC 176) (G)
A-2	153-150-02	400	Wash	Unmaintained roads (G)
A-3	153-150-06	280	Wash	Alphie Springs Rd. (SC 176), SC 171 (G)
A-4	153-170-03	640	Springs	Unmaintained roads (G)
A-5	153-170-06	640	Springs	Alphie Springs Rd. (SC 176) (G)
A-6	153-170-04	600	Springs	Unmaintained roads (G)
A-7	444-070-05	477	Wash	-- (G)
A-8	444-070-09	640	Wash	Butterbrecht Cyn Rd. (SC 176), SC 251 (G)
<u>Butterbrecht Parcel Group Pinyon Mountain and Dove Spring 7.5' quadrangles)</u>				
B-1	153-070-05	632	Wash	Butterbrecht Canyon Rd. (SC 123), Gold Peak Rd. (SC 124) (G)
B-2	153-140-08	317	Wash	Butterbrecht Canyon Rd. (SC 123) (G)
B-3	153-140-07	320	Wash	Butterbrecht Canyon Rd. (SC 123) (G)
B-4	153-160-02	636	Wash	Butterbrecht Canyon Rd. (SC 123) (G)
B-5	153-160-06	323	Wash	-- (G)
B-6	153-160-04	639	Wash	Butterbrecht Canyon Rd. (SC 123) (G)
B-7	153-180-04	200	Wash	Unmaintained roads (G)
B-8	153-180-02	80	Wash	-- (G)

B-9	153-180-12	80	Springs	Butterbrecht Canyon Rd. (SC 123) (G)
B-10	153-170-01	640	Wash	Unmaintained roads (G)
WESTERN ACQUISITION PARCELS				
<u>Kelso Valley Parcel Group Pinyon Mountain, Claraville and Cross Mountain 7.5' quadrangles)</u>				
K-1	153-080-02	320	Springs	Private roads (S)
K-2	153-080-08	322	Springs	Private roads (S)
K-3	153-070-03	40	Wash	--
K-4	153-070-02	321		Butterbrecht Canyon Rd. (SC 123) (G), Pacific Crest Trail (H)
K-5	153-080-05	160	Wash	Private roads (S)
K-6	153-080-04	640	Wash	Kelso Valley Rd. (S)
K-7	153-070-07	640	Wash	-- (S)
K-8	153-030-05	640	Water, Esperanza Canyons; Sorrell Peak	Unmaintained roads (N)
K-9	153-100-03	640	Esperanza Canyon, Water Canyon	Private roads (S)
K-10	153-090-01	640	Wash	Private roads (S)
K-11	153-090-03	640	Wash	-- (S)
K-12	153-100-13	603	Springs	Private roads (S)
K-13	153-100-10	640	Green Spring	Kelso Valley Rd. (S)
K-14	153-090-05	640	Wash	Private roads (S)
K-15	153-051-03	634	Cottonwood Creek	Jawbone Canyon Rd. (S)
K-16	153-120-02	640	Springs	Private roads (S)
K-17	153-120-04	120	Wash, springs	-- (S)
K-18	153-110-01	632	Wash	Jawbone Cyn Rd., Kelso Valley Rd. (S)
K-19	153-110-03	634	Wash	Jawbone Canyon Rd. (S)
K-20	153-120-07	513	Springs	Jawbone Canyon Rd. (S)
<u>Landers Meadow Parcel Group (Claraville 7.5' quadrangle)</u>				
L-1	153-012-03	123	Meadow	Piute Mountain Rd. (S)
L-2	153-012-05	41	Meadow	-- (N)
L-3	153-012-07	81	--	-- (N)
<u>Caliente Creek Parcel Group (Emerald Mountain 7.5' quadrangle)</u>				
C-1	442-020-20	640	Hugh Mann Canyon	Private roads (N)
C-2	442-010-10	160	Hugh Mann Canyon	Private roads (N)
C-3	(deleted)			
C-4	442-030-01	640	Caliente Creek	Weller Road (N)
Total		28,275 acres		
*Road and trail designations: H=hiking only; S=street-legal vehicles on identified, maintained roads only; G=green sticker and street-legal vehicles allowed on identified roads only; O=within or partially within BLM-designated open area; N=unpaved roads present, but no usage designated. Parcels may contain more than one designation. Sources: Friends of Jawbone (2011); Trailsource.com (2012).				

1.2 Setting

1.2.1 Climate

Most of the project area is situated on the east side of the Piute Mountains, and therefore lies in a rain shadow. Precipitation in the project area generally falls during the winter months. Rain is predominant at the lower elevations, but a substantial proportion falls as snow at the higher elevations. Total annual precipitation ranges from 6 inches or less at the eastern, lower elevations of the project area, to 12 or 13 inches at the higher elevations in the Piute Mountains (Western Region Climate Center, 2012; DWR, 2003).

1.2.2 Geology and Soils

The survey area lies at the boundary between two geologic provinces, the Sierra Nevada and the Mojave Desert (Twisselmann, 1995). The Sierra Nevada formed as large granitic batholiths during the Mesozoic era 90 to 120 million years ago, was uplifted to become mountainous terrain, and began the process of erosion that continues today. Piute Mountain forms the southernmost range of the Sierra Nevada. Although most of the rock comprising Piute Mountain is granitic, metamorphic rocks are also present where the intruding batholith contacted surrounding rock. Blue Point, near the intersection of Jawbone Canyon Road and Alphie Canyon Road, is the most prominent example of a metamorphic rock outcrop in the general area.

Piute Mountain is relatively steep on its eastern slope where it descends into Kelso Valley. Terrain then drops through a series of lower mountains (Butterbredt Peak, Gold Peak, Dove Peak) and valleys (Butterbredt Canyon, Alphie Canyon, Jawbone Canyon) toward Fremont Valley. The Jawbone Fault passes more or less through Alphie Canyon in the survey area. The Sierra Nevada geologic formation—and hence Sierra Nevada province—ends at the Sierra Nevada Fault Zone, which passes through Jawbone Canyon slightly west of Poleline Canyon (Smith, 1964). To the east of the fault zone are Pliocene lakebed formations and alluvial fans.

Most of the soils in the project area are granitic in origin (U.S. Dept. Agriculture National Resource Conservation Service (USDA NRCS), 2007, 2008a, 2008b, 2009). The uplands in the Jawbone Canyon, Alphie Canyon, Butterbredt, Kelso Valley, and Landers Meadow areas are generally granite or granitoid (i.e., similar to granite but varying in texture and composition), and the soils formed over these uplands are generally thin and coarse-textured. The fans at the bases of the uplands consist of accumulated alluvium of increasing depth; the soils are deeper in the fans, although often still coarse. The valley floors and broad canyon mouths contain finer-textured soils. Some, in Landers Meadow and the southern portion of Kelso Valley, are fine-textured sandy loams formed in wetlands and floodplains. Some in the lowest part of Kelso Valley are saline-alkaline.

The soils in the Dove Spring and eastern Alphie Canyon and Sugarloaf areas contain older alluvial fans where soils are more fully developed and the topography consists of broad gentle slopes and dissected bajadas. Older alluvial fans are also present on the eastern side of Kelso Valley. Still farther east, and primarily in the gently sloping terrain of the eastern Sugarloaf parcels, are still finer-textured somewhat calcareous fine sandy loams formed over Pliocene lakebeds formed from highly weathered granite alluvium.

Metamorphic soils are of interest in the survey of special-status plants, because they may contain unusual combinations of minerals. Metamorphic soils are relatively uncommon in the survey

area, but several areas are noted as potentially containing them. Most of the Caliente Creek parcels (C-1, C-2 and C-4) contain soils reported as forming from granitoid rock (igneous), gneiss (a metamorphic rock formed from granite), or metamorphic rock (USDA NRCS, 2007). In addition, the geologic map for the region (Smith, 1964) shows a metamorphic rock formation extending along the western side of Alphie Canyon in the survey area. Even though the soil surveys do not indicate the presence of soils formed from metamorphic rock, some areas of distinctive soils could be present, especially in the western portions of Parcels A-4 and A-5 and the southeastern portion of nearby Parcel B-10.

1.2.3 Hydrology (Watersheds and Drainages)

Most of the project area is within the Fremont Valley Groundwater Basin, a closed basin 523 square miles in area that drains mainly into Koehn Dry Lake, to the east of Jawbone Canyon (DWR, 2003). The main drainages in the project area are Jawbone Canyon (and its tributaries, including Water Canyon, Alphie Canyon, Poleline Canyon, Butterbredt Canyon, and Hoffman Canyon); and Red Rock Canyon (and its tributaries, including Dove Spring Canyon).

To the west and upslope from the Fremont Valley Basin proper is the Kelso Lander Valley Groundwater Basin. This basin lies at the foot of Piute Mountain and is only 17 square miles in area (DWR, 2003). Kelso Valley has a number of seeps and springs on its western edge at the foot of Piute Mountain. Water flows for varying distances into Kelso Valley, then disappears into the sandy and gravelly alluvium that characterizes the valley floor, reappearing at Green Springs and extensive meadows at the southern end of Kelso Valley. Groundwater then drains southward toward Cottonwood Creek, which flows south and eastward through Jawbone Canyon toward Fremont Valley. Landers Valley, which is higher in Piute Mountain, has a network of small drainages, none of which sustain surface flow into Kelso Valley and in fact appear to drain toward Kelso Creek, a tributary of the South Fork Kern River. The South Fork Kern River is a sub-basin of the Tulare Lake Hydrologic Region, a vast (17,000 square miles) area containing the southern San Joaquin Valley and tributaries from the Sierra Nevada, southern Tehachapis, and Coast Ranges. Portions of Parcels B-1 and K-4 in the northern portion of the Kelso Valley and Butterbredt areas also drain toward Kelso Creek.

The Caliente Creek parcels are also located in the Tulare Lake Hydrologic Region. Caliente Creek drains a small portion of western Piute Mountain. Caliente Creek empties into Walker Creek near Arvin, on the eastern San Joaquin Valley floor. From this point most flow moves as groundwater toward the Kern River and the Tulare Basin (DWR, 2003).

2 Study Methods

2.1 Definitions

Special-status plant is defined as a species meeting one or more of the following criteria:

- Listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA) or candidate for possible future listing as threatened or endangered under ESA (50 CFR Sec. 17.12)
- Listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA; Fish and Game Code Sec. 2050 et seq.).
- Listed as rare under the California Native Plant Protection Act (Fish and Game Code Sec. 1900 et seq.).
- Meets the definition of rare or endangered under the California Environmental Quality Act (Sec. 15380 (b) and (d)). Species that may meet the definition of rare or endangered include the following:
 - Species considered by the California Rare Plant Rank (CRPR) to be “rare, threatened or endangered in California” (Ranks 1A, 1B, and 2; CNPS, 2012)
 - Species that may warrant consideration on the basis of local significance or recent biological information²
 - Some species included on the California Natural Diversity Database (CNDDDB) Special Plants, Bryophytes, and Lichens List (California Department of Fish and Game, 2012a)
- Considered a locally significant species; that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region. An example could include a species at the outer limits of its known range or a species occurring on an uncommon soil type. In general, CRPR 3 and 4 species were considered locally significant for the purposes of this report
- Designated by the Bureau of Land Management (BLM) Ridgecrest or Bakersfield Field Office as a “special-status” plant (BLM, 2011)

Vegetation type is defined as a distinctive mapping unit. Whenever possible, vegetation types correspond to alliances or associations described in the second edition of *A Manual of California Vegetation* (MCV2; Sawyer et al., 2009). In some cases, distinctive mapping units not described in MCV2 were defined and mapped in this study.

Sensitive vegetation type is a mapping unit that is of limited distribution statewide or regionally. In general, MCV2 vegetation alliances ranked as G3 or S3 were considered sensitive vegetation types in this study. Vegetation types were also considered sensitive if they were unusually high in species richness or were known or likely to support special-status plants, even if they were not recognized in MCV2. Most types of wetlands and riparian communities are considered by the California Department of Fish and Game (CDFG) to be sensitive due to their limited distribution in California, and are included in this definition for this study.

² In general, CRPR 3 and 4 plants may not warrant consideration under CEQA. To be inclusive they are included here under the definition of special-status plants.

2.2 Review of Existing Information

Prior to initiating field surveys, available information was collected and reviewed to determine the resources with potential to occur in the survey area. The definitions of vegetation types were reviewed and a list of potentially-occurring vegetation types was compiled. Inquiries were made regarding mapping for the Mojave Desert Renewable Energy Conservation Plan (MDRECP), which slightly overlapped with the project area, but mapping information was not available until after completion of field surveys. CALVEG information (U.S. Forest Service, 2012) was also obtained and reviewed for the project area. CALVEG was relied upon for describing the Caliente Creek parcels, which were not field-accessed for this study.

For special-status plants, a list of species considered was compiled based on three primary sources: a CNDDDB Rarefind query of the six U.S. Geological Survey 7.5-minute quadrangles on which the project is located—Cinco, Claraville, Cross Mountain, Dove Spring, Emerald Mountain, and Pinyon Mountain—as well as the 14 quadrangles surrounding them (CDFG, 2012b); a query of the California Native Plant Society (CNPS) Electronic Inventory for the same quadrangles (CNPS, 2012); and a review of a recent, nearby botanical survey for the North Sky River Wind Farm (Garcia and Associates, 2010). A list of 52 species was developed from these sources (see **Appendix A**).

From this list of species considered, a list was developed of species with potential to occur, based on the following. Species were considered to have potential to occur if they occurred within the geographic (within approximately 5 miles of the survey area) and elevation range of the survey area (2000-8000 ft) in the following broad habitat types: Mojavean Desert Scrub, Chenopod Scrub, Chaparral, Valley and Foothill Grassland, Marshes and Swamps, Riparian Forest, Riparian Scrub, Cismontane Woodland, Pinyon and Juniper Woodland, Joshua Tree Woodland, Lower and Upper Montane Coniferous Forest. Thirteen species not meeting these criteria were considered “unlikely to occur” and were given no further consideration. For those remaining 39 species, further information was developed on the distribution, habitat features, flowering period and other ecological information by reviewing collection records from the Consortium of California Herbaria (CCH, 2012) and the CalFlora database (CalFlora, 2012).

Prior to field surveys, BLM Ridgecrest Field Office biologists Glenn Harris and Shelly Ellis were contacted regarding species occurrences and sensitive habitat localities. Both knowledgeable individuals provided helpful information about known and potential occurrences of special-status plants in the project area and on the location of reference populations nearby.

In addition to compiling a table of species with potential to occur, we prepared a profile of each species with potential to occur, including a description, photograph, habitat and distribution information. These were provided to all field survey crew members.

2.3 Field Surveys

Field surveys were designed to be at the level of habitat assessment (rather than floristic or protocol) because of the large area of the project, the relative inaccessibility of many parcels, and anticipated limited impact of the acquisition project. The conditions of relative drought in 2012 reinforced this approach, because the detection of many herbaceous species was problematic.

Visits to reference populations were an important part of the field surveys because the abundance and phenological timing of many plant species varies from year to year, particularly when

precipitation is low or sporadic. Visits to reference populations were carried out at the beginning of each survey period in order to focus the surveys and plan for the next survey period.

2.3.1 Timing of Surveys

On March 13-15, 2012, Barbara M. Leitner and TRA biologist Sara Jones carried out a preliminary visit to the project area out to review site conditions, plant phenology, and check reference populations. On April 1-8, a crew of six biologists, including TRA biologists Tay Peterson and Megan Kalyankar, and consulting biologists Neal Kramer, Diane Renshaw, Denise LaBerteaux and Barbara M. Leitner carried out surveys on most of the eastern acquisition parcels. On May 6-12, 2012, Victoria Harris, Neal Kramer, Denise LaBerteaux, Mike Wood and Barbara M. Leitner re-visited some of the eastern acquisition area parcels and visited most of the parcels in Kelso Valley and Landers Meadow. On July 29, 2012, Denise LaBerteaux re-visited the Landers Meadow parcels.

2.3.2 Visits to Reference Populations

To train field crews on the appearance of special-status plants and to ascertain the phenological development of these plants to optimize survey efforts, we visited reference populations of several special-status plants known from the vicinity of the project area.

Shevock's onion (*Allium shevockii*): A CNDDDB (Occ. 7) population of Shevock's onion is located in a side canyon of Jawbone Canyon. This canyon has conspicuously dark metamorphic rock formations (G. Harris, pers. comm., March 2012). In March 2012 a small colony of *Allium* was detected in clay pockets in rock outcrops there; the leaves had the characteristic onion odor and linear, terete (round in cross-section) form. The leaves already showed signs of herbivory in March and could not be relocated in May.

Alkali mariposa lily (*Calochortus striatus*): The CNDDDB Occurrence 35 for alkali mariposa lily in Green Springs, Kelso Valley, was visited in March, April and May, 2012. It was hoped that this relatively large and extensive population would give some indication of the phenology of this species. However, no plants were observed during any of the site visits. A second site was visited, CNDDDB Occurrence 36, south of Red Rock Canyon State Recreation Area in May. This site was a small and very well-defined area of alkaline seep and meadow. No alkali mariposa was found during a thorough search of suitable habitat there.

Red Rock tarplant (*Deinandra arida*): Populations in Red Rock Canyon were visited in April and May, 2012. Very few plants were observed during both visits; plants were observed in early flower in May. In addition, three Red Rock tarplants were observed at the alkali mariposa lily Occurrence 36 site to the southwest; this apparently was a previously-unreported sighting.

Mojave tarplant (*Deinandra mohavensis*): A CNDDDB (Occ. 32) population of this plant is located in a side canyon of Jawbone Canyon, more or less south of Blue Point. This population was visited in March and again in May, 2012. No sign of Mojave tarplant was observed on either occasion.

Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*): BLM biologist Glenn Harris provided a detailed map of a large population of Red Rock poppy in Mesquite Canyon in the El Paso Mountains (CNDDDB occs. 6 and 7). This area was visited in March, April and May, 2012, but no sign of any poppy species was observed.

Charlotte's phacelia (*Phacelia nashiana*): CNDDDB has two records in and near the project area, both in Jawbone Canyon (CNDDDB Occurrences 16 and 49). These sites were visited in March,

April and May 2012. No plants were observed at either site. Overall herbaceous growth was very limited and spring annuals were generally sparse.

2.3.3 Vegetation Classification and Mapping

Vegetation mapping was done using 1:9,000 scale aerial photographs. For vegetation types not recognized as sensitive (special-status), the minimum mapping unit was generally taken as 20 acres, although sometimes smaller units were mapped for vegetation types very different from surrounding vegetation. Reference was made to the “membership criteria” described in MCV2 to determine if a mapping unit fit the description of a vegetation alliance. Sometimes vegetation fit a known vegetation association within an alliance; and if so, this type was mapped if possible. For Joshua Tree Woodland, the predominant understory (i.e., shrub) species was mapped as well. Sensitive vegetation types were mapped when they were encountered, regardless of size.

2.3.4 Special-status Plant Surveys

A list of plant species observed was developed for each parcel. The location of any special-status plants was recorded using a GPS unit, and a CNPS rare plant survey form was prepared. Areas of potentially suitable habitat for any special-status plants were noted and mapped.

2.3.5 Observed Disturbance

Several types of disturbance affect the condition of vegetation. Livestock grazing, wildfire, development, and off-highway vehicle use often affect vegetation in the western Mojave Desert. Invasive weeds³ often increase after other types of vegetation disturbance. Incidental observations were made of vegetation disturbance in survey parcels, with the following limitation: Several invasive weeds are abundant and widespread in the project area—cheatgrass (*Bromus tectorum*), red brome (*B. madritensis* ssp. *rubens*), Mediterranean grass (*Schismus arabicus* and *S. barbatus*), and redstem filaree (*Erodium cicutarium*). No special note was taken of these species, but other invasive plants were noted as encountered, especially Saharan mustard (*Brassica tournefortii*) and tamarisk (*Tamarix* spp.).

2.4 Survey Limitations

Precipitation from the two nearest National Oceanic and Atmospheric Administration (NOAA) stations with complete records for the 2012 water year indicate that rainfall was well below normal (38% of normal at Palmdale and 44% of normal at Haiwee Reservoir; NOAA, 2012). Rain was also late: at Palmdale, precipitation from October 1, 2011 through February 29, 2012 totaled about 1 inch. Then about 1.25 inches fell in March and April. The total for the rainfall year was 2.73 inches compared to the normal total of 7.2 inches. The low total rainfall and relatively late rainfall meant that annual vegetation growth was extremely limited in 2012, therefore limiting the detection of many herbaceous plants, including, potentially, special-status species.

³ An invasive weed is a non-native plant that is included on the lists maintained by the California Department of Food and Agriculture (CDFA, 2010) or the California Invasive Plant Council (Cal-IPC, 2006).

3 Results

3.1 Vegetation Types

The EKCA survey area encompasses a considerable range of physical conditions. The survey area extends 11 miles north to south and 21 miles from east to west, on both sides of the Sierra Nevada crest. Within the survey area, elevations range from 2,170 feet at the mouth of Jawbone Canyon to 7,700 feet at Sorrell Peak. Rainfall varies from an estimated average of 6 inches in Jawbone Canyon to an estimated 13 inches at Sorrell Peak and Landers Meadow. Vegetation ranges from extensive desert washes and arid scrub to live oak woodland, Jeffrey pine forest, and Joshua tree woodland. More than 400 plant taxa were observed during field surveys in 2012 (see **Appendix B and C**, Plant Species Observed during 2012 Surveys, eastern and western parcels, respectively). More intensive surveys during a favorable rainfall year would increase the number and frequency of plant taxa observed.

Fifty-one vegetation types were identified and mapped in the EKCA survey area. Vegetation types corresponded to Manual of California Vegetation alliances and associations, where possible (Sawyer et al., 2009). In the discussion that follows, the vegetation type and associated MCV2 vegetation alliance or association are noted together. For the purposes of this discussion, vegetation types are presented in related groupings, such as wetland and riparian; creosote bush scrub; and Joshua tree woodland. **Table 2** presents the vegetation types observed, by parcel, in the EKCA survey area. **Appendix D** presents vegetation maps of the parcels.

3.1.1 Barren, Herb-dominated or Very Sparse Shrub Types

Barren

This vegetation type has very low cover but fine-textured soil that may be high in clay or alkalinity. White bursage (*Ambrosia dumosa*) is the most common woody species. In 2012, a very dry year, the species richness of annuals was limited, but the special-status species Mojave spineflower (*Chorizanthe spinosa*; CRPR 4.2) was detected in this vegetation type.

In the survey area, barren areas mapped in the Jawbone and Sugarloaf areas (Parcels J-3, J-4, J-5, S-3 and S-6) were associated with Cutterbank soils, lakebed soils formed from granite alluvium. Their surface was gravelly with a fine-textured and possibly somewhat calcareous matrix. Although reported to be only moderately high in clay, these soils may have some associated alkalinity or other chemical property that results in their low productivity for plants. Barren areas were also noted in the Alphie Springs area (Parcels A-4, A-5, and A-8). Here, the barren areas may be associated with metamorphic substrate; blue rock formations similar to those at Blue Point were observed in the western canyon in Parcel A-4.

Rock Outcrop

This vegetation type was used to describe upland areas with rocky substrate and low plant cover. It was mapped in several parcels with extensive rocky areas: in the Jawbone Canyon area, Parcel J-1; in the Sugarloaf area, Parcel S-5; in Kelso Valley, Parcels K-9 and K-16. Smaller areas of rock outcrop were common throughout the survey area.

EASTERN PARCELS	Parcel Group	JAWBONE CANYON					SUGARLOAF						DOVE SPRING				ALPHIE CANYON								BUTTERBREDT												
	Parcel Code	J-01	J-02	J-03	J-04	J-05	S-01	S-02	S-03	S-04	S-05	S-06	D-01	D-02	D-03	D-04	A-01	A-02	A-03	A-04	A-05	A-06	A-07	A-08	B-01	B-02	B-03	B-04	B-05	B-06	B-07	B-08	B-09	B-10			
Notes:																																					
<i>Bold italics:</i> sensitive vegetation type;																																					
(Parentheses): vegetation type present but too small to map																																					
APN NO.		444-090-04	181-080-32	181-080-11	181-080-30	181-190-02	153-240-12	153-240-14	153-240-16	181-020-02	181-020-11	181-020-13	153-130-01	153-130-03	153-130-05	153-150-04	153-140-05	153-150-02	153-150-06	153-170-03	153-170-06	153-170-04	444-070-05	444-070-09	153-070-05	153-140-08	153-140-07	153-160-02	153-160-06	153-160-04	153-180-04	153-180-02	153-180-12	153-170-01			
VEGETATION TYPE	Rarity Rank	Acreage																																			
<u>Barren, Herb-dominated or Very Sparse Shrubs</u>																																					
Barren				X	X	X			X		X									X	X				X												
Rock Outcrop			X								X																										
Annual Grassland													X																								
Developed					X																																
<u>Blackbrush Scrub Vegetation Types</u>																																					
Blackbrush Scrub	G5S4		X	X		X	X						X	X	X		X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X		
Blackbrush-Creosote Bush Scrub							X	X												X	X																
<u>Creosote Bush-White Bursage Scrub Vegetation Types</u>																																					
Creosote Bush Scrub	G5S5		X	X	X		X		X		X									X	X			X													
Creosote Bush-White Bursage Scrub	G5S5		X	X	X	X			X	X	X	X							X	X	X	X															
Creosote Bush-Desert Senna Scrub												X																									
White Bursage Scrub	G5S4		X	X		X			X			X												X													
<u>Desert Wash and Terrace Scrub Vegetation Types</u>																																					
Cheesebush Scrub	G5S4		X	X		X					X		X																								
Allscale Scrub	G5S4		X	X	X	X														X					X												
Desert Wash			X	(X)	(X)	X	X	X	X	X	X	X	(X)	(X)	(X)	(X)	X	X	X	X	X	X	X	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	X	
Rubber Rabbitbrush Scrub	G5S5				X																												X	X			
<u>Wetland and Riparian Vegetation Types</u>																																					
<i>Blackstem Rabbitbrush Scrub</i>	G4S3		X																																		
<i>California Coffeeberry Scrub</i>	G4S4																																				
<i>Desert Olive Scrub</i>	G3S2.2																																				
<i>Desert Riparian Forest and Scrub</i>	G4S4								X		X		X																				X	X			
<i>Meadow and Seep</i>				X		X							X					X	X															X	X		
<i>Mesquite Scrub</i>	G5S3.2										X																										
<i>Pond</i>																																			X		
<i>Scalebroom Scrub</i>	G3S3			X	X	X								X																							
<u>Lower Mojave Mixed Woody Scrub</u>																																					
Upper Mojave Mixed Woody Scrub Vegetation Types			X	X					X	X			X						X	X	X	X	X								X						
Big Sage Scrub	G5S5																																				
California Buckwheat Scrub	G5S5								X																X	X					X						
Nevada Ephedra Scrub	G4S4.3			X																																	
<i>Spiny Hopsage Scrub</i>	G5S3.3			X																																	
Upper Mojave Mixed Woody Scrub													X																								
Wedgeleaf Ceanothus Scrub	G4S4																																				
<i>Wright's Buckwheat Scrub</i>	G3S3																																				

Table 2. (contd.)																																					
EASTERN PARCELS (contd.)		Parcel Group	JAWBONE CANYON					SUGARLOAF					DOVE SPRING				ALPHIE CANYON				BUTTERBREDT																
		Parcel Code	J-01	J-02	J-03	J-04	J-05	S-01	S-02	S-03	S-04	S-05	S-06	D-01	D-02	D-03	D-04	A-01	A-02	A-03	A-04	A-05	A-06	A-07	A-08	B-01	B-02	B-03	B-04	B-05	B-06	B-07	B-08	B-09	B-10		
Notes:																																					
<i>Bold italics</i> indicates sensitive vegetation type;																																					
(Parentheses) indicates vegetation type present but too small to map																																					
VEGETATION TYPE	Rarity Rank	Acreage	444-090-04	181-080-32	181-080-11	181-080-30	181-190-02	153-240-12	153-240-12	153-240-16	181-020-02	181-020-11	181-020-13	153-130-01	153-130-03	153-130-05	153-150-04	153-140-05	153-150-02	153-150-06	153-170-03	153-170-06	153-170-04	444-070-05	444-070-09	153-070-05	153-140-08	153-140-07	153-160-02	153-160-06	153-160-04	153-180-04	153-180-02	153-180-12	153-170-01		
<u>California Juniper Woodland Vegetation Types</u>																																					
California Juniper Woodland	G4S4																																				
California Juniper/Blackbrush Woodland																																					
California Juniper/California Buckwheat Woodland																																					
California Juniper/Rubber Rabbitbrush Woodland																																					
California Juniper-Joshua Tree/Blackbrush Woodland																																					
<u>Joshua Tree Woodland Vegetation Types</u>		G4S3.2 (all)																																			
Joshua Tree/Big Sage Woodland																																					
Joshua Tree/Blackbrush Woodland														X	X	X	X	X	X	X	X	X					X	X	X	X	X	X			X	x	
Joshua Tree/California Buckwheat Woodland																											X	X	X								
Joshua Tree/Creosote Bush Woodland																						X			X												
Joshua Tree/Goldenbush Woodland																																					
Joshua Tree/Lower Mojave Mixed Woody Scrub Woodland																						X															
Joshua Tree/Nevada Ephedra Woodland																																					
Joshua Tree/Rubber Rabbitbrush Woodland																																					
Joshua Tree/Upper Mojave Mixed Woody Scrub Woodland																											X	X	X	X			X				
Joshua Tree/White Bursage Woodland							X																														
<u>Oak Forest and Woodland Vegetation Types</u>																																					
Blue Oak Woodland	G4S4																																				
Interior Live Oak Woodland	G4S4																																				
<u>Pine Forest and Woodland Vegetation Types</u>																																					
Gray Pine Woodland	G4S4																																				
Gray Pine-Interior Live Oak Woodland																																					
Jeffrey Pine Forest	G4S4																																				
Singleleaf Pinyon Pine Woodland	G5S4																																				

Table 2 (contd.)		KELSO VALLEY																			LANDERS MDW.			CALIENTE CREEK					
WESTERN PARCELS		Parcel Group	K-01	K-02	K-03	K-04	K-05	K-06	K-07	K-08	K-09	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-01	L-02	L-03	C-01	C-02	C-04	
Notes:		Parcel Code	153-080-02	153-080-08	153-070-03	153-070-02	153-080-05	153-080-04	153-070-07	153-030-05	153-100-03	153-090-01	153-090-03	153-100-13	153-100-10	153-090-05	153-051-03	153-120-02	153-120-04	153-110-01	153-110-03	153-120-07	153-012-03	153-012-05	153-012-07	442-020-20	442-010-10	442-030-01	
Notes:		APN NO.																											
VEGETATION TYPE		Rarity Rank	Acreage																										
<u>Barren, Herb-dominated or Very Sparse Shrubs</u>																													
Barren																													
Rock Outcrop			X	X							X							X											
Annual Grassland						X								X		X	X	X				X				X	X	X	
Developed																													
<u>Blackbrush Scrub Vegetation Types</u>																													
Blackbrush Scrub		G5S4						X	X			X			X					X	X								
Blackbrush-Creosote Bush Scrub																													
<u>Creosote Bush-White Bursage Scrub Vegetation Types</u>																													
Creosote Bush Scrub		G5S5																											
Creosote Bush-White Bursage Scrub		G5S5																											
Creosote Bush-Desert Senna Scrub																													
White Bursage Scrub		G5S4																											
<u>Desert Wash and Terrace Scrub Vegetation Types</u>																													
Cheesebush Scrub		G5S4																											
Allscale Scrub		G5S4																											
Desert Wash			(X)	(X)	X	X	(X)	(X)	X	(X)	(X)	X	(X)	(X)	(X)		(X)	(X)	(X)	X	X								
Rubber Rabbitbrush Scrub		G5S5	X	X			X	X			X			X					X	X		X							
<u>Wetland and Riparian Vegetation Types</u>																													
<i>Blackstem Rabbitbrush Scrub</i>		G4S3																											
<i>California Coffeeberry Scrub</i>		G4S4	X	X																									
<i>Desert Olive Scrub</i>		G3S2.2																											
<i>Desert Riparian Forest and Scrub</i>		G4S4, G4S3.2	X								X			X															
<i>Meadow and Seep</i>																													
<i>Mesquite Scrub</i>		G5S3.2																											
<i>Pond</i>			X											X								X	X	X					
<i>Scalebroom Scrub</i>		G3S3																											
<u>Lower Mojave Mixed Woody Scrub</u>																													
<u>Upper Mojave Mixed Woody Scrub Vegetation Types</u>																													
Big Sage Scrub		G5S5				X	X				X									X			X	X		X	X	X	
California Buckwheat Scrub		G5S5	X	X		X	X	X	X			X				X										X		X	
Nevada Ephedra Scrub		G4S4.3																											
Spiny Hopsage Scrub		G5S3.3																											
Upper Mojave Mixed Woody Scrub																													
Wedgeleaf Ceanothus Scrub		G4S4																											
Wright's Buckwheat Scrub		G3S3	X	X																									

Table 2 (contd.)		KELSO VALLEY GROUP																			LANDERS MDW.			CALIENTE CREEK GROUP						
WESTERN PARCELS (contd.)		Parcel Group	KELSO VALLEY GROUP																			LANDERS MDW.			CALIENTE CREEK GROUP					
VEGETATION TYPE	Parcel Code	APN NO.	K-01	K-02	K-03	K-04	K-05	K-06	K-07	K-08	K-09	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-01	L-02	L-03	C-01	C-02	C-04		
			153-080-02	153-080-08	153-070-03	153-070-02	153-080-05	153-080-04	153-070-07	153-030-05	153-100-03	153-090-01	153-090-03	153-100-13	153-100-10	153-090-05	153-051-03	153-120-02	153-120-04	153-110-01	153-110-03	153-120-07	153-012-03	153-012-05	153-012-07	442-020-20	442-010-10	442-030-01		
	Rarity Rank	Acreage																												
<u>California Juniper Woodland Vegetation Types</u>																														
California Juniper Woodland	G4S4													X	X			X										X		X
California Juniper/Blackbrush Woodland																				X	X									
California Juniper/California Buckwheat Woodland																					X									
California Juniper/Rubber Rabbitbrush Woodland																						X								
California Juniper-Joshua Tree/Blackbrush Woodland																					X									
<u>Joshua Tree Woodland Vegetation Types</u>																														
Joshua Tree/Big Sage Woodland	G4S3.2																													
Joshua Tree/Blackbrush Woodland					X			X	X			X	X			X				X	X									
Joshua Tree/California Buckwheat Woodland									X			X	X																	
Joshua Tree/Creosote Bush Woodland																X														
Joshua Tree/Goldenbush Woodland																X														
Joshua Tree/Lower Mojave Mixed Woody Scrub Woodland																														
Joshua Tree/Nevada Ephedra Woodland																												X		
Joshua Tree/Rubber Rabbitbrush Woodland				X			X	X			X				X	X					X									
Joshua Tree/Upper Mojave Mixed Woody Scrub Woodland																														
Joshua Tree/White Bursage Woodland																														
<u>Oak Forest and Woodland Vegetation Types</u>																														
Blue Oak Woodland	G4S4																					X					X	X	X	
Interior Live Oak Woodland	G4S4									X	X			X		X	X													
<u>Pine Forest and Woodland Vegetation Types</u>																														
Gray Pine Woodland	G4S4										X																X	X		
Gray Pine-Interior Live Oak Woodland																													X	
Jeffrey Pine Forest	G4S4									X							X							X	X	X				
Singleleaf Pinyon Pine Woodland	G5S4					X							X					X											X	

Typical species on exposed sites included white bursage, California buckwheat (*Eriogonum fasciculatum* var. *polifolium*), and chaparral yucca (*Hesperoyucca whippleyi*). In sheltered sites, some typical species include rock goldenbush (*Ericameria cuneata*), interior goldenbush (*Ericameria linearifolia*), and rock nettle (*Eucnide urens*).

Annual Grassland (Annual Grassland Semi-Natural Herbaceous Stand)

Annual grassland may be found in all topographic settings and soil textures. It is generally defined as having 80 percent relative cover in the herbaceous layer (Sawyer et al., 2009). In the survey area, the most typical species in this vegetation type is red brome, although Mediterranean grass is also present in the lower elevations and cheatgrass is abundant in the higher elevations. None of these species are native to California. Annual grasslands are usually found where a substantial disturbance has removed the native woody vegetation. Fire is one cause, but mechanical disturbance from livestock or vehicular activity can also result in invasion by these non-native grasses.

Annual grassland was mapped in Parcel D-1 in the Dove Spring area, apparently the result of a small wildfire. In Kelso Valley, most of the parcels mapped as having annual grassland had experienced relatively recent fire (parcels K-5, K-13, K-16, K-17, and K-20). Within a few years after a fire in Kelso Valley, rubber rabbitbrush (*Ericameria nauseosa*) invades the annual grassland; in the absence of repeated fire, annual grassland is eventually replaced by other woody dominants such as big sage (*Artemisia tridentata*). The three Caliente Creek parcels also have relatively large areas of annual grassland.

Parcel K-15 has an area mapped as annual grassland, but during the survey this area was found to contain many native wildflowers and appeared to be related to unusual soil conditions rather than disturbance. Typical species in this area were blue field gilia (*Gilia capitata*), variable leptosiphon (*Leptosiphon parviflorus*), Arizona popcornflower (*Plagiobothrys arizonicus*), and California poppy (*Eschscholzia californica*).

Developed

Developed areas have structures, landscaping, or permanently maintained disturbance associated with ongoing human activities. One area mapped as developed is the ranch headquarters at Green Spring in Parcel K-13 in Kelso Valley. The other is an area adjacent to and south of Jawbone Canyon Road in Parcel J-4 which appears to be maintained as permanently bare because of recreational vehicle staging activities. Other developed areas that may be seen in the vicinity of the survey area, such as Los Angeles Department of Water and Power pipeline and corporation yard, are largely excluded from the survey area and therefore were not mapped.

3.1.2 Blackbrush Scrub Vegetation Types

Blackbrush Scrub (*Coleogyne ramosissima* Shrubland Alliance)

Blackbrush scrub (*Coleogyne ramosissima* shrubland alliance) is found on alluvial fans bordering intermountain basins, slopes, upper bajadas, and rocky highlands. Parent materials are mixed alluvium and colluvium. Soils are thin and sandy with abundant exposed rock. They often have a shallow caliche layer and moderate alkalinity. This vegetation type is defined by at least 2 percent blackbrush in the shrub canopy. Associated species such as Nevada ephedra (*Ephedra nevadensis*), green rabbitbrush (*Ericameria teretifolia*), cheesebush (*Ambrosia salsola*), bladder sage (*Scutellaria mexicana*), or California buckwheat may exceed the cover contributed by blackbrush on disturbed sites (Sawyer et al., 2009). Blackbrush is a long-lived, low-growing, many-branched shrub with diffuse, shallow roots and a low tolerance of salinity. Plants are drought-deciduous. Typical stands have shallow soils with caliche layers and well-developed

cryptogamic crusts. Stands are generally simple and monotypic, with shrubs closely to rather widely-spaced. Low soil moisture or cold air drainage set the lower elevation limit for this vegetation type, and cold air temperatures set the upper limit; this vegetation is most common above 3,300 feet in the Mojave Desert (Sawyer et al., 2009). Stands occur abundantly on older geologic soils. Blackbrush is very sensitive to fire, which can spread quickly in closely spaced stands. This species does not sprout after fire and is slow to invade sites once burned.

In the survey area, blackbrush scrub was very extensive in the stable soils found in the gently sloping terrain in the northern Sugarloaf and the Dove Spring parcels, and the uplands in most of the Alphie Canyon and Butterbredt parcels. Small patches were mapped occasionally in the highest elevations of the Jawbone Canyon parcels, on north-facing and gently-sloping sites. It was mapped on six of the Kelso Valley parcels, primarily on the west-facing slopes on the eastern side of the valley.

Blackbrush-Creosote Bush Scrub (*Coleogyne ramosissima*-*Larrea tridentata*-*Ambrosia dumosa* Association)

This vegetation type is much like the preceding, but was found at the lower elevational limit of blackbrush, where it intergrades with creosote bush (*Larrea tridentata*)-white bursage. Shrubs form an open, sparse layer with limited herbs. This vegetation type was mapped on stable flats and gently sloping terrain in the Sugarloaf area in Parcels S-1 and S-2, and in the Alphie Canyon area in Parcels A-5 and A-6.

3.1.3 Creosote Bush and White Bursage Vegetation Types

Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance)

Creosote bush scrub (*Larrea tridentata* shrubland alliance) is found on alluvial fans, bajadas, and upland slopes. Soils are well drained, and sometimes have desert pavement (Sawyer et al., 2009). This vegetation type is defined by the visual dominance of creosote bush, which may exceed other shrubs in cover except for goldenhead (*Ericameria cooperi*), green rabbitbrush, Nevada ephedra, and white bursage, none of which would have more than double the cover of creosote bush. Creosote bush is a very long-lived shrub with low seedling recruitment. It is evergreen and extremely resistant to high temperatures. This species grows well in deep, sandy soils because of its deep, spreading root systems, but also grows well on poorly developed alluvial soils. In sandy situations on wash terrace deposits, creosote bush may be found with allscale (*Atriplex polycarpa*). Creosote bush is poorly adapted to fire because of its limited sprouting ability and highly flammable resinous foliage (Sawyer et al., 2009).

In the survey area, creosote bush scrub was mapped on several parcels in the Jawbone Canyon (Parcels J-1, J-3 and J-4), Sugarloaf (Parcels S-2, S-4 and S-6) and Alphie Canyon (Parcels A-5, A-8) areas. Creosote bush scrub (as opposed to creosote bush-white bursage scrub, below) was generally found in deep soils between high floodplain terraces and lower bajadas.

Creosote Bush-White Bursage Scrub (*Larrea tridentata*-*Ambrosia dumosa* Shrubland Alliance)

Creosote bush-white bursage scrub (*Larrea tridentata*-*Ambrosia dumosa* shrubland alliance) is found on minor washes and rills, alluvial fans, bajadas, and upland slopes. Soils are well-drained, alluvial, colluvial, sandy, and sometimes underlain by hardpan (Sawyer et al., 2009). This vegetation type is defined by both creosote bush and white bursage having at least 1 percent in the shrub canopy, and both species having at least twice the cover contributed by other species (Sawyer et al., 2009). Creosote bush-white bursage represents the major vegetation type of California's hot deserts, where it is the typical vegetation on bajadas, alluvial fans, and lower

slopes. Conditions supporting creosote bush-white bursage may range from extremely hot and dry (with attendant low species diversity) to relatively mild and mesic (with higher species diversity) (Sawyer et al., 2009).

The survey area is situated at the western edge of the Mojave Desert, where this vegetation type occupied the more extreme dry, south-facing, exposed sites at lower elevations. Species richness was somewhat lower than other vegetation types. This vegetation type was found in all of the lowest, driest parcels (all five of the parcels in the Jawbone Canyon area, Parcels S-3 through S-6 in the Sugarloaf area, and Parcels A-4 through A-8 in the Alphie Canyon area).

Creosote Bush-Desert Senna Scrub (*Larrea tridentata*-*Ambrosia dumosa*/*Senna armata* Association)

Creosote bush-desert senna scrub (creosote bush-white bursage/desert senna (*Senna armata*) association) is a subset of the creosote bush-white bursage alliance that is found in relatively stable desert washes. It was mapped only in Parcel S-6 in the Sugarloaf area. Desert senna was found occasionally at lower elevations in washes and floodplains, but this was the only place where an extensive stand of creosote bush and senna were found together.

White Bursage Scrub (*Ambrosia dumosa* Shrubland Alliance)

White bursage scrub (*Ambrosia dumosa* shrubland alliance) is found on older washes and river terraces, alluvial fans, bajadas, rocky hills, partially stabilized and stabilized sand fields, and upland slopes. Soils are sandy, clay-rich or calcareous and may have pavement surfaces (Sawyer et al., 2009). This vegetation type is defined by white bursage having more than twice as much absolute cover as creosote bush, or white bursage exceeds the cover of other shrubs. White bursage is a short-lived shrub with relatively shallow roots. It dominates sandy substrates, rocky hills or alluvial fans, and particularly older soils with caliche (calcium carbonate) or clay layers. The geographic distribution of white bursage scrub is similar to that of creosote bush, and the two species, together with Acton's encelia (*Encelia actonii*), form large areas with varying proportions of these shrubs. White bursage is sensitive to fire because it has limited ability to re-sprout.

In the survey area, white bursage scrub was mapped in three parcels (J-2, J-3 and J-5) in the Jawbone Canyon area, two parcels (S-3 and S-5) in the Sugarloaf area and one parcel (A-8) in the Alphie Canyon area. In most of these situations, white bursage was found on exposed ridgetops and lakebed formations that may have had caliche or clay subsoil layers. The mapped white bursage scrub tended to have fairly low cover compared with other vegetation types in the survey area. The difference between this vegetation type and barren areas was only a matter of degree; the areas mapped as barren had extremely low shrub cover.

3.1.4 Desert Wash and Terrace Scrub Vegetation Types

Cheesebush Scrub (*Ambrosia* (= *Hymenoclea*) *salsola* Shrubland Alliance)

Cheesebush scrub (*Ambrosia* (= *Hymenoclea*) *salsola* shrubland alliance) is found in valleys, flats, rarely-flooded low-gradient deposits, arroyos, intermittent channels and washes. Soils are alluvial, sandy and gravelly, and disturbed desert pavement. The vegetation type is variously defined as cheesebush having more than 5 percent absolute cover in the shrub canopy; more than 2 percent cover in the shrub canopy but more cover than other shrub species; or more than 1 percent cover with other shrubs less than half the cover of cheesebush (Sawyer et al., 2009). Cheesebush is a short-lived shrub with shallow roots. It colonizes bare mineral soil and also sprouts following damage from flood or fire. It occupies upland sites, such as steep slopes or loose alluvium, as well as bottomland sites. It is a pioneering species after disturbance.

In the survey area, cheesebush shrubland alliance was generally mapped on upper terraces adjacent to the active channel in alluvial fans in canyons. It was found in several parcels in the Jawbone area (J-1, J-2 and J-5), Parcel D-2 in the Dove Spring area, and Parcel S-5 in the Sugarloaf area, as well as a fairly small area in Parcel K-18 in eastern Kelso Valley.

Allscale Scrub (*Atriplex polycarpa* Shrubland Alliance)

Allscale scrub (*Atriplex polycarpa* shrubland alliance) is found in washes, dissected alluvial fans, rolling hills, terraces, and edges of large, low gradient washes. Soils may be carbonate rich, alkaline, sandy or sandy clay loams. The vegetation type is defined as allscale having more than 2 percent absolute cover in the shrub canopy, or more than 50 percent relative cover in the shrub canopy. Allscale is an intricately branched shrub that grows to 6 feet tall. It tolerates moderately saline conditions or dry, non-saline upland sites with shallow water tables. It is sensitive to fire and does not re-sprout if top-killed. Its limited but varied salt tolerance and high drought tolerance interact to define the broad habitat boundaries of the vegetation type (Sawyer et al., 2009).

In the survey area, allscale scrub was mapped in the Jawbone Canyon area on Parcels J-1 through J-4 and in the Alphie Canyon area on Parcels A-5 and A-8, where it occupied the valley floor on terraces just above the active channel. It also was observed as part of the desert wash scrub vegetation type, described next, in the smaller alluvial fans and benches in much of the eastern acquisition area.

Desert Wash

This is a vegetation type consisting of a mix of rocky canyon, desert wash and terrace scrub types with generally low cover where the dominant species were present in a fine-textured mosaic and no single species dominance could be defined at the scale of mapping used in this study. Typical species in this vegetation type include desert baccharis (*Baccharis sergiloides*), sweetbush (*Bebbia juncea*), and shrubby ragwort (*Senecio flaccidus*) in narrow, rocky canyons with subsoil moisture; allscale, cheesebush, rubber rabbitbrush, and white bursage in broader, deeper washes. This vegetation type was found in all parcels in the eastern acquisition area, although sometimes the washes were extremely narrow and too small to map. It also was present in most Kelso Valley parcels.

Rubber Rabbitbrush Scrub (*Ericameria nauseosa* Shrubland Alliance)

Rubber rabbitbrush scrub (*Ericameria nauseosa* shrubland alliance) is found in all topographic settings, especially sites with disturbance. Soils are well-drained sands and gravels. This vegetation type is defined as having rubber rabbitbrush with 2 percent or more absolute cover or more than 25 percent relative cover in the shrub canopy (Sawyer et al., 2009). Rubber rabbitbrush is a fast-growing, relatively short-lived, early-successional shrub that establishes after disturbance. It is well-adapted to the regime of periodic disturbance found in washes and fans with intermittent flooding. It is also fire-adapted, sprouting vigorously after a fire. In stable situations without repeated disturbance, rubber rabbitbrush may be replaced by other species.

In the survey area, rubber rabbitbrush scrub was mapped in Parcel J-4 in Jawbone Canyon, Parcels B-9 and B-10 in Butterbredt Canyon, all large washes experiencing repeated disturbance from periodic flooding. In Kelso Valley, nine parcels were mapped with rubber rabbitbrush; most were extensive areas with recent fires. It appeared that non-native grassland dominated by red brome was the first stage following fire, followed by developing rubber rabbitbrush scrub. In the absence of repeated disturbance rubber rabbitbrush scrub appeared to eventually be replaced by big sage or other long-lived shrubs, as well as singleleaf pinyon pine (*Pinus monophylla*).

3.1.5 Wetland and Riparian Vegetation Types

Blackstem Rabbitbrush Scrub (*Ericameria paniculata* Shrubland Alliance)

Blackstem rabbitbrush scrub (*Ericameria paniculata* shrubland alliance) is found in intermittently flooded arroyos, channels and washes. Soils are coarse to fine sand, usually well drained and moderately acidic to slightly saline. The vegetation type is defined as having more than 5 percent cover of blackstem rabbitbrush with no other shrub having more than 50 percent relative cover (Sawyer et al., 2009). Blackstem rabbitbrush is distinctive in having a rust that causes black banding around the stem. This species is a fast-growing but relatively short-lived shrub that can achieve 16 feet in height and often forms single-species stands. Blackstem rabbitbrush may sprout following minor damage, while large flood events may destroy all shrubs, necessitating seedling recruitment from nearby protected individuals. Stands are localized in medium to large washes where flooding events occur every few years. Blackstem rabbitbrush is ranked S3, meaning it is considered a sensitive natural community statewide (Sawyer et al., 2009).

In the survey area, blackstem rabbitbrush scrub was mapped only in Parcel J-2 in the wash in Poleline Canyon, where it occupied a large, broad wash. Examples too small to map were found in other washes in the eastern acquisition area and were mapped as part of desert wash scrub.

Coffeeberry Scrub (*Frangula (=Rhamnus) californica* Shrubland Alliance)

California coffeeberry scrub (*Frangula (=Rhamnus) californica* shrubland alliance) is found widely in California on concave slopes, lower slopes, along drainages and undulating moderate to steep slopes of sedimentary or serpentine substrates. Soils typically retain moisture for much of the year. California coffeeberry shrubland alliance is defined as having more than 50 percent relative cover in the shrub canopy (Sawyer et al., 2009). California coffeeberry is a long-lived, shade tolerant shrub that can reach 20 feet in height and 200 years in age (Sawyer et al., 2009). It sprouts vigorously from the base following fire, browsing, or cutting. Although this vegetation type is not considered sensitive throughout California, the example mapped in the survey area appeared to be a riparian vegetation type and therefore was considered unusual and sensitive locally.

In the survey area, stands of California coffeeberry were noted along several steep, rocky draws in northern Kelso Valley in Parcels K-1 and K-2. It may be present elsewhere in similar ecological situations on the lower slopes of Piute Mountain west of Kelso Valley. The subspecies of coffeeberry was not determined, but based on distribution it may have been *F. c. ssp. tomentella*.

Desert Olive Scrub (*Forestiera pubescens* Shrubland Alliance)

Desert olive scrub (*Forestiera pubescens* shrubland alliance), also referred to as desert olive patches, is found on floodplains, streambanks, springs, river terraces, and washes. Soils range from silty clays to coarse sands. The vegetation type is defined as consisting of more than 50 percent relative cover of desert olive in the shrub layer (Sawyer et al., 2009). Desert olive is a long-lived, spreading shrub or small tree. Plants form clonal thickets and sprout after stem damage (such as from floods, fires, or browse). Desert olive scrub occurs as scattered, small stands in slightly drier conditions upslope from flowing water, in areas with subsurface moisture such as washes and river terraces, and narrows in desert canyon bottoms where moisture is forced to the surface (Sawyer et al., 2009). The statewide ranking of this alliance is S2, meaning it is a sensitive natural community.

In the survey area, a large stand of desert olive scrub was mapped in Parcel K-9 along the lower portion of Esperanza Canyon. It formed a long, dense thicket on the stream terraces above the stream, which appeared to be perennial. It also was present along the lower reaches of Water Canyon in Parcel K-9, lining the willow (*Salix* spp.) scrub but in patches too small to map. This vegetation type may also be present along in some of the other parcels on the eastern foot of Piute Mountain. A very small patch, too small to map, was noted in Parcel D-2, and could also be present near small seeps and springs in Alphie and Butterbredt canyons.

Desert Riparian Forest and Scrub

Desert riparian forest and scrub is an assemblage of MCV2 (Sawyer et al., 2009) alliances dominated by tree and tree-like woody species dependent on fairly consistent subsurface or surface water for most of the year. Desert riparian scrub may be found a springs, along perennial or seasonally intermittent streams, in the lower canyons of desert mountains, and in valleys with a dependable subsurface water supply. Typical dominant species include Fremont cottonwood (*Populus fremontii*), arroyo willow (*Salix lasiolepis*), sandbar willow (*Salix exigua* var. *exigua*), and red willow (*Salix laevigata*). The understory is often fairly sparse and may include rubber rabbitbrush, mule fat (*Baccharis salicifolia*), and big sage (*Artemisia tridentata*), among others. The understory often consists of a dense accumulation of downed branches, litter, and duff. As a result there is often limited development of the herbaceous layer, although peripheral areas often contain a variety of grasses and grass-like plants. Desert riparian forest and scrub is a sensitive vegetation type that is rare in the region and provides high wildlife value.

In the survey area desert riparian forest and scrub was found in association with other shrubby and herbaceous wetland vegetation types, such as the rubber rabbitbrush scrub, meadow and seep, and desert wash. The largest areas of desert riparian forest and scrub were mapped in Parcel D-2 in the Dove Spring area, Parcels A-4 and A-5 in the Alphie Springs area, and Parcels K-9 and K-13 in the Kelso Valley area. Additional riparian forest is probably present in the steep canyons of the western Kelso Valley parcels, such as K-8, K-12, K-15 and K-16, but these were not visited in detail and could not be characterized.

Meadow and Seep

Meadow and seep habitats occupy relatively small areas in desert and mountainous areas in California, but their importance to species diversity and wildlife habitat is very high. Due to their typically small size, these habitats have been mapped together in the survey area, but they consist of several somewhat different vegetation types. These will be described below.

Baltic and Mexican rush (*Juncus balticus* and *J. mexicanus*) are sometimes treated as varieties of *Juncus arcticus* (vars. *balticus* and *mexicanus*), as they are in Sawyer et al., 2009). Thus, the alliance described in the Manual of California Vegetation is the **Baltic and Mexican rush (*Juncus arcticus*) herbaceous alliance**. Particularly because the two rushes were difficult to reliably distinguish in the field, this vegetation type is simply referred to here as **rush meadow**. Rush meadows are found in wet and mesic situations, along stream banks, rivers, lakes, ponds, fens, and sloughs, in freshwater, brackish and alkaline marshes. Soils are poorly drained, often with a thick organic layer. Plants form dense stands because of their dense rhizomes. Plants grow in shallow soil, but the rooting depth varies greatly. This species tolerates disturbance, usually resulting from flooding and deposition, although it can also resprout following fire Sawyer et al., 2009).

In the survey area, the most extensive marshes were found at Green Spring in Kelso Valley (parcels K-13, K-17 and K-20) where rush meadows occupy the lowest position, surrounded by salt grass (*Distichlis spicata*) and alkali sacaton (*Sporobolus airoides*) on the periphery. Small

patches of rush meadow were found at nearly all of the seeps and springs, including the springs in Parcels J-3 and J-5 in the Jawbone Canyon area; Parcel D-2 in the Dove Spring area; Parcels A-4 and A-5 in the Alphie Canyon area; and Parcels B-9 and B-10 in the Butterbredt area. In addition, extensive areas of rush meadow were mapped at Landers Meadow, in Parcels L-1 and L-2.

In the desert, the **salt grass grassland (*Distichlis spicata* herbaceous alliance)** is found on playas, swales, seeps, and terraces along washes that are typically intermittently flooded. Soils are often deep, alkaline or saline, and may have an impermeable layer making them poorly drained. When the soil is dry, the surface usually has salt accumulations (Sawyer et al., 2009). Salt grass is a rhizomatous, warm-season grass that is widespread in North America. It may form a dense thatch in suitable habitat. The leaves have special salt glands that allow for extrusion of salt to maintain osmotic balance in the plant.

In the survey area, salt grass grassland was closely associated with seeps and springs, growing at the periphery of the rush alliance. The most extensive area of salt grass was at Green Spring in Kelso Valley, a complex of seeps and springs occupying several hundred acres in parcels K-13, K-17 and K-20. Other, small areas of salt grass grassland were associated with spring and seeps in the eastern acquisition area, including Butterbredt Springs and several springs farther downstream (Parcels B-9 and B-10), a complex of springs along the Sierra Nevada fault line in Alphie Canyon (Parcel A-5) and in several canyons to the east (Parcels A-4, A-6, A-7 and A-8), and along the Dove Spring canyon (Parcel D-2).

Alkali sacaton grassland (*Sporobolus airoides* herbaceous alliance) is found on alluvial flats, basins, stream terraces, swales, valley bottoms, and lower portions of alluvial slopes. Soils are non-saline to moderately saline, and usually alkaline. The vegetation type is defined by alkali sacaton comprising more than 50 percent relative cover in the herbaceous layer (Sawyer et al., 2009). Alkali sacaton is a long-lived, warm-season, tussock-forming grass that grows to over 3 feet in height. It has a broad tolerance to salinity and pH conditions. Stands usually occur in seasonally wet, alkaline areas. They usually form a mosaic with other meadow and shrubland types. In the survey area, this alliance was found as part of the Green Springs meadow complex of habitats in Kelso Valley (Parcels K-13, K-17 and K-20).

Mesquite Scrub (*Prosopis glandulosa* Woodland Alliance)

Mesquite scrub (*Prosopis glandulosa* woodland alliance) is found in sites with access to permanent underground water; deep roots tap water supplies up to 15 m (50 ft) below the surface (Sawyer et al., 2009). This vegetation type is defined as having at least 3 percent absolute cover of mesquite and is not exceeded by any other species of shrub or tree (Sawyer et al., 2009). Mesquite scrub is found on the fringes of playa lakes, river terraces, stream banks, floodplains, and sometimes the flooded margins of arroyos and washes and sand dunes, although they are generally not found in close association with rivers. Frost sensitivity creates an upper altitudinal limit for this vegetation type, and other limiting factors include flooding, shifting sand, and fires. Mesquite scrub is a sensitive vegetation type, and is quite rare in the western Mojave Desert.

Mesquite scrub was mapped in only one locality in the survey area, a seep on the eastern slope of Sugarloaf Mountain in Parcel S-5. It was a very small locality at a small spring. The understory was very limited and there were no other woody associates. Some other small examples of this alliance may be present elsewhere in the Sugarloaf parcels but could not be verified during 2012 surveys.

Pond

This vegetation type is generally associated with desert riparian forest and scrub or meadow and seeps. Pond habitat may support emergent species such as spikerush (*Eleocharis* spp.), cattails (*Typha latifolia*), and rush, as well as aquatic species such as water speedwell (*Veronica anagallis-aquatica*) and duckweed (*Lemna* sp.). Examples were observed in Parcel A-4 in the Alphie Canyon area, in Parcels K-1 and K-13 in the Kelso Valley area, and in Parcel L-1 in the Landers Meadow area.

Scalebroom scrub (*Lepidospartum squamatum* Shrubland Alliance)

Scalebroom scrub (*Lepidospartum squamatum* shrubland alliance) is found along intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans. Soils range in texture from fine to coarse and may be somewhat layered. Scalebroom scrub is defined as having more than 1 percent cover in alluvial environments (Sawyer et al., 2009). Scalebroom is a woody, broom-like shrub that grows up to more than 6 feet tall. It is well-adapted to the dynamic conditions of desert washes; seedlings become established in moist soil among older shrubs, while older plants sprout from branches and crown bases. It can become established from plant fragments dispersed downstream in scouring floods, and root crowns can sprout from deep beneath flood-deposited alluvium or on alluvial fans. Scalebroom shrubland alliance is ranked S3, meaning it is a sensitive natural community in California.

Scalebroom scrub was mapped only in the largest desert washes. It was mapped in three parcels in Jawbone Canyon (Parcels J-3, J-4 and J-5) at the edge of the active channel and a small area of scale broom was also mapped in the Dove Spring wash in Parcel D-2. Areas of scalebroom too small to map were observed along other large active channels in the eastern acquisition area.

3.1.6 Lower Mojave Mixed Woody Scrub

Lower Mojave mixed woody scrub is a collective term for the vegetation found in the survey area on low-elevation and south-facing slopes, and often in rocky sites with limited soil development. It often has a fine-textured mosaic of dominant species with no one species dominant over large areas. Typical species include white bursage, Acton's encelia, bladder sage, grape lupine (*Lupinus excubitus*), little leaf Mojave indigo bush (=indigo bush, *Psoralea arborescens* var. *minutifolius*) and green rabbitbrush.

This vegetation type was abundant in the eastern acquisition area. It was observed and mapped in Jawbone Parcel A-1, Sugarloaf Parcels S-3 and S-5, Dove Spring Parcel D-2, Alphie Canyon Parcels A-4 through A-7 and Butterbred Canyon Parcel B-7.

3.1.7 Upper Mojave Mixed Woody Scrub Vegetation Types

Upper Mojave mixed woody scrub is a category devised for this survey to describe vegetation types found at higher, cooler and moister sites than creosote bush scrub and white bursage. It includes several specific vegetation types and also is a collective term for a fine-textured mosaic without a single dominant species.

Big Sage Scrub (*Artemisia tridentata* Shrubland Alliance)

Big sage scrub (*Artemisia tridentata* shrubland alliance) is found on plains, alluvial fans, bajadas, pediments, lower slopes, valley bottoms, seasonal and perennial stream channels, and dry washes. Soils are sandy to loamy, well-drained and deep, but generally not alkaline or saturated for long periods. This vegetation type is defined by big sage having at least 2 percent absolute cover in the shrub canopy and no other species with greater cover (Sawyer et al., 2009). Shrubs may live to 50 years. Stands are sensitive to fire because shrubs do not sprout after fire.

In the survey area, big sage scrub was mapped on four parcels in the Kelso Valley area (K-4, K-5, K-9 and K-18), two parcels in the Landers Meadow area (L-1 and L-2) and the Caliente Creek area (C-1, C-2 and C-4). Typical associates in the survey area included green ephedra, bitterbrush (*Purshia tridentata*), Nevada ephedra and blackbrush.

California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)

California buckwheat scrub (*Eriogonum fasciculatum* shrubland alliance) is found on upland slopes, intermittently flooded arroyos, cannels and washes, and rarely flooded low-gradient deposits. Soils are coarse, well drained and moderately acidic to slightly saline. This vegetation type is defined by California buckwheat having more than 5 percent absolute cover in the shrub canopy; or at least 50 percent relative cover in the shrub canopy (Sawyer et al., 2009). California buckwheat is a semi-woody, many-branching shrub with roots that penetrate to nearly 5 feet. Stands do well on rocky sites and in shallow soils, and they establish well after disturbance by fire or flood or even heavy grazing.

In the survey area, California buckwheat scrub was widespread in the rocky uplands. It was mapped in Butterbredt Parcel B-7, nearly half of the Kelso Valley parcels, mainly on the eastern slopes between Kelso Valley and Butterbredt Canyon; and in Parcels C-1 and C-4 in the Caliente Creek area.

Nevada Ephedra Scrub (*Ephedra nevadensis* Shrubland Alliance)

Nevada ephedra scrub (*Ephedra nevadensis* shrubland alliance) is found on dry, open slopes, ridges, breaks with southern exposures, canyons, sides of arroyos, floodplains and washes. Soils are well drained, gravelly or rocky, and may be saline or alkaline. This vegetation type is defined by Nevada ephedra contributing at least 2 percent absolute cover in the shrub layer. Nevada ephedra is a relatively slow-growing shrub that spreads clonally and may survive for more than 100 years. Stands are common but widely scattered throughout the mid-elevations of the Mojave Desert, and the species is a component of many alliances. Nevada ephedra scrub can include a variety of shrubs such as big sage, green ephedra, bitterbrush, spiny hopsage (*Grayia spinosa*), and blackbrush. Nevada ephedra readily sprouts from the root or crown after low or moderate intensity fires.

In the survey area, Nevada ephedra was found mainly at elevations above the creosote bush-white bursage level. Only one example was mapped in the eastern acquisition area; in Parcel J-3 in the Jawbone Canyon area, one stand was observed on a north-facing slope at the top of the hills south of Jawbone Canyon. Although this species was observed occasionally in the upper Alphia Canyon and Butterbredt Canyon areas, no other large stands were mapped within the survey area.

Spiny Hopsage Scrub (*Grayia spinosa* Shrubland Alliance)

Spiny hopsage scrub (*Grayia spinosa* shrubland alliance) occupies basins, valleys, bajadas, and mountain slopes. Soils are deep and alluvial, and can vary from alkaline and calcareous clays to sandy soils free of salt accumulations and hardpans. This vegetation type is defined by spiny hopsage contributing at least 2 percent cover in the shrub canopy and with cover at least as great as any other species (Sawyer et al., 2009). Spiny hopsage is a long-lived, diffusely branched shrub that reaches nearly 5 feet in height. Stands are small but widespread in the Mojave Desert. They usually occur at elevations higher than creosote bush scrub and lower than big sage. Shrub density and cover tend to increase with stand age. The state rank of this alliance is S3, meaning it is a sensitive alliance in California.

In the survey area, spiny hopsage was mapped in only three areas—the upper slopes of the mountains in Parcel J-3, just south of Jawbone Canyon, and Kelso Valley Parcels K-1 and K-2. Additional small areas of spiny hopsage scrub may be present in the uplands in the Butterbred Canyon, Alphie Canyon, and Kelso Valley parcels.

Upper Mojave Mixed Woody Scrub

This vegetation type is a catch-all for vegetation dominated by a variety of species in a fine-textured mosaic, with no one species dominating a large area. Typical species include spiny hopsage, big sage, bitterbrush, green rabbitbrush, interior goldenbush, Cooper's box thorn (*Lycium cooperi*), horsebrush (*Tetradymia* spp.) and Nevada ephedra. This vegetation type was typically found at higher elevations in the eastern acquisition area, and on hills and slopes in the western acquisition area. It was mapped in the Dove Spring area in Parcel D-2 and in Kelso Valley in Parcel K-19.

Wedge Leaf Ceanothus Scrub (*Ceanothus cuneatus* Shrubland Alliance)

Wedge leaf ceanothus (*Ceanothus cuneatus* shrubland alliance) is found on ridges and upper slopes, on shallow, rocky and well-drained soils (Sawyer et al., 2009). This vegetation type is defined by wedge leaf ceanothus having more than 60 percent cover in the shrub canopy. Wedge leaf ceanothus is an evergreen shrub with thorny, rigid branches that grows to more than 10 feet in height. Stands are often dense, with interlocking crowns that contain considerable dead wood, or stands may be open with much bare ground. The species is an obligate seeder; that is, the plant is killed by fire, but fire breaks seed dormancy, and abundant germination takes place following fire.

This vegetation type is more a montane type than desert. Considerable wedge leaf ceanothus was observed as a co-dominant or sub-dominant on the lower slopes of Piute Mountain on the western side of Kelso Valley. This alliance was mapped only on Parcel K-9, although examples may also be present in the western Kelso Valley parcels and possibly in Caliente Creek, in areas of relatively frequent fires.

Wright's Buckwheat Scrub (*Eriogonum wrightii* Dwarf Shrubland Alliance)

Wright's buckwheat scrub (*Eriogonum wrightii* dwarf shrubland alliance) is found on flats, ridgetops, and stony slopes on granitic, sedimentary or serpentinite substrates. Soils are typically loams or clays (Sawyer et al., 2009). This vegetation type is defined by Wright's buckwheat comprising more than 50 percent relative cover in the shrub canopy. Wright's buckwheat is an intricately branched low shrub with gray leaves. Its distinctive, fine-textured, rather dark appearance is easy to discern from a distance. The state rank of this alliance is S3, meaning it is a sensitive vegetation type in California.

In the survey area, Wright's buckwheat scrub was found at the northern end of Kelso Valley, in Parcels K-1 and K-2. It may occur in areas too small to map elsewhere in Kelso Valley.

3.1.8 California Juniper Woodland Vegetation Types

California Juniper Woodland (*Juniperus californica* Woodland Alliance)

California juniper woodland (*Juniperus californica* woodland alliance) is found on ridges, slopes, valleys, alluvial fans, and valley bottoms. This vegetation type is loosely defined as California juniper having more than 3 percent absolute cover over lower shrubs; or California juniper having more than 1 percent cover as a dominant shrub or tree and no other tree species exceeding the cover of California juniper (Sawyer et al., 2009). Soils are porous, rocky, coarse, sandy or silty, and are often very shallow. California juniper is a slow-growing shrub or small tree that usually

grows to about 13 feet in height. It may appear as a single dominant tree species over a variety of smaller shrubs, including blackbrush, rabbitbrush, and California buckwheat; or may be present with other trees such as singleleaf pinyon pine or with Joshua tree. California juniper does not sprout after fire, and stands may be eliminated by repeated fire (Sawyer et al., 2009). Because California juniper is so slow-growing, stand recovery from a single fire event may take over 125 years (Sawyer et al., 2009).

Several associations were identified in the survey area within the California juniper woodland alliance. These included:

- California juniper/blackbrush woodland
- California juniper/rubber rabbitbrush woodland
- California juniper/California buckwheat woodland
- California juniper-Joshua tree/blackbrush woodland

In the survey area, California juniper woodland and its associations were mapped in the upper portion of Parcel B-4 in the Butterbredt area, Parcels C-1 and C-4 in the Caliente Creek area, and Parcels K-12, K-13, K-16, K-18, K-19, and K-20 in the Kelso Valley area.

3.1.9 Joshua Tree Woodland Vegetation Types

Joshua Tree Woodland (*Yucca brevifolia* Woodland Alliance)

Joshua tree woodland (*Yucca brevifolia* woodland alliance) is found on gentle alluvial fans, ridges, gentle to moderate slopes with coarse sands, very fine silts, gravel or sandy loams. This vegetation type is defined as having Joshua tree having at least 1 percent cover, with juniper or pine species having less than 1 percent absolute cover in the tree canopy (Sawyer et al., 2009). Joshua trees are relatively long-lived plants that typify the Mojave Desert region. Vegetative reproduction is the most common method of propagation, and clonal, multi-stemmed clusters of Joshua trees may be seen throughout its range. There is a high degree of stand-to-stand variation in structure and species composition in Joshua tree woodland (Sawyer et al., 2009); Joshua trees can grow over an open canopy of shrubs or grasses comprised of many species. The fire resistance of Joshua trees increases with age because the thick mat of dried leaves along the trunk decreases with age, and the corky bark of older trunks serves as insulation. Plants respond to fire by sprouting after low-severity fires, but high-severity fires may kill Joshua trees.

Many expressions of Joshua tree woodland were observed over a considerable range of elevation and soil conditions in the survey area:

- Joshua tree/goldenbush woodland
- Joshua tree/white bursage woodland
- Joshua tree/big sage woodland
- Joshua tree/blackbrush woodland
- Joshua tree/Nevada ephedra woodland
- Joshua tree/rubber rabbitbrush woodland
- Joshua tree/California buckwheat woodland
- Joshua tree/creosote bush woodland
- Joshua tree/ lower Mojave mixed woody scrub woodland
- Joshua tree/ upper Mojave mixed woody scrub woodland

These vegetation types were found in nearly all of the Dove Spring, Butterbredt, and Alpie Canyon parcels. They were mapped in 12 out of the 20 Kelso Valley parcels, in the valley and

lower slopes on the western side, and far into the uplands on the eastern side of the valley. Joshua tree woodland was mapped in only one Jawbone Canyon parcel (J-5) and was absent from the Sugarloaf, Caliente Creek and Landers Meadow parcels.

3.1.10 Oak Forest and Woodland Vegetation Types

Blue Oak Woodland (*Quercus douglasii* Woodland Alliance)

Blue oak woodland (*Quercus douglasii* woodland alliance) is found on hillsides, valley bottoms, and rocky outcrops, in shallow, rocky soils with low fertility. The vegetation type is defined as blue oak having more than 50 percent relative cover in the tree canopy (Sawyer et al., 2009). Blue oak is a drought- and flood-tolerant tree that can sprout after cutting or burning (Sawyer et al., 2009). Blue oak woodland establishes in varied stands and can form savannas or woodlands with a variety of co-dominants; on the east side of the Sierra Nevada, typical co-dominants would include California juniper, and interior live oak (*Quercus wislizenii*).

The *Quercus douglasii* woodland alliance was found in a single area at the southern end of Kelso Valley in Parcel K-20. Fire frequency may limit the extent of this vegetation type in Kelso Valley. It also was mapped in all three of the Caliente Creek parcels, where it was fairly widespread.

Interior Live Oak Woodland (*Quercus wislizenii* Woodland Alliance)

Interior live oak woodland (*Quercus wislizenii* woodland alliance) is found on upland slopes, valley bottoms, and terraces where soils are shallow and moderately to excessively drained. This vegetation type is defined as interior live oak having more than 50 percent relative cover and 15 percent absolute cover in the tree canopy (Sawyer et al., 2009). Interior live oak is a slow-growing evergreen tree that can live for 200 years with root systems that can be much older (Sawyer et al., 2009). This species is well adapted to fires with relatively thick bark on mature trees. Throughout its wide range in California, interior live oak can form savannas or woodlands with a variety of hardwood and conifer species.

In the survey area, depending on site conditions, interior live oak co-dominated with singleleaf pine, gray pine (*Pinus sabiniana*) and canyon live oak (*Quercus chrysolepis*). Interior live oak appeared to be the predominant vegetation for some years following a fire, when it sprouts abundantly and assumes dominance; as the pines become larger they overtop the interior live oak and become the dominant species until the next fire cycle. Interior live oak woodland alliance was mapped in several parcels on the western side of Kelso Valley (Parcels K-8, K-9, K-12, K-15, and K-16), as well as several parcels in the Caliente Creek area.

3.1.11 Pine Forest and Woodland Vegetation Types

Gray Pine Woodland (*Pinus sabiniana* Woodland Alliance)

Gray pine (or ghost pine; *Pinus sabiniana* woodland alliance) is found on streamside terraces, valleys, slopes, and ridges. This vegetation type is defined as gray pine having more than 10 percent absolute cover and dominant in the tree canopy (Sawyer et al., 2009). It is found on soils that are shallow, often stony, infertile, and moderately to excessively drained. Gray pine woodland occupies rough foothill slopes intermixed with stands of chaparral. Gray pine is a drought tolerant conifer that is fire sensitive despite its relatively thick bark on mature individuals (Sawyer et al., 2009). Although found at elevations as low as 1000 ft, this vegetation type is found at higher elevations on the eastern side of the Sierra Nevada, where it grows along stream terraces below the conifer belt. On the western slopes of the Sierra Nevada, gray pine woodland

occupies a broad belt at lower elevations. It often appears as an emergent tree over a chaparral understory, but may also occur as an open savanna over an herbaceous understory.

In the survey area, gray pine woodland was found in all three of the Caliente Creek parcels, and in two parcels (K-9 and K-16) on the western side of Kelso Valley. In Parcel K-9, this alliance forms a riparian strip in some deeper alluvial soil along the terraces of Water Canyon as it descends into Kelso Valley.

Gray Pine-Interior Live Oak Woodland (*Pinus sabiniana-Quercus wislizenii* Woodland Association)

This vegetation type is found in similar ecological situations as the preceding, but consists of a denser canopy co-dominated by gray pine and interior live oak. This vegetation type was mapped on the steep western slopes of Piute Mountain in the Caliente Creek drainage, in Parcels C-2 and C-4.

Jeffrey Pine Forest (*Pinus jeffreyi* Forest Alliance)

Jeffrey pine forest (*Pinus jeffreyi* forest alliance) is found on raised stream benches, slopes, ridges and plateaus. Soils are typically shallow and infertile. The vegetation type is defined as Jeffrey pine having more than 5 percent absolute cover in the tree cover, with other conifer species having no more than 5 percent cover (Sawyer et al., 2009). In the region of the survey area Jeffrey pine forest is typically found at the higher elevations in the Piute Mountain area. Jeffrey pine is a conifer that attains a height of nearly 200 feet and an age of 500 years (Sawyer et al., 2009). Trees are shade tolerant and grow most rapidly in full sunlight. This vegetation type is typically an early- to mid-seral (successional) species on productive sites, eventually being replaced by more shade-tolerant species under long fire intervals. The amount of tree cover varies in Jeffrey pine forest. Jeffrey pines are moderately resistant to fire, although sensitivity varies with fire intensity, age of tree, and season.

In the survey area, Jeffrey pine forest was found at the highest elevations in the Piute Mountain, in the highest-elevation parcels (K-8 and K-15) on the western side of Kelso Valley, and in all three parcels (L-1 through L-3) surrounding Landers Meadow. Associated tree species included singleleaf pinyon pine, interior live oak, and Oregon oak (*Quercus garryana* var. *breweri*).

Singleleaf Pinyon Pine Woodland (*Pinus monophylla* Woodland Alliance)

Singleleaf pinyon pine woodland (*Pinus monophylla* woodland alliance) is found on alluvial fans, pediments, slopes, ridges, canyons and ravines. This vegetation type is defined as singleleaf pinyon pine having more than 5 percent absolute cover in the tree canopy (Sawyer et al., 2009). Soils are typically well drained. Singleleaf pinyon pine is a slow-growing conifer that attains a height of 40 feet and an age of 800 years. This vegetation type is typically found at higher elevations in desert mountains and in desert transitions on the eastern side of the Sierra Nevada, where it is believed to be relictual; this and other conifer alliances (such as California juniper) were probably much more widespread in the Mojave Desert during and following the Pleistocene. Singleleaf pinyon pine does not sprout after a fire, and repeated, even moderate, surface fires remove stands. Singleleaf pinyon pine is often co-dominant with California juniper and a variety of shrubs typical of the upper mixed Mojave Desert scrub vegetation type.

In the survey area, singleleaf pinyon pine woodland was found in one of the Caliente Creek parcels (C-4) and the upper elevation rim of Kelso Valley on the eastern (Parcel K-4) and western slopes (Parcels K-12 and K-16).

3.2 Special-status Plants

As noted in the methods section, Appendix A summarizes the name, status, habitat and potential to occur of 52 special-status species considered in this study on the basis of CNDDDB and CNPS queries. Of these, 39 species were considered to have at least moderate potential to occur in the project area. This large number of potentially-occurring species is the result of the considerable geographic, elevational, and habitat range encompassed by the project area. **Figure 3** shows reported (by others) and observed (during 2012 field surveys) special-status plant records within 5 miles of the survey area. **Table 3** presents a parcel-by-parcel assessment of potential to occur for these species. **Appendix E** presents California Natural Diversity Database field forms for special-status plant observations in 2012.

The following paragraphs present information on the appearance, status, habitat, distribution, and likely occurrence of the 39 species deemed to have at least moderate potential to occur within the EKCA project area. Ten special-status plants were observed in the survey area in 2012 or have been reported previously from project parcels.

Allium shevockii (Spanish Needle onion)

Spanish Needle onion has no state or federal listing status, but has a CRPRof 1B.3, meaning it is rare, threatened, or endangered in California and elsewhere, but not very endangered in California (CNPS, 2012). It is designated by both BLM Bakersfield and Ridgecrest Resource areas as sensitive (BLM, 2011).

Spanish Needle onion is a bulb-forming perennial herb in the onion family (Alliaceae; formerly within the lily family, Liliaceae) that is 4 to 9 inches tall. Its leaves are cylindrical, and the inflorescence is a head-like cluster of 12-30 flowers (Baldwin et al., 2012). The perianth (sepal and petal) parts are white to green at the base, and deep maroon at the recurved tips. The flowering period for Spanish Needle onion is from May to July (CNPS, 2012; Baldwin et al., 2012). Habitat for this species is typically pinyon and juniper woodland and upper montane coniferous forest. It is found on clay, on talus or loose, deep gravel, often at the edge of rock outcrops. It is reported from dark-colored andesite or granitic rock, as well as from metamorphic outcrops. Known occurrences range in elevation from 2,800 to 8,200 feet.

Spanish Needle onion is restricted to Kern County. It is known from ten localities, from Spanish Needle Peak southward to Horse Canyon north of Highway 58 (CNDDDB, 2012b; CCH, 2012). It was found in the North Sky River Wind Farm project area in 2010 (GANDA, 2010), and several records are reported from tributary canyons in Jawbone Canyon in the vicinity of Blue Point where it is found on dark metamorphic rock.

We visited CNDDDB Occurrence 7 nearest Blue Point twice during 2012 surveys. In March a small colony of vegetative *Allium* (recognizable from the onion odor when bruised slightly) was found on a tiny clay pocket in a rock outcropping. It had been grazed by herbivores; herbivory no doubt intensified as the dry winter and spring progressed. No sign of the colony was found during a subsequent visit in early May. No obviously suitable metamorphic rock outcrop habitat was observed on any of the eastern acquisition parcels, and the known populations are generally at higher elevations than these. Suitable habitat could be present in the pinyon-juniper and upper montane conifer forest habitat at the higher elevations in some of the western parcels, such as Parcels K-8, -12, -15 and -16 in the upper elevations of the Kelso Valley area and Parcel L-3 in Landers Meadow.

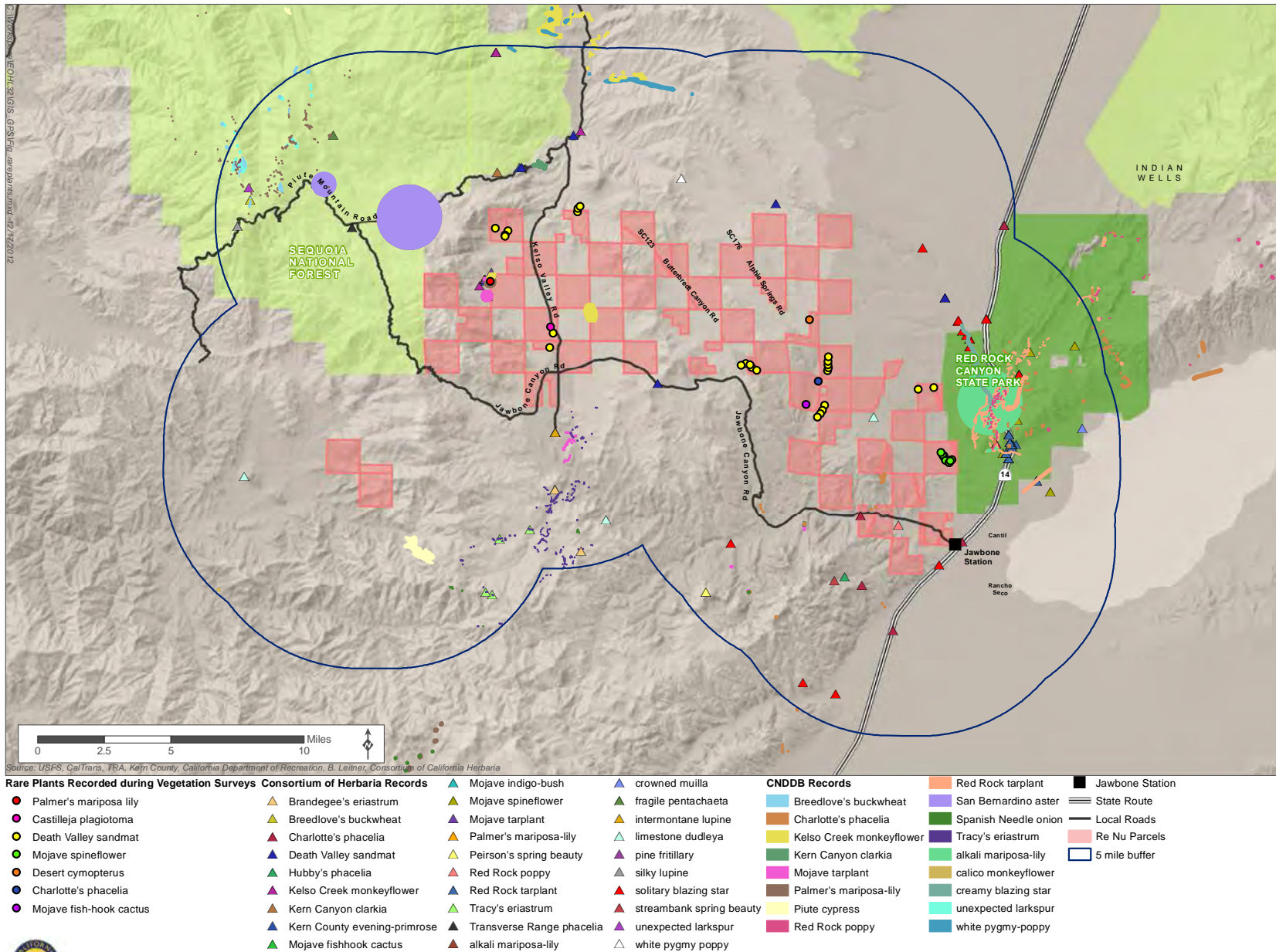


Figure 3 Special-status Plants in and near the Eastern Kern County Acquisition Project

Eastern Kern County Acquisition Project Botanical Resources Report



WESTERN PARCELS	PARCEL GROUP AND PARCEL CODE																																			
	Parcel Group	KELSO VALLEY																				LANDERS MDW			CALIENTE CREEK											
	Parcel Code	K-01	K-02	K-03	K-04	K-05	K-06	K-07	K-08	K-09	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-01	L-02	L-03	C-01	C-02	C-04									
	Notes: 1. Species in Appendix A considered "unlikely to occur" are not included here; 2. "Moderate", "high" and "present" are indicated; however, many species have low potential to occur throughout study area	153-080-02	153-080-08	153-070-03	153-070-02	153-080-05	153-080-04	153-070-07	153-030-05	153-100-03	153-090-01	153-090-03	153-100-13	153-100-10	153-090-05	153-051-03	153-120-02	153-120-04	153-110-01	153-110-03	153-120-07	153-012-03	153-012-05	153-012-07	442-020-20	442-010-10	442-030-01									
Species	Habitat (L)	CNPS Rank																																		
<i>Allium shevockii</i>	Metamorphic outcrops, talus, PJW, UMCF	1B.3							M			M			M	M							M													
<i>Androsace elongata</i> ssp. <i>acuta</i>	Mdws and seeps, many communities	4.2								M						M									H	H	H									
<i>California macrophylla</i>	Clay flats, CMWdld, grasslands	1B.1																																		
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Mdws, vernal moist places, YPF, Chap	1B.1							H	P		H			H	H						P	P													
<i>Calochortus striatus</i>	Alkaline Mdws, moist CBS	1B.2											P				M				H															
<i>Camissonia kernensis</i> ssp. <i>kernensis</i>	Sandy slopes, flats, sagebrush scrub or JTW	4.3	M	H	H	H	H	H	M	H	H	H	H	H	M	M	H	H	M																	
<i>Canbya candida</i>	JTW, MDS, sandy places	4.2	M	M	M	H	H	H		H	H	H	H	H	M	M	H	H	M																	
<i>Castilleja plagiotoma</i>	Dry sagebrush scrub, pinyon woodland	4.3								M			P			M	H			H	P	P														
<i>Chamaesyce vallis-mortae</i>	MDS; dry, sandy places	4.2	P	P	H	P	H	H		H	H	M		P	P	H	P	P	H	H	P															
<i>Chorizanthe spinosa</i>	Sand or gravel	4.2																																		
<i>Clarkia xantiana</i> ssp. <i>parviflora</i>	Chap, VFGrS, Cis Wldd, GBS, dry slopes, sandy or rocky	4.2	M	M	M	M					M					M					M	M	M													
<i>Claytonia parviflora</i> ssp. <i>grandiflora</i>	Vernal moist, often disturbed sites in CMWdld	4.2																						M	M	M										
<i>Cymopterus deserticola</i>	Sandy soils, JTW, MDS	1B.2																																		
<i>Deinandra arida</i>	Clay, volcanic tuff; washes, edge of springs, seeps, washes	1B.2																																		
<i>Deinandra mohavensis</i>	Moist sites, openings in chaparral, desert scrub, wldd	1B.2	M								H		M				H																			
<i>Delphinium inopinum</i>	UMCFrs, rock outcrops, metamorphic substrates	4.3							M							M							M													
<i>Dudleya abramsii</i> ssp. <i>calicola</i>	Open, rocky, granite or limestone outcrops in Chap., PJW	4.3	M	M				M	M	M	M	M	M		M	M			M			M														
<i>Eriastrum tracyi</i>	Open areas, shale or alluvium, Chap or CMWdld	3.2						M	M		M			M	M	M			M	M	M			M	M	M										
<i>Eriogonum breddlovei</i> var. <i>breddlovei</i>	PJW, UMCF; carbonate, quartzite	1B.2																				M	M	M												
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i>	MDS, desert washes, flats slopes; tuff	1B.2																																		
<i>Fritillaria pectorum</i>	Shaded granitic slopes in chap, coniferous forest, PJW	4.3							M			M			M	M							M													
<i>Hesperocyparis nevadensis</i>	PJW, oak woodland, Chap., CCCF	1B.2																																		
<i>Layia heterotricha</i>	CMWdld, JTW, VFGrS, alkaline and clay soils	1B.2																			M															
<i>Lupinus pusillus</i> var. <i>intermontanus</i>	Great basin scrub, open, sandy areas	2.3				M	M			M	M									M																
<i>Mentzelia eremophila</i>	Canyons, rocky slopes and washes, roadsides, CBS	4.2																																		
<i>Mentzelia tridentata</i>	CBS, rock outcrops and washes	1B.3																																		
<i>Mimulus pictus</i>	Bare, sunny, shrubby areas, granite outcrops, forests, wldd	1B.2																								H	H	H								
<i>Mimulus shevockii</i>	Alluvial fans, dry streamlets, generally on granitic soils	1B.2	H	H	M	M	H	H	M		P	H	M	H	P		H	M	H	H	M															
<i>Monardella linoides</i> ssp. <i>oblonga</i>	Chap, conifer wldd to forest, gravelly, dry slopes, flats	1B.3							M				M			M	M																			
<i>Munilla coronata</i>	Open desert scrub, JTW, PJW	4.2	M	M	M	M	M	M		M	M		M	M			M	M	M	M																
<i>Navarretia setiloba</i>	CMWdld, PJW, VFGrS, red clay, gravelly loam	1B.1																								M	M	M								
<i>Nemacladus gracilis</i>	CMWdld, VFGrS, sandy or gravelly soil	4.3																								H	H	H								
<i>Orthotrichum shevockii</i>	Underhangs of granitic rocks in LMCF, JTW	1B.3																				H	H													
<i>Pentachaeta fragilis</i>	Grassy areas, chaparral, arid woodland, conifer forest	4.3							M						M	H		M	M	H	M	M	M	M	M	M	M	M								
<i>Phacelia excilis</i>	Sandy, rocky slopes, flats, Mdws; MCFrs, pebble plains	4.3							M	M		M			M	M					M	M	M													
<i>Phacelia nashiana</i>	Sandy to rocky, granitic east-facing slopes, JTW, PJW	1B.2																																		
<i>Ribes menziesii</i> var. <i>exoderme</i>	Chap., CMWdld, forest openings	1B.2																									M									
<i>Sclerocactus polyancistrus</i>	Limestone hills, canyons, alluvial slopes; CBS, JTW	4.2																																		
<i>Streptanthus cordatus</i> var. <i>piutensis</i>	BUFRs, CCCF, PJW, Chap, cypress stands	1B.2																										M								
<i>Symphotrichum defoliatum</i>	Meadows, seeps, marshes; CSS, CMWdld, LMCF	1B.2																			P	P														

***Androsace elongata ssp. acuta* (California androsace)**

California androsace has no state or federal status. Its CRPR is 4.2, meaning it is uncommon but fairly endangered in California. California androsace is an annual herb in the primrose family (Primulaceae). Only 2 to 8 cm in height, this slender, inconspicuous and early-flowering plant is easily overlooked. The hairy, pointed and tapered leaves are in a basal rosette; and flowers are borne in one or more peduncles, with hairy, red-tipped calyces that are longer than the inconspicuous white petals. California androsace flowers from February to May.

California androsace is found in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, pinyon and juniper woodland. Its microhabitat is meadows and seeps. Some records report it from north-facing slopes and clay substrate (CCH, 2012). It is reported as being highly localized. Its elevation range is 0-6,400 feet.

This species ranges from Oregon to Baja California. CNPS reports the species from 52 quadrangles in 19 counties, mostly west of the Sierra Nevada crest (CNPS, 2012). CCH (2012) reports 34 records from Kern County, in the Tehachapi Mountains, the Southern Sierra Nevada foothills, and the southern High Sierra Nevada. Specific localities are reported from Woolstaff Creek, Kern Canyon, Breckenridge Mountain Road, north of Tehachapi Pass, Oak Creek Canyon, Glennville, and Keene Station. These records are to the north, west and south of the survey area. The western portion of the survey area is likely to support this plant in areas of suitable habitat, particularly the Caliente Creek parcels (C-1 through -4). Less likely are the meadows and seeps in the higher western elevations of the Kelso Valley parcels (K-9 and -16), as these are higher in elevation and somewhat outside the known range for the species.

***Calochortus palmeri var. palmeri* (Palmer's mariposa-lily)**

Palmer's mariposa-lily has no state or federal status, but has a CRPR of 1B.2, meaning it is rare and endangered in California and is fairly endangered there. It is considered by both BLM Bakersfield and Ridgecrest field offices to be a sensitive species.

Palmer's mariposa-lily is a perennial herb in the lily family (Liliaceae). This plant grows to a height of 30 to 60 cm, with linear basal leaves that wither by flowering, and a branched flower stem bearing one to six erect, widely bell-shaped white to lavender flowers. The base of the petals may be brown-spotted, with a round nectary that is densely surrounded by knobby, yellow hairs. Flowering is from May to July.

This species is found in yellow pine forest and chaparral, in meadows, streamlets and vernal moist sites. The elevation range of known sites is 3,300 to 7,900 feet (CNPS, 2012).

Palmer's mariposa-lily is known from the mountains of Southern California, including the Inner Coast Range, Transverse Range, San Bernardino Mountains and southern Sierra Nevada, from Kern County south to San Bernardino County and west to San Luis Obispo and Los Angeles counties. CNPS reports the species from 81 occurrences on 41 quadrangles in 7 counties (CNPS, 2012). CNPS reports 29 of these occurrences from Kern County.

One record (CNDDDB Occ. 10) is a non-specific locality reported by Twisselmann from Landers Meadow. Parcels L-1 and L-2 have extensive meadows and this species is assumed to be present on both. Another (CNDDDB Occ. 66) is reported from the eastern slopes of the Piute Mountains in Esperanza Canyon, in the NE quarter of Section 18, adjacent to Parcel K-9. This site was visited on May 8, 2012 and the population verified. We also found a few plants within Parcel K-9 on a

gravelly flat adjacent to the drainage in Esperanza Canyon. These appeared to be outliers in drier habitat than is usually reported. Based on the presence of small streams and the likely presence of associated small meadows on many of the western parcels in Kelso Valley (Parcels K-8, K-12, K-15 and K-16), Palmer's mariposa-lily was deemed to have high potential to occur.

***Calochortus striatus* (Alkali mariposa-lily)**

Alkali mariposa-lily has no state or federal listing status, but has a CRPR of 1B.2, meaning it is rare, threatened or endangered in California and elsewhere, and endangered in California (CNPS, 2012). It is listed as sensitive by the BLM Bakersfield and Ridgecrest field offices (BLM, 2011).

This species is a perennial, bulb-forming member of the lily family (Liliaceae). As is typical for the genus, this species has a basal rosette of linear leaves that typically wither early. One to five flowers are borne in an umbel-like inflorescence. The flower is open and bell-shaped, with white to lavender petals and distinctive purple veins. Alkali mariposa-lily flowers from April to June.

This species is found in chaparral, chenopod scrub, Mojavean desert scrub, and meadows and seeps, in alkaline and usually clay soils in meadows and ephemeral drainages. Its reported elevation range is from 200 to 5,300 feet (CNPS, 2012).

Alkali mariposa-lily ranges from the southern San Joaquin Valley eastward through the southern Sierra Nevada and southward through the western Mojave Desert. It is reported from Tulare and Inyo counties through Los Angeles, Kern and San Bernardino counties. CNDDDB reports more than 100 occurrences of this species (CNDDDB, 2012b). There are several localities near and in the survey area; one record (CNDDDB Occ. 35) is reported from Green Spring, in Parcel K-13 in Kelso Valley. Another (CNDDDB Occ. 36) is a few miles southeast of Jawbone Canyon.

We visited the Green Spring locality in March, April and May 2012 but found no mariposa-lily. We also visited CNDDDB Occurrence 36 (2 miles south of Ricardo, one-half mile west of Highway 14) in May, and no alkali mariposa-lily was found in this small but very distinctive patch of salt grass and rushes. This plant would be difficult to detect unless flowering, because its narrow, grass-like leaves would be obscured by the dense meadow vegetation. Based on the presence of extensive alkali meadow vegetation, this plant is likely to occur in other parcels in Kelso Valley (K-17 and K-20) as well as the known occurrence at Green Spring (K-13). Smaller areas of potentially suitable habitat were found in association with springs in the eastern acquisition area: at the spring at the upper end of Water Canyon in Parcel J-5 in Jawbone Canyon; at springs and seeps in Alphie Springs Canyon (Parcels A-4 and A-5); at the springs and seeps in the vicinity of Butterbredt Springs (Parcels B-9 and B-10); and areas in one parcel in the Dove Spring area (Parcel D-2).

***Camissonia kernensis* ssp. *kernensis* (Kern County evening-primrose)**

Kern County evening-primrose has no state or federal listing status, but has a CRPR of 4.3, meaning it is uncommon in California but not very endangered in California (CNPS, 2012).

This species is an herbaceous annual in the evening-primrose family (Onagraceae). It is a compact plant typically 5 to 15 cm in height with dense, spreading hairs on the stem and leaves. Narrow, slightly serrate leaves are clustered at the base of the plant. Flower petals are yellow, large (8 to 18 mm in length), and with large basal spots. Its flowering period is from March to May. Kern County evening-primrose is found in sagebrush scrub, Joshua tree woodland,

chaparral, and pinyon-juniper woodland, generally in sandy slopes and flats, often on granitic substrate. The elevation range for this species is 2,600 to 7,000 ft (CNPS, 2012).

Kern County evening-primrose is limited mostly to Kern County, although there are some records in Santa Barbara County. CCH has over 100 collection records for this species (CCH, 2012). Two occurrences are near the project area; one is in Esperanza Canyon, less than a quarter-mile west of Parcel K-9, while the other is on Harris Grade, about two miles north of Kelso Valley and three miles east-northeast of Landers Meadow (CCH, 2012). Although this species was not encountered during 2012 field surveys, habitat is suitable for this species in many of the parcels in the Kelso Valley, Butterbredt, upper Alphie Canyon and Dove Spring areas.

***Canbya candida* (White pygmy-poppy)**

White pygmy-poppy has no state or federal listing status, but has a CRPR of 4.2, a watch list (CNPS, 2012). White pygmy-poppy is a tiny herbaceous annual in the poppy family (Papaveraceae). Only 1-3 cm in height, this plant forms a tuft a few centimeters in diameter consisting of fleshy leaves surmounted by tiny white flowers, each on a single peduncle (stem). It flowers from April to May. White pygmy-poppy grows on gravelly and sandy soils formed over granite rock in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland. Its known elevation range is 1,900 to 4,900 feet. Like many desert annuals, it can grow abundantly in years of above-average rainfall, and little or not at all during dry years.

White pygmy-poppy is known from the Mojave Desert from Inyo County south to San Bernardino and Los Angeles counties. In Kern County in the vicinity of the project this species has been reported from Dove Spring Canyon and 9 miles north of Ricardo, and from a number of locations in the North Sky River Wind Farm near Jawbone Canyon Road as it descends into Kelso Valley, apparently near some of the Kelso Valley parcels.

Suitable granitic soil habitat for white pygmy-poppy was observed in some parcels in the Jawbone Canyon, Sugarloaf, Dove Spring, and upper Alphie Canyon areas, and in many parcels in the Butterbredt and Kelso Valley areas. Although it was not observed in 2012, it is likely to appear in years of above-average precipitation.

***Castilleja plagiotoma* (Mojave paintbrush)**

Mojave paintbrush has no state or federal listing status, but has a CRPR of 4.3, a watch list (CNPS, 2012). Mojave paintbrush is an herbaceous perennial in the broomrape family (Orobanchaceae; formerly in the snapdragon family, Scrophulariaceae), a family of parasitic and partially parasitic plants. This gray-green, short-hairy plant reaches 30 to 60 cm in height, often becoming dark reddish with age. The flowers and bracts are white-woolly and yellow in color, blooming from April to June. Mojave paintbrush grows in dry sagebrush scrub and pinyon woodland at elevations from 950 to 8,200 feet.

Mojave paintbrush grows in the Mojave Desert and coastal ranges from Fresno and San Benito counties southward to Riverside and San Bernardino counties and coastward to San Luis Obispo and Ventura counties (CCH, 2012). In Kern County, the species is known from Oak Canyon west of Mojave, north of Highway 58 near Sand Canyon. In the vicinity of the project area, it was observed in the North Sky River Wind Farm and it is reported from Landers Meadow (CCH, 2012).

This species was therefore assumed to be present in Parcels L-1 and L-2 in Landers Meadow, where extensive areas of suitable habitat are present. It was observed near Green Spring in Kelso Valley, on Parcel K-13. Several hundred plants were found growing under and through rubber rabbitbrush at the margins of alkaline meadows dominated by rushes. Similar habitat was observed in Parcels K-9, K-16, K-17 and K-20, where it was considered likely to occur.

***Chamaesyce vallis-mortae* (Death Valley sandmat)**

Death Valley sandmat has no state or federal listing status, and its CRPR 4.2, a watch list (CNPS, 2012). It is a prostrate perennial herb in the spurge family (Euphorbiaceae). It is distinctive in being white-tomentose, with yellow-green involucre glands and white appendages. This plant flowers from May through December. Death Valley sandmat is found in Mojavean Desert scrub, in sandy or gravelly places. Its elevation range is below 4,800 feet (CNPS, 2012).

Death Valley sandmat is limited to the western Mojave Desert, in Inyo, Kern and San Bernardino counties, from the vicinity of Owens Lake to northeast of Barstow. There are several records from the close vicinity of the project area, including Red Rock Canyon, Kelso Valley, Kelso Creek, the Jawbone area, near Dove Spring and Dove Well (CCH, 2012).

In May 2012, we mapped Death Valley sandmat in seven parcels in Kelso Valley (K-1, K-2, K-4, K-13, K-16, K-17, and K-20), two in Butterbrecht Canyon (B-9 and B-10), three in Alphia Canyon (A-4, A-6 and A-7), one in Dove Spring (D-4), and one parcel in the Sugarloaf area (S-1). It is likely to occur in nearly all of the lower-elevation Kelso Valley parcels and all of the parcels in the eastern acquisition area.

***Chorizanthe spinosa* (Mojave spineflower)**

Mojave spineflower has no state or federal listing status, but has a CRPR of 4.2, a watch list (CNPS, 2012). This is an herbaceous annual plant in the buckwheat family (Polygonaceae). It is prostrate, generally less than 10 cm in height, and spreading to 80 cm under favorable conditions. Leaves are tomentose on the underside. The involucre are 4 to 5-toothed or ribbed and the involucre awns are long, stiff, and straight. The awns are so thick that previous year's growth persists over the winter and can be seen as a skeleton the next year. The flowering period for Mojave spineflower is April through July. Its habitat is Mojavean Desert scrub, in sandy or gravelly places. Its elevation range is from 50 to 4,800 feet (CNPS, 2012; CNDDDB, 2012b).

Most Mojave spineflower is reported from Kern, Los Angeles and San Bernardino counties, although CCH reports some records from western Fresno County as well. CCH also reports 11 localities from Red Rock Canyon State Park, mainly east of Highway 14 (CCH, 2012). We observed Mojave spineflower in several locations within Parcel S-6. In many instances, the previous year's skeletons of Mojave spineflower were the first indication of the population, and the 2012 plants were both smaller and less numerous. The plants were most often seen on lower bajada slopes near small drainages, on fine-textured soils with a gravelly surface. The soils in these areas were mapped as Cutterbank association, soils formed from granitic alluvium in former lakebeds. Suitable habitat appeared to be present in a number of the eastern parcels with Cutterbank soils (Parcels J-2, J-4 and J-5 and S-1 through S-5).

***Clarkia xantiana* ssp. *parviflora* (Kern Canyon clarkia)**

Kern Canyon clarkia has no state or federal listing status, but has a CRPR of 4.2, a watch list (CNPS, 2012). It is an annual herb in the evening-primrose family (Onagraceae). It is a slender,

erect plant, growing to 80 cm in height with reflexed buds, lavender to red-purple, lobed and clawed petals 6 to 12 mm in length. The stigma does not exceed the anthers. Kern Canyon clarkia flowers from May to June. This species is found in chaparral, valley and foothill grassland, cismontane woodland and Great Basin scrub on sparsely vegetated dry slopes in sandy and rocky substrates with varying exposures. The elevation range for the species is reported variously as 2,400 to over 11,000 feet (CNDDDB, 2012b) but most records in Kern County are below 5,000 feet (CCH, 2012).

Kern Canyon clarkia is reported from about 20 to 30 localities in Kern, Tulare, Inyo and Los Angeles counties, with most occurrences centered on the Kern River Canyon and its tributaries. The nearest record to the survey area is on Piute Mountain Road about 3.5 miles west of Kelso Valley Road. This record is near the Landers Meadow parcels and those in Kelso Valley, and is located in habitat similar to many of the parcels in this area. This species was considered to have a moderate potential to occur in the more northern of the Kelso Valley parcels and the Landers Meadow parcels, all which are slightly out of the known range for the species.

***Claytonia parviflora* ssp. *grandiflora* (Streambank spring beauty)**

Streambank spring beauty has no state or federal listing status, but has a CRPR of 4.2, a watch list (CNPS, 2012). This is an annual herb in the miner's lettuce family (Montiaceae, formerly within the Portulacaceae). It is a small plant, spreading to erect, 1 to 30 cm in height. The basal leaves are narrow, and the cauline (stem) leaves may be fused into a disk. The flowers are 4 to 6 mm in long, white or light pink and the seeds are smooth and shiny with a white appendage. Its flowering period is May to July.

As the name suggests, streambank spring beauty grows in vernal moist, rocky, often disturbed sites in cismontane woodlands (Baldwin et al., 2012). Its elevation range is reported variously as from 500 to 4,800 feet.

Streambank spring beauty is a plant of the Sierra foothills, ranging from Butte County in the north to Kern County in the south. Most records are in the mid-Sierra, with a few outlying records in the desert mountains such as the Panamint, Granite, and Nelson ranges. CNPS reports occurrences from 30 quadrangles (CNPS, 2012). The Caliente Creek parcels are near the southern end of the species' range; one locality, reported from the hillsides of Caliente Canyon, notes poetically that the species, when flowering, covered the hillsides, giving the appearance of light snowfall (CCH, 2012). Another record by Mary DeDecker is described as Aqueduct Road near Water Canyon. This record is in an area lacking cismontane woodland and has very limited vernal moist habitat. Thus, the parcels with greatest potential to support this species are the Caliente Creek parcels (C-1 through -4), although Parcel J-5 which includes Water Canyon was also considered to have moderate potential to support this species.

***Cymopterus deserticola* (Desert cymopterus)**

Desert cymopterus has no state or federal status, but has a CRPR of 1B.2, meaning it is rare, threatened or endangered in California and elsewhere, and fairly endangered in California (CNPS, 2012). It is considered a Sensitive species by the BLM Ridgecrest field office (BLM, 2011). It is a perennial herb in the carrot family (Apiaceae). Desert cymopterus is a low-growing, glabrous plant with pinnately dissected leaves and dark purple flowers in dense heads. It flowers from March to May. Desert cymopterus is found in fine to coarse, loose sandy soils of old dunes in Joshua tree woodland and Mojavean desert scrub. The elevation range for the species is 2,000 to 5,000 feet.

Desert cymopterus is found in the western Mojave Desert from Kern, Los Angeles and San Bernardino counties. CNDDDB reports a total of 79 occurrences for the species (CNDDDB, 2012b). Most records are in the vicinity of Edwards Air Force Base in Kern County. The nearest records to the project area are in the vicinity of California City and Cuddeback Dry Lake.

Since the project area is almost 20 miles north or west of the nearest known records, an observation of desert cymopterus in Parcel A-3 was unexpected. One colony consisting of 25 individuals in vegetative condition was observed in April 2012, identified by Denise LaBerteaux, a botanist familiar with the species and the genus. We returned to look for flowering individuals in May 2012, but the plants seen earlier had been grazed to the ground. Because this was a range extension of the known range and a small population, this species was judged to have only moderate potential to occur elsewhere in loose, sandy soils in the eastern acquisition area parcels. The most likely suitable habitat was observed in Jawbone Canyon Parcel J-5, Sugarloaf Parcel S-3, and Alpie Canyon A-7.

***Deinandra arida* (Red Rock tarplant)**

Red Rock tarplant is state-listed as rare and has a CRPR of 1B.2, meaning it is rare, threatened and endangered in California and elsewhere and is fairly threatened in California (CNPS, 2012). It is listed by the BLM Ridgecrest field office as a sensitive species (BLM, 2011). Red Rock tarplant is an annual herb in the sunflower family (Asteraceae). It is an erect, glandular plant typically growing to 20 to 80 cm in height. Its leaves are toothed to entire, bristly-hairy and glandular. The yellow flower heads are grouped in branched panicles, the bracts below the head not overlapping the involucre, the phyllaries both hairy and glandular. The disk flowers generally have no pappus. Red Rock tarplant flowers from April to November. This species is found Mojavean desert scrub in washes and canyon slopes at the edges of springs and seeps, and typically on clay or volcanic tuff. The elevation range for the species is 1,000 to 3,300 feet.

Red Rock tarplant is restricted to a small area in Kern County centered on Red Rock Canyon. CNDDDB lists six occurrences for the species, and CNPS lists occurrences in four quadrangles (CNDDDB, 2012b; CNPS, 2012). Most records are in Red Rock Canyon itself, but some records are in Cudahy Creek and Last Chance Canyon nearby (CNDDDB, 2012b). The records along Highway 14 are all one to two miles east of the project area. We visited several localities in April and May 2012, all apparently a part of CNDDDB Occurrence 1. Compared with past records the plants were fewer in number and flowering relatively early in the season.

Although volcanic tuff substrate is generally not found in the survey area, seeps and springs in fine-textured soil of the Cutterbank Association are present in several parcels in the Sugarloaf and Jawbone areas. These were considered to have moderate potential to support Red Rock tarplant, although none was found in April and May 2012. Other parcels with seeps and springs in the Alpie Canyon and Butterbredt areas were concluded to have low potential to support this species.

***Deinandra mohavensis* (Mojave tarplant)**

Mojave tarplant is state-listed as endangered but has no federal listing status with USFWS. It has a CRPR of 1B.3, meaning it is rare, threatened or endangered in California and elsewhere; not very endangered in California (CNPS, 2012). The BLM Ridgecrest field office lists it as a Sensitive species (BLM, 2011). Mohave tarplant is an herbaceous annual in the sunflower family (Asteraceae). It typically grows from 10 cm to 1 m in height, with leaves entire to serrate, hairy

and stalked-glandular. The yellow flower heads consisting of five ray flowers and numerous disk flowers are generally in tight groups or in crowded, sometimes open panicle-like clusters. The pappus consists of five to nine irregularly shaped scales 0.1 to 0.9 mm in length. Mojave tarplant flowers from May through January. This species is found in chaparral, desert scrub, desert riparian habitat, and woodland. It is described as occurring in moist sites, on low sand bars in river beds, mostly in riparian areas or grassy areas associated with stream or wash habitats. The known elevation range for the species is from 1,500 to 5,300 feet.

Mojave tarplant is known from the western Mojave Desert and San Jacinto Mountains in Kern, Inyo, Riverside, San Bernardino, and San Diego counties. The records nearest the project area include two records from Water Canyon and Esperanza Canyon (CNDDDB occs. 67 and 68) in the section just west of Parcel K-9; from the North Sky River wind farm project in the southern end of Kelso Valley (CNDDDB Occ. 72), less than two miles south of the project parcels; and a record from a side canyon of Jawbone Canyon near Blue Point (CNDDDB Occ. 32). The latter locality was checked in March, April and May 2012 but no evidence of vegetative or flowering tarplant was found in the suitable habitat there.

Potentially suitable habitat could be present in a number of parcels on the west side of Kelso Valley, in parcels with seeps and springs in the Jawbone, Dove Spring, Alphie Canyon, and Butterbred areas.

***Delphinium inopinum* (Unexpected larkspur)**

Unexpected larkspur has no state or federal status and has a CRPR of 4.3, meaning it is uncommon and not very endangered in California. It is a perennial herb in the buttercup family (Ranunculaceae). This plant is tall (up to 1-1.5 m), glabrous and glaucous, with leaves on the lower portion of the stem during flowering. The numerous white to light blue flowers are borne on a tall stem, the sepals pointing forward and the spur 9 to 12 mm in length. Unexpected larkspur is generally reported as flowering in summer rather than spring; it is reported variously as flowering from May to August (CNPS, 2012, Baldwin et al., 2012).

Unexpected larkspur is reported from upper montane conifer forest in rock outcrops of metamorphic and limestone in red fir and western white pine forest (CNPS, 2012; CNDDDB, 2012b), although some occurrences are reported on granite substrate in pinyon woodland (CNDDDB Occ. 36). The elevation range for the species is from 6,000 to 9,800 feet (CNDDDB, 2012b).

This species is found in the southern Sierra Nevada, Piute Mountains and Mt. Pinos, in Fresno, Inyo, Tulare, Kern, and Ventura counties. CNPS has 30 occurrence records in 13 quadrangles (CNPS, 2012). The nearest records to the project site are on the north side of Piute Peak, about five miles west of Landers Meadow, and several records in the vicinity of Alaska Flat, about five miles northwest of Landers Meadow. The lower elevation, and lack of red fir and western white pine forest reduce the likelihood of occurrence of this species except at Landers Meadow, and possibly on the higher elevation parcels in the Kelso Valley area.

***Dudleya abramsii* ssp. *calcicola* (Limestone dudleya)**

Limestone dudleya has no state or federal status and has a CRPR of 4.3, meaning it is uncommon and not very endangered in California. It is a perennial herb in the stonecrop family (Crassulaceae). This plant has one to many basal rosettes of oblong to lanceolate or subcylindric,

fleshy leaves, and often-branched flower stalks with pale yellow flowers with keels darker yellow or red-tinged (Baldwin et al., 2012). Limestone dudleya flowers from April to August. This species grows in chaparral and pinyon and juniper woodland, on open, rocky outcrops that are often carbonate but sometimes granite. The known elevation range for limestone dudleya is 1,600 to 8,500 feet.

Limestone dudleya is known from the southern Sierra Nevada, in Inyo, Tulare and Kern counties. Several records have been reported from the vicinity of the project area; one is apparently from Jawbone Canyon near the California Aqueduct crossing in or near Parcel J-3 (SD99581); another is just south of Blue Point; a third (RSA617755) is less than a mile from Parcels S-4 and S-5 (CCH, 2012). These are most likely on granitic rather than calcareous substrate. Although none of these localities were verified during field surveys, the potential is high for this species to occur on many parcels in the Jawbone, Sugarloaf, Dove Spring, Alphie Canyon, Butterbrecht, Kelso Valley, and Landers Meadow areas.

***Eriastrum tracyi* (Tracy's eriastrum)**

Tracy's eriastrum is state-listed as rare, but has no federal status. Its CRPR was recently reduced to 3.2, meaning its status needs review but it is fairly endangered in California. This species is a small (to 22 cm), slender, tufted-woolly-hairy plant with awl-shaped, narrowly lobed leaves, trumpet-shaped, white to purple flowers with a yellow throat. It flowers from May to August. Tracy's eriastrum is found in chaparral or cismontane woodland in open areas on gravelly clay shale or alluvium, and apparently is found in sites with at least a moderate degree of disturbance. The reported elevation range for the species is from 1,300 to 3,300 feet.

Tracy's eriastrum has a disjunct distribution, with records in the North Coast Ranges in Shasta, Trinity, Colusa, Glenn, Tehama, and Santa Clara counties, as well as in Fresno and Kern counties. CNPS and CNDDB each have 46 occurrence records for the species (CNPS, 2012; CNDDB, 2012b). Fourteen occurrences on the Cross Mountain and Emerald Mountain quadrangles were initially reported by GANDA (2010) as part of the North Sky River project. One occurrence was reported about a mile southeast of Schoolhouse Well (Parcel K-20) in blackbrush scrub and Joshua tree woodland. In 2012 surveys we found five other species of eriastrum, such as *Eriastrum signatum*, *E. sapphirinum*, *E. pluriflorum*, and others, but did not encounter any populations of Tracy's eriastrum. The blackbrush and pinyon-juniper woodland habitat in some parcels in Kelso Valley and possibly the chaparral in the Caliente Creek parcels resemble that reported by GANDA (2010) for this species, although none of the soils in the EKCA project area are derived from sedimentary shale. As such, Tracy's eriastrum was considered to have moderate potential to occur in the Caliente Creek parcels, and limited potential to occur in some parcels in the southern part of Kelso Valley.

***Eriogonum breedlovei* var. *breedlovei* Breedlove's buckwheat**

Breedlove's buckwheat has no state or federal status, but is ranked as CRPR 1B.2, meaning it is rare and endangered in California and is fairly endangered there. Breedlove's buckwheat is a perennial, mat-forming herb in the buckwheat family (Polygonaceae). Growing to 10 cm in height and 15 to 20 cm in diameter, this plant is glandular-hairy, with tomentose leaves, erect to spreading glandular peduncles, and white to red perianth parts obovate in outline. This plant flowers from June to September. Breedlove's buckwheat grows in pinyon and juniper woodland and upper montane coniferous forest, reportedly on quartzite and carbonate. Some records report it from black metamorphic rock surrounded by Jeffrey pine and white fir forest, but most are from dolomite or carbonate substrates. The elevation range for the species is 7,500 to 8,200 feet.

Breedlove's buckwheat is restricted to Kern County, where it is known only from only 10 localities on four adjoining quadrangles, including the Claraville quadrangle. The nearest record to the project area is at French Meadow, about three miles west-northwest of Landers Meadow. Although the habitat features of the Landers Meadow only partially match the typical characteristics of the reported occurrences, this species was considered to have moderate potential to occur in the Landers Meadow parcels.

***Eschscholzia minutiflora* ssp. *twisselmannii* (Red Rock poppy)**

Red Rock poppy has no state or federal status, but is ranked as CRPR 1B.2, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM to be a sensitive species. This is an annual herb in the poppy family (Papaveraceae). Although this subspecies is not recognized in the second edition of the *Jepson Manual* (Baldwin et al., 2012), it continues to be recognized by CNPS and CNDDDB. Red Rock poppy is relatively small (5 to 25 cm), glaucous and glabrous plant with a basal rosette of narrowly divided leaves and yellow flowers, sometimes orange-spotted at the base, petals 10 to 26 mm in length. The rim at the base of the hypanthium is small, 0 to 0.3 mm. This species flowers from March to May. It is found in Mojavean desert scrub on volcanic tuff substrate, although it sometimes is reported as occurring on decomposed granite (CNDDDB, 2012B). The known elevation range for the species is below 8,500 feet.

Red Rock poppy is known only from Kern County, with nearly all records from the Rand and El Paso mountains to the east of the survey area. Out of 26 records on file with CNDDDB, only one, a record from Edwards Air Force Base, is outside of this area. Although neither CNPS nor CNDDDB report any occurrences from the quadrangles on which the project is located, CCH reports a single locality from Jawbone Canyon, about 1.5 miles west of Highway 14 (RSA445460).

The project team visited the large Mesquite Springs locality (CNDDDB Occ. 28) monthly in March, April and May, 2012; no plants were observed during this dry year. Although the project area contains little if any volcanic tuff habitat, this species occasionally is reported from other substrates. Therefore, it was concluded that outliers could potentially be found in the EKCA parcels nearest the known distribution of the species and having soils formed from fine-textured lakebed sediments: the Sugarloaf parcels, and perhaps in the Jawbone parcels J-4 and J-5 as well.

***Fritillaria pinetorum* (Pine fritillary)**

Pine fritillary has no state or federal status and has a CRPR of 4.3, meaning it is uncommon and not very endangered in California. This is a perennial plant in the lily family (Liliaceae). Plants are 10 to 40 cm tall, with fewer than 10 leaves and the spreading to erect flowers purple mottled with green-yellow. Pine fritillary flowers relatively late for the genus, from May to September. It is found in chaparral, lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, and upper montane coniferous forest on shaded granitic or metamorphic slopes. The elevation range for the species is from 5,900 to 10,500 feet.

Pine fritillary is found in the Sierra Nevada, Mt. Pinos, and Transverse Ranges from Tuolumne and Mono counties south to Los Angeles and San Bernardino counties. Although occurrences are not common in the Piute Mountains, CCH (2012) reports an occurrence from the Saddle Springs Campground, several miles west of Kelso Valley and Landers Meadow. This species could occur in Landers Meadow and the higher elevations of the western Kelso Valley parcels.

***Hesperocyparis nevadensis* (Piute cypress)**

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Piute cypress has no state or federal status, but it has a CRPR of 1B.2, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM to be a sensitive species. Piute cypress is in the cypress family (Cupressaceae). It is a narrow tree with fibrous gray to red bark, resinous, scale-like leaves forming cylindrical branchlets more than 1 mm in diameter, and ovoid cones 20 to 35 mm in diameter, with 6 to 8 scales. This species is found in pinyon and juniper woodland, oak-pine woodland, chaparral, and closed-cone conifer forest, often forming small monotypic (single-species) stands on rocky slopes. It has been reported from granodiorite, gabbro and limestone substrates at elevations from 2,400 to 5,900 feet.

CNDDDB and CNPS report Piute cypress only from Tulare and Kern counties in the southern Sierra Nevada, Greenhorn, and Piute Mountains, although CCH has additional localities from Fresno, Los Angeles, San Bernardino and San Diego counties. Most records are from Kern County. Some populations were reported in the North Sky River Wind Farm project, and an older record was reported from Back Canyon, about two miles from Parcel C-4 in the Caliente Creek area. Since the species forms small colonies, some undiscovered populations could exist in the granitoid substrates in the rugged back country of the Caliente Creek parcels.

***Layia heterotricha* (Pale yellow layia)**

Pale yellow layia has no state or federal status, but is ranked as CRPR 1B.2, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM to be a sensitive species. It is an annual herb in the sunflower family (Asteraceae). It can be moderately tall, growing from 15 up to 90 cm in height, with a stout, hollow, purple-streaked stem, and is glandular with an apple or banana scent. Leaves are clasping and entire to coarsely toothed. The flower heads are large and the ray flowers white to cream-colored. The disk pappus is absent. This plant flowers from March to June (CNDDDB, 2012b, Baldwin et al., 2012). Pale yellow layia is found in cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland in open areas on clay and often alkaline soils. The known elevation range for the species is from 900 to 5,600 feet (CNPS, 2012; CNDDDB, 2012b).

Pale yellow layia is known from many localities in the Inner and Outer Coast Ranges and foothills of the southern Sierra Nevada, Tehachapis, and even the western Mojave, but generally appears only in years with above-average rainfall. CNPS reports its distribution from Monterey and San Benito counties southward to Los Angeles and Kern counties. Although CNPS reports one record from Freeman Junction, most of the records near the project area are in the Tehachapi Mountains near Monolith and Sand Canyon and Mojave. The Caliente Creek parcels are within the typical range of the species; however, soils data indicate that the substrate for most of the area is granitoid rock and gneiss. These are unlikely to develop the alkaline clay that comprises suitable habitat for this species. Kelso Valley Parcel K-20 has relatively high clay and somewhat alkaline soils and pale yellow layia could occur there. If present, this species would be expected to appear only in the highest rainfall years.

***Lupinus pusillus* var. *intermontanus* (Intermontane lupine)**

Intermontane lupine has no state or federal status, but is ranked as CRPR 2.3, meaning it is rare, threatened or endangered in California but more common elsewhere, and is not very endangered in California. It is an annual herb in the pea family (Fabaceae). As the species name suggests, this is a small plant, 5 to 12 cm in height, hairy, with leaves consisting of 5 to 6 small leaflets crowded near the base. The flowers are spiraled, with the petals pale blue fading to pink or white,

with a yellow spot on the banner. Intermontane lupine is found in Great Basin scrub, in open, sandy areas. The elevation range for the species is from 4,000 to 5,300 feet.

As the varietal name indicates, intermontane lupine is known from the western United States, from Washington and Montana south to Arizona and California. The California records are from the eastern part of the state, from Modoc County to Inyo County (CNDDDB, 2012b), although CNPS reports the species from the desert mountains near Death Valley. CCH (2012) reports one record from Kelso Valley, although this is an old record and may be questionable. If present, intermontane lupine would most likely be found in the higher elevations in the Kelso Valley parcels where sagebrush scrub was reported.

***Mentzelia eremophila* (Solitary blazing star)**

Solitary blazing star has no state or federal status, but is ranked as CRPR 4.2, meaning it is uncommon but fairly endangered in California. This is an annual herb in the blazing star family (Loasaceae). This species is erect, glabrous to hairy, with entire, green bracts and large yellow petals 12 to 24 mm long. It flowers from March to May. Solitary blazing star is found in creosote bush scrub, in canyons, rocky slopes and washes as well as roadsides. The elevation range for the species is from 1,900 to 4,100 feet.

Solitary blazing star is reported from Inyo, Kern and San Bernardino counties, although most records are from Kern County in the general vicinity of Red Rock Canyon. CNPS has no records from the quadrangles including the project area, but CCH has several, including a record about two miles west-southwest of Blue Point (RSA 440298), one about a mile south of the junction of Jawbone Canyon and Highway 14 (RSA440396), one about two miles east of Parcel 58 (RSA440399) and numerous records along Highway 14 in Red Rock Canyon, a mile or two east of the Sugarloaf parcels. We observed a single individual solitary blazing star in the wash of Red Rock Canyon in April 2012, but it had disappeared and we found no others when revisiting the site in May 2012. Rocky slopes and washes are relatively common in the Sugarloaf and Jawbone areas and we concluded that this species has moderate to high potential to occur in many of these parcels.

***Mentzelia tridentata* (Creamy blazing star)**

Creamy blazing star has no state or federal listing status, but it is a CRPR 1B.3 plant, indicating that it is rare, threatened, or endangered in California and elsewhere, but not very endangered in California (CNPS, 2012). This is an annual herb in the blazing star family (Loasaceae). This is a small (5 to 25 cm tall), erect, hairy plant with wavy to toothed leaves, white to pale yellow petals 1 to 4 cm long and widely obovate with a narrow, pointed tip, the bracts are green, and the fruit is 9 to 18 mm long. The filaments are broadened and two-lobed at the end with stamens borne on a narrow stalk between the lobes. Creamy blazing star flowers from April to May. It is found in Mojavean desert scrub, reportedly on dry, rocky slopes, at the edge of washes, on rocky granite slopes, volcanic gravel, and various eastern, southern and western exposures. The elevation range for the species is 2,300 to 4,300 feet.

Creamy blazing star is found in the Mojave Desert from Inyo County southward to Imperial and San Diego counties. Most of the 25 CNDDDB records are from western San Bernardino County. The record nearest the project area is from the mud hills of Red Rock Canyon (CNDDDB Occ. 9), but it is noted that this is out of range and should be checked. The next nearest records are from Little Lake in Inyo County and from Hinkley and eastward (CCH, 2012; CNDDDB, 2012b). Rocky

granite washes in creosote bush scrub are present in parts of the Jawbone, Sugarloaf and Alphia Canyon areas, so outliers have moderate potential to occur there.

***Mimulus pictus* (Calico monkeyflower)**

Calico monkeyflower has no state or federal status, but is ranked as CRPR 1B.2, meaning it is rare and endangered in California and is fairly endangered there. It is considered by the BLM Bakersfield Resource Area to be a sensitive species. This is an annual herb formerly in the snapdragon family (Scrophulariaceae) but now assigned to the lopseed family (Phrymaceae). This is a small to medium-sized hairy plant, 2 to 38 cm in height, with square stems. The flowers are white with a distinctive pattern of purple-brown veins. Calico monkeyflower flowers from March to May and is found in broadleaved upland forest and cismontane woodland in bare, sunny and shrubby areas at the base of granite outcrops. The elevation range for the species is from 300 to 4,300 feet.

Calico monkeyflower is known from Tulare and primarily Kern counties on the west side of the Sierra Nevada and the Tehachapis from near Visalia to the Tejon Ranch. The record nearest the project area is from near Stephenson Peak (CNDDDB Occ. 38), about 3 miles south of Parcel C-4; and more distant records are from Keene Station and the grade to Walker Basin. Granite outcrops and potentially suitable habitat appear to be present on Caliente Creek parcels C-1 through C-4, and this species was considered to have high potential to occur there.

***Mimulus shevockii* (Kelso Creek monkeyflower)**

Kelso Creek monkeyflower has no state or federal status, but is ranked as CRPR 1B.2, meaning it is rare and endangered in California and is fairly endangered there. It is considered by both BLM Bakersfield and Ridgecrest Resource areas to be a sensitive species (BLM, 2011). This is an annual herb formerly in the snapdragon family (Scrophulariaceae) but now assigned to the lopseed family (Phrymaceae). Kelso Creek monkeyflower is 2 to 12 cm in height, minutely puberulent, with clasping and sometimes fused stem leaves. The flowers are distinctively bicolored, with the upper lip maroon and the lower lip yellow with maroon dots. This species flowers from March to May, depending on conditions. It is found in Joshua tree woodland and pinyon and juniper woodland, in loose, granitic, sandy soil. The elevation range for the species is from 2,900 to 4,300 feet.

This species is endemic to Kern County, with a known range from six quadrangles extending from Lake Isabella to Pinyon Mountain and Claraville. CNDDDB has two occurrence records (occs. 12 and 13) from Kelso Valley, one in Parcel K-14 on the east side of Kelso Valley, and one just west of Parcel K-9. We looked for Kelso Creek monkeyflower in May 2012 at Occurrence 12, but found no sign of it. This is evidently a flower that appears early, briefly, or not at all in unfavorable years. CNDDDB notes for Occurrence 12 suggest that all of Kelso Valley should be surveyed in a good year for additional occurrences. Many parcels in Kelso Valley were considered to have high potential to support this species.

***Monardella linoides* ssp. *oblonga* (Tehachapi monardella)**

Tehachapi monardella has no state or federal listing status, but it is a CRPR 1B.3 plant, indicating that it is rare, threatened, or endangered in California and elsewhere, but not very endangered in California (CNPS, 2012). It is designed by the BLM Ridgecrest Resource Area as a special-status species (BLM, 2011). This is a perennial rhizomatous herb in the mint family (Lamiaceae). It has silvery to ash-gray, narrow leaves, and bracted heads of whitish, lavender or pale purple flowers.

It flowers from June to August. Its habitat is lower montane coniferous forest, upper montane coniferous forest, and pinyon and juniper woodland, where it is found on dry, gravelly slopes and flats. Its elevation range is from 4,900 to 8,500 feet.

Tehachapi monardella is found in Kern, Tulare and Ventura counties, mainly on the western side of the Sierra Nevada, but with some records on the eastern side of the Tehachapis. There records nearest the project area are from the Cache Peak quadrangle (CNDDDB occs. 54 and 55) at the north end of Sweet Ridge as part of the North Sky River Wind Farm project. The project area is slightly outside of the known range for the species, although the habitat in the upper elevations of the Kelso Valley parcels may be suitable. We observed only *Monardella linoides* ssp. *linoides* during field surveys in 2012.

***Muilla coronata* (Crowned muilla)**

Crowned muilla has no state or federal status and has a CRPR of 4.2, meaning it is uncommon but fairly endangered in California. It is a bulb-forming perennial herb, formerly in the lily family (Liliaceae) but now assigned to the brodiaea family (Themidaceae). This small species has a flowering stem 3 to 5 cm high with two to ten flowers on pedicels 1 to 3 cm long. The perianth lobes are white or light blue, with a green midvein on the back. The filaments are dilated with free but wide overlapping margins. Crowned muilla flowers from March to May. It is found on barren flats and ridges on sandy, granitic soils in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland. Its elevation range is 3,200 to 5,300 feet.

Crowned muilla is found primarily on the eastern side of the Sierra Nevada, from Inyo and Tulare counties southward to Los Angeles, Kern, and San Bernardino counties, and eastward to Nevada. The records nearest the project area are on the Weldon and Freeman Junction quadrangles, more than 10 miles north of the project area (CNPS, 2012). CCH has one record from Redrock Randsburg Road, about 10 miles east of the project area. This is a species that flowers briefly and may be difficult to detect in the seasons and years when it does not flower. Further, it may be subject to intense herbivory in dry years such as 2012. There is potential for this species to occur in very low density throughout the project area.

***Navarretia setiloba* (Piute Mountains navarretia)**

Piute Mountains navarretia has no state or federal status and has a CRPR of 1B.1, meaning it is rare, threatened or endangered in California and seriously endangered in California (CNPS, 2012). The BLM Bakersfield Resource Area office lists it as a sensitive plant (BLM, 2011). It is an annual herb in the phlox family (Polemoniaceae). It flowers from April to July. This species is found in cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland in red clay or gravelly loam. The elevation range for the species is 1,000 to 3,700 feet.

Pine Mountains navarretia is known only from Kern, Tulare and Los Angeles counties, primarily on the west side of Piute Mountain. It is known from only 22 localities (CNDDDB, 2012b). The nearest records are between Caliente and Walker Basin, about 12 miles west of the Caliente Creek parcels. Suitable habitat may be present for this species in the Caliente Creek parcels.

***Nemacladus gracilis* (Slender threadplant)**

Slender threadplant has no state or federal status and has a CRPR of 4.3, meaning it is uncommon and not very endangered in California. It is an annual herb in the bellflower family

(Campanulaceae). This is a small and slender plant, 2.5 to 10 cm tall, with tiny, spoon-shaped and slightly toothed leaves. The inflorescence axis is straight or weakly zigzag, the pedicels are S-curved, the anthers are 0.5 mm in length, and the corolla is white or pale lavender, with the midvein on the lobes sometimes pink, lavender or maroon, but otherwise without darker marks. Slender threadplant flowers from March to May. In dry years it likely appears in limited abundance or not at all. Slender threadplant is found in cismontane woodland, valley and foothill grassland in sandy or gravelly soils from 400 to 6,300 feet.

Slender threadplant is reported from the east side of the San Joaquin Valley, Inner Coast Ranges, Outer Coast Ranges and southern Sierra Nevada, from Merced County south to Kern and Los Angeles counties, as well as Nevada and Arizona (CNPS, 2012). CCH (2012) reports only 25 records from many disparate localities. The nearest location to the project area is from Caliente, which is within 15 miles from the Caliente Creek parcels. Threadplants are frequently overlooked and under-collected, in part because of their small stature and fragility, and in part because they appear much more abundantly in high rainfall years and very little in dry years. However, there is moderate to high potential that this species could be found in the Caliente Creek parcels in a favorable year.

***Orthotrichum shevockii* (Shevock's bristle moss)**

Shevock's bristle moss has no state or federal listing status, but it has a CRPR of 1B.3, indicating that it is rare, threatened, or endangered in California and elsewhere, but not very endangered in California (CNPS, 2012). It is designed by BLM as a special-status species (BLM, 2011). It is a moss in the bristle moss family (Orthotrichaceae). This species is found in Jeffrey pine forest, Joshua tree woodland, and pinyon juniper woodland, on granitic rocks in underhangs with reflected light. The known elevation range for the species is from 2,500 to 7,000 feet. Shevock's bristle moss is known from Kern and Tulare counties, primarily from the Piute Mountains and the southern Sierra Nevada. The nearest records are from the Scodie Mountains, about ten miles to the north of the project area. The most likely habitat is at Landers Meadow. Mosses are generally not well inventoried by most botanists and the geographic distribution of mosses is likely to be developed more fully as these species receive more attention.

***Pentachaeta fragilis* (Fragile pentachaeta)**

Fragile pentachaeta has no state or federal status and has a CRPR of 4.3, meaning it is uncommon and not very endangered in California. It is an annual in the sunflower family (Asteraceae). It is slender, 4 to 16 cm in height, and mostly glabrous, with seven to 12 well-developed yellow ray flowers and only 10 to 23 disk flowers. Fragile pentachaeta flowers from March to June. This species is found in chaparral and lower montane coniferous forest, in grassy openings on sandy soils. The elevation range for the species is from 160 to 6,900 feet.

Most records for fragile pentachaeta are from the South Coast Ranges, Transverse Ranges, and southern Sierra Nevada, but there also are some records from the San Joaquin Valley. There are a few records from the western Mojave Desert. This species is reported from eight California counties, from Merced southward along the coast to Ventura County, and eastward to Kern County. CCH (2012) reports a single record (POM351184) from the southern end of Kelso Valley, about a mile south of Schoolhouse Well and Parcel K-20. Botanical surveys for the North Sky River Wind Farm expanded the number of records for this species just east of Kelso Valley in grassland and open California juniper woodland, and in blue oak woodland and Tucker oak chaparral. The plant was usually found with annual grasses and forbs in areas with little litter or overstory cover (GANDA, 2010). This diminutive and somewhat generic-looking plant is likely

to be overlooked, but could be present in western Kelso Valley, Landers Meadow and several Caliente Creek parcels.

***Phacelia exilis* (Transverse Range phacelia)**

Transverse Range phacelia has no state or federal status and has a CRPR of 4.3, meaning it is uncommon and not very endangered in California. It is an annual herb formerly placed in the waterleaf family (Hydrophyllaceae) and now assigned to the borage family (Boraginaceae) (Baldwin et al., 2012). This plant has shallowly-lobed stem leaves, relatively large (5-10 mm) deciduous lavender corollas with white at the base, stamens included or barely exerted, and five to 20 seeds per fruit. Its flowering period is from May to August. Transverse Range phacelia is found in lower montane coniferous forest, upper montane coniferous forest, and meadows and seeps. Its reported microhabitat is sandy or rocky slopes, flats, and meadows. The reported elevation range is 3,600 to 8,900 feet.

The great majority of occurrence records for Transverse Range phacelia are from the San Bernardino Mountains, many in the vicinity of Baldwin Lake and Bear Valley. However, there are some records in the Piute and Greenhorn Mountains in the southern Sierra Nevada, and several in the San Emigdio Mountains in the western Transverse Ranges. The records nearest the project area are at Claraville Flat, southeast of Piute Peak (JEPS39518), and in French Meadow (CAS5474326), which is two miles west of Landers Meadow. This plant seems likely to occur in the Landers Meadow parcels, and possibly in the western Kelso Valley parcels in the upper elevations.

***Phacelia nashiana* (Charlotte's phacelia)**

Charlotte's phacelia has no state or federal status, but is ranked as a CRPR 1B.2 plant, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM Ridgecrest Resource Area to be a Sensitive species (2011). It is an annual herb formerly placed in the waterleaf family (Hydrophyllaceae) and now assigned to the borage family (Boraginaceae). This distinctive plant has rounded, crenate (scalloped) leaves and flat to bell-shaped, bright blue flowers with a white dot at the base of each lobe. The style is cleft more than half its length. It flowers from March to June. Charlotte's phacelia is found in Mojavean desert scrub, Joshua tree woodland and pinyon and juniper woodland, on sandy to rocky, often granitic slopes and sometimes volcanic substrate. The elevation range for this species is from 2,000 to 7,900 feet.

Charlotte's phacelia grows in the hills and mountains of the western Mojave Desert and the slopes of the adjoining Sierra Nevada. It is reported from 17 quadrangles in Tulare, Inyo and Kern counties (CNPS, 2012). CCH (2012) also reports several records from Anza-Borrego State Park. It is reported from seven CNDDDB (2012) localities on the Cinco quadrangle, including five from the general vicinity of Jawbone Canyon. One is reported from Parcel J-3 (CNDDDB Occ. 16), one is in Section 18 between Parcels J-3 and S-5 (CNDDDB Occ. 49); one is in sections 6 and 31 about a mile southwest of Parcel J-5 (CNDDDB Occ. 50); and two are south of Blue Point in sections 22 and 23, about a mile southwest of Parcel J-1 (CNDDDB occs. 60 and 61).

We visited CNDDDB Occurrence 16 monthly during March, April and May 2012 but did not find any Charlotte's phacelia. Few annual herbs were present at all. We located a small population of Charlotte's phacelia in very early flower in early April on Parcel A-5. We revisited this locality in early May and found that the population had dried and become undetectable. However, with the relatively numerous known localities in and near the project area and the extent of apparently

suitable habitat, it is likely that this species could be present in many parcels in the Jawbone Canyon, Sugarloaf, Dove Spring, Alpie Canyon, and Butterbredt areas.

***Ribes menziesii* var. *ixoderme* (Aromatic canyon gooseberry)**

Aromatic canyon gooseberry has no state or federal status, but is ranked as a CRPR 1B.2 plant, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM Bakersfield Resource Area to be a Sensitive species (BLM, 2011). It is a woody shrub in the gooseberry family (Grossulariaceae). This species has spines on the nodes of the branches, the strongly aromatic leaf blades are glandular on the undersides, the inflorescences consist of fewer than five white to pink flowers while the sepals and fruit are purple. This species flowers in April. Aromatic canyon gooseberry is found in chaparral and montane woodland in forest openings. The known elevation range is 2,000 to 3,800 feet.

Aromatic canyon gooseberry is known the southern Sierra Nevada foothills from six quadrangles in Fresno, Tulare, and Kern counties. The southernmost quadrangle is in Caliente Canyon on the Loraine quadrangle, adjacent to the Emerald Mountain quadrangle (CNDDDB Occ. 1), although this is a non-specific locality. Although the Caliente Creek parcels are generally higher in elevation than the range reported for this species, the potential occurrence of this species there could not be ruled out.

***Sclerocactus polyancistrus* (Mojave fish hook cactus)**

Mojave fish hook cactus has no state or federal status and has a CRPR of 4.2, meaning it is uncommon but somewhat endangered in California. It is a perennial succulent in the cactus family (Cactaceae). This species grows up to 45 cm in height and is cylindrical in form, with prominent stem-ribs. The central spines are of two kinds, long, hooked central spines and straight radial spines. It flowers from April to July. Mojave fish hook cactus is found in creosote bush scrub, Joshua tree woodland and Great Basin scrub, on well-drained rocky slopes and canyons, sometimes on limestone (CNDDDB, 2012B). The known elevation range for the species is from 2,100 to 7,700 feet.

Mojave fish hook cactus is known from Inyo, Kern and San Bernardino counties and Nevada. Although CNPS reports it from only 10 quadrangles, it is likely to be present at very low densities throughout its known range. The nearest records to the project area are from the Saltdale NW quadrangle, from two records in Red Rock Canyon State Recreation Area (CNPS, 2012; CCH, 2012).

We observed a single Mojave fish hook cactus in Parcel A-5 in Alpie Canyon during 2012 surveys. This cactus was located on a rocky ridge much like many others in the project area. It is probable that more individuals could be located in suitable habitat throughout the Jawbone Canyon, Sugarloaf, Dove Spring, Alpie Canyon, and Butterbredt areas.

***Streptanthus cordatus* var. *piutensis* (Piute Mountains jewel-flower)**

Piute Mountains jewel-flower has no state or federal status, but is ranked as a CRPR 1B.2 plant, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM Ridgecrest field office to be a Sensitive species (BLM, 2011). Piute Mountains jewel-flower is an herbaceous perennial herb in the mustard family (Brassicaceae). This erect plant typically grows to 30 to 90 cm in height and is simple or few-branched with a

basal rosette and stem leaves reduced above. The inflorescence is a spike with sepals green-brown to purple, the petals purple to brown. It flowers from May to July. Piute Mountains jewel-flower is found in open chaparral and Piute cypress stands, often on red-clay soils. The elevation range for the species is 3,600 to 5,700 feet.

Piute Mountains jewel-flower is reported from the southern Sierra Nevada in the Piute Mountains. Reported from only four quadrangles, this species is fairly closely associated with Piute cypress stands and their associated habitat. The Sweet Ridge locality (CNDDDB Occ. 4), reported by GANDA (2010) as part of the North Sky River Wind Farm project, is a few miles to the northeast of the Caliente Creek parcels. Since soils in the Caliente Creek parcels include some of metamorphic origin, this species was considered potentially occurring there.

***Symphotrichum defoliatum* (San Bernardino aster)**

San Bernardino aster has no state or federal status, but is ranked as a CRPR 1B.2 plant, meaning it is rare and endangered in California and is fairly endangered there. It is considered by BLM Ridgecrest field office to be a Sensitive species (BLM, 2011). It is a rhizomatous perennial herb in the sunflower family (Asteraceae). This erect plant grows to 40 to 100 cm in height and is strigose (having stiff, appressed hairs) throughout. Flower heads are in a narrow, cyme-like cluster with oblong phyllaries green at the tips and pale-margined at the base. The 15 to 40 ray flowers are white to pale violet, and the fruits are hairy. San Bernardino aster is found in marshes and swamps, meadows and seeps, coastal scrub, cismontane woodland, lower montane coniferous forest, and grasslands. Its microhabitat is vernal mesic grassland, disturbed places, and near ditches, streams and springs. The reported elevation range for the species is below 6,700 feet.

San Bernardino aster is reported in the San Gabriel, San Bernardino and Peninsular ranges and many coastal localities from Kern and San Luis Obispo counties southward to San Diego and Imperial counties. In the vicinity of the project area, there is a report of the species from Landers Meadow (CNDDDB Occ. 42). Although non-specific it most likely is within one of the Landers Meadow parcels within the survey area. The most likely place for this species within the survey area is at the two Landers Meadow parcels containing meadows (L-1 and L-2).

3.3 Descriptions of Parcels

In this section, the characteristics of each parcel will be described—location, physical conditions, vegetation present, potential for special-status plants, and degree of disturbance. Parcels will be presented in numerical order within parcel groups, in the following sequence: Jawbone Canyon, Sugarloaf, Dove Spring, Alphie Canyon, Butterbrecht, Kelso Valley, Landers Meadow, and Caliente Creek.

3.3.1 Jawbone Canyon Parcels

Parcel J-1 (APN 444-090-04)

This 640-acre parcel is located near the western end of the Jawbone Open Area, on the northeastern corner of the intersection between Jawbone Canyon Road and Alphie Springs Road. It consists of steep, rugged terrain generally sloping to the south and west, with some alluvial valleys at the feet of the steep slopes. Although several watercourses are noted on the USGS Cinco quadrangle, they have relatively small watersheds and probably flow only during substantial storms. The elevation range for Parcel J-1 is 900 feet, from 2,550 feet in Jawbone Canyon to 3,450 feet at the rocky summits. The soils are Jawbone and Typic Torriorthents-Rock Outcrop, all soils formed in granite parent rock or in alluvium formed from granitic material.

Vegetation resources. Most of Parcel J-1 was mapped as lower Mojave mixed woody scrub; vegetation was generally rather sparse and consisted of a complex mosaic of species found in arid, rocky situations, such as Acton's encelia, indigo bush, bladder sage, white bursage, chaparral yucca, and Nevada ephedra. Some of the lower, less steep slopes with more soil accumulation supported creosote bush scrub and creosote bush-white bursage scrub, sometimes with allscale on the lower slopes. The alluvial valleys on the western side of the parcel supported desert wash and cheesebush scrub. Desert wash was mapped on two of the largest canyons. A small amount of allscale scrub was mapped in the southwestern corner where the parcel included the floor of Jawbone Canyon. On higher elevation plateaus, a small area of blackbrush scrub was mapped, while the highest areas were mapped as rock outcrops with very little vegetation. In these sparse areas, some typical species were chaparral yucca, desert needlegrass (*Stipa speciosa*), and California buckwheat.

Special-status plant resources. Although no special-status plants were observed during field surveys, the high, rocky slopes had potential for Mojave fish hook cactus and limestone dudleya, while the loose talus slopes had potential for Charlotte's phacelia. The open, sandy slopes and washes in the side canyons had potential habitat for Death Valley sandmat, white pygmy-poppy, crowned muilla, and possibly Mojave tarplant, solitary blazing star and creamy blazing star.

Disturbance factors. This parcel contains no designated roads or routes. It is partially within the Jawbone Open Area and no signage or fencing warns against OHV usage. As a result, OHV tracks were very abundant in Parcel J-1 on the smooth, sandy lower slopes; along ridges; and in washes and draws up to the point where rocks become obstacles. Erosion was evident on ridge tops and in the southeastern corner of the parcel on loose, sandy soils

Parcel J-2 (APN 181-080-32)

This 614-acre parcel is located in Poleline Canyon, about one-third mile north of Jawbone Canyon, almost 2 miles west of Highway 14. It bisected by Poleline Canyon Road. The parcel contains a broad valley in the northern half which narrows into a canyon, then broadens as it empties into Jawbone Canyon. The parcel contains two major washes, Poleline Canyon and a tributary, that merge just south of the southern parcel boundary. According to the Friends of Jawbone trails map (Friends of Jawbone (FOJ), 2011), this parcel contains two designated routes labeled LA1 and LA2, referring to access roads used for the construction of Los Angeles Department of Water and Power Aqueducts 1 and 2. The LADWP Aqueduct 2 passes through this parcel as a siphon. The elevation range for Parcel J-2 is about 500 feet, from 2,464 to 2,962 feet. The soils in this parcel are primarily Cutterbank soils, uplifted lakebed soils formed from well-weathered granitic alluvium. The broad areas with low slopes are Koehn sands, alluvial fans formed from granitic material.

Vegetation resources. The great majority of Parcel J-2 was mapped as creosote bush-white bursage scrub. The south-facing slopes supporting this vegetation type had Acton's encelia, indigo bush and California buckwheat as typical associates, while the north-facing slopes had green rabbitbrush, goldenbush, Sandberg bluegrass (*Poa secunda*) and indigo bush as associates. Some very steep and rocky slopes in the northwest corner of the parcel were mapped as white bursage; these areas had low cover of with limited shrub diversity. The washes were mapped as an extensive area of blackstem rabbitbrush in the braided active channel. Alluvial terraces were mapped as allscale scrub in several places; these typically had very dense shrub cover. The upper portion of one wash was mapped as cheesebush scrub. Shrub associates in cheesebush scrub included Acton's encelia, bladder sage, and desert senna.

Special-status plant resources. Blackstem rabbitbrush is a sensitive natural community, and Parcel J-2 contains examples in washes that extend for some distance in Poleline Canyon and its tributary. Although no special-status plants were observed during field surveys, the high, rocky slopes had potential for Mojave fish hook cactus and limestone dudleya, while the loose, talus slopes had potential for Charlotte's phacelia. The open, sandy slopes and washes in the side canyons had potential habitat for Death Valley sandmat, white pygmy-poppy, crowned muilla, and possibly Mojave tarplant. The Cutterbank soils formed from lakebed sediments appeared likely to support Mojave spineflower, and potentially solitary blazing star and creamy blazing star. Less likely is the potential for Red Rock tarplant in clay-enriched washes.

Disturbance factors. The combination of proximity to the Jawbone Open Area, the presence of several roads and the broad, braided washes has made Parcel J-2 a popular area for vehicular use. Aerial photographs show many trails along ridges and washes, and this parcel was considered to have a moderate to high degree of disturbance.

Parcel J-3 (APN 181-080 11)

This 582-acre parcel is located in the center of Jawbone Canyon where LADWP Aqueduct 1 crosses Jawbone Canyon Road. Excluded from this parcel is the LADWP building and corporation yard on the north side of Jawbone Road. A few ephemeral drainages are shown on both the north and south side of Jawbone Canyon, but the primary drainage is Jawbone Canyon itself. A fairly large side canyon runs in a northeasterly direction through the southeastern part of the parcel, emptying into Jawbone Canyon east of this parcel. The broad valley of Jawbone Canyon is accentuated by the very rugged slopes rising to the north and south of the canyon. The elevation range for Parcel J-3 is almost 900 feet, from 2,360 feet in the valley floor to 3,240 feet on the ridgetop south of Jawbone Canyon. The soils are Koehn sands in the valley floor and Jawbone association on the slopes and ridges; both are formed on or in granitic materials.

Vegetation resources. The braided, active channel in Jawbone Canyon was mapped as scalebroom scrub, a dense, uniform vegetation type with limited shrub diversity. The adjacent terraces were mapped as allscale scrub. The alluvial fans upslope from this, especially on the north side of the canyon, were mapped as creosote bush scrub. Although cover by creosote bush was relatively high, associates included allscale, cheesebush, Acton's encelia, and even some scalebroom. The extensive uplands, both north and south of Jawbone Canyon, were mapped as creosote bush-white bursage scrub; this was the largest mapping unit in Parcel J-3. On north-facing slopes this vegetation type was fairly diverse and contains Nevada ephedra, indigo bush, and California buckwheat, while south-facing slopes were sparse, uniform, and rather low in diversity. Several interesting mapping units were noted on the upper slopes in the southern half of the parcel—gently sloping ridgetops supported uniform, low-diversity blackbrush scrub, and some north-facing slopes supported areas dominated by spiny hopsage and Nevada ephedra. The side canyon noted in the southeastern corner of the parcel supported white bursage scrub on the barren ridges, and Nevada ephedra on the lower slopes. A small seep was noted midway up the north-facing slope in the canyon west of the LADWP service road.

Special-status plant resources. Sensitive natural communities observed in Parcel J-3 included the the spring and seep midway up the north-facing slope south of Jawbone Canyon, the patch of spiny hopsage scrub at the top of this slope, and the scalebroom scrub in the center of Jawbone Canyon.

Parcel J-3 has a known locality for Charlotte's phacelia on the south-facing slopes above Jawbone Canyon (CNDDDB Occ. 16). In addition, the rocky outcrops contain habitat for Mojave fish hook cactus and limestone dudleya, while the sandy soils in the canyons and draws could contain

habitat for crowned muilla, Death Valley sandmat, white pygmy-poppy, and potentially solitary blazing star and creamy blazing star.

Disturbance factors. Since this parcel is situated entirely within the Jawbone Open Area, it is not surprising that certain areas of the parcel are heavily impacted by OHV use. The canyon bottom is criss-crossed with trails throughout, and some of the smooth lower slopes at the base of the hills near the canyon are nearly devoid of vegetation from OHV use. Erosion gullies starting from the LADWP road do not seem to be the result of OHV use, but there are many OHV trails in the uplands and side canyons. Saharan mustard was regularly observed in the canyon floor of this parcel.

Parcel J-4 (APN 181-080-30)

This 550-acre parcel is located at the mouth of Jawbone Canyon. It contains mostly low hills and gentle bajadas as well as the full width of the valley floor in Jawbone Canyon, about a quarter-mile in width. In addition to the east-west Jawbone Canyon Road, the LAWDP power line and service road pass from north to south in the parcel, as well as LA Aqueduct No. 2. The elevation range for the parcel is about 300 feet, from 2,130 to 2,440 feet. The valley floors are mapped as Koehn sands, and the low hills on the eastern side are Cutterbank soils, formed in lakebed sediments derived from granite.

Vegetation resources. As with other parcels in the Jawbone area, the active channel in Jawbone Canyon supported dense, uniform scalebroom scrub, and the adjacent floodplain supports allscale scrub of varying density. Slightly higher fans and old terraces supported a broad swath of creosote bush scrub, while the nearby slopes support creosote bush-white bursage scrub. Typical associates in this vegetation type were cheesebush and desert senna. One area on the eastern side of the parcel was mapped as barren and contained fine-textured lakebed soils. The unvegetated area next to Jawbone Canyon Road used for camping and staging areas was mapped as developed to distinguish it from barren areas with unusual soils and vegetation.

Special-status plant resources. The sensitive natural community mapped in Parcel J-4 was the scalebroom scrub. The barren area with Cutterbank soils has high potential to support Mojave spineflower, and the sandy flats and washes could support Death Valley sandmat. Less likely are Charlotte's phacelia, limestone dudleya and Mojave fish hook cactus in the rocks and higher slopes; crowned muilla, creamy blazing star and solitary blazing star on the lower slopes and flats. Although the soils are not of volcanic origin, Red Rock poppy was also considered to have low to moderate potential to occur on the Cutterbank soils in the eastern portion of the parcel because of their clay content and proximity of the parcel to known localities for this species.

Disturbance factors. The amount of human-caused disturbance in Parcel J-4 was very high. This area is near the entrance to the Jawbone Open Area, is fully contained within the designated open area, and has accessible topography. Airphotos show a network of tracks throughout the valley floor of Jawbone Canyon and nearby gentle slopes, and tracks up the steeper nearby slopes as well. The invasive Saharan mustard was observed in this parcel.

Parcel J-5 (APN 181-190-02)

This 480-acre parcel is located 0.5 to 1 mile south of Jawbone Canyon, about 2 miles west of the canyon mouth at Highway 14. It contains no roads or designated routes. It is bisected by Water Canyon, a broad deep canyon that drains the northern half of the parcel toward Jawbone Canyon. The eastern slopes of the parcel descend toward Fremont Valley; these contain a few small canyons with ephemeral watercourses. The elevation range for the parcel is 950 feet, from 2,360 feet at the base of the eastern slopes, to 3,316 feet on the western ridgetops above Water Canyon.

The soils in this area are mapped almost entirely as Jawbone association, with a little Koehn sand in the floor of Water Canyon. There is an extensive area of barren, highly colored sedimentary deposits on the eastern slopes that suggest the presence of some finer-textured soils, possibly of the Cutterbank group.

Vegetation resources. The vegetation found in Parcel J-5 was typical of lower-elevation desert, although it is diverse because of the different microhabitats provided by the steep, rocky exposures in Water Canyon and the eastern slopes. Scalebroom scrub was mapped along the active channel in Water Canyon, and desert wash and cheesebush scrub was mapped on adjacent floodplains. The canyon floor and adjacent rocky slopes contained bladderpod (*Peritoma (=Isomeris) arborea*), desert almond (*Prunus fasciculata*), Thurber's sandpaper plant (*Petalonyx thurberi*), and desert baccharis. The extensive uplands supported mostly white bursage and creosote bush-white bursage scrub. More unusually, some of the higher north-facing slopes supported blackbrush, and a large area deep within Water Canyon supported Joshua tree/white bursage woodland, a somewhat unusual combination. The spring, mapped as meadow and seep, at the upper end of Water Canyon was fairly substantial and supported iris leaved rush (*Juncus xiphioides*) and cattails. The extensive barren area mapped on the eastern slopes was unusual-looking but was not considered sensitive.

Special-status plant resources. Parcel J-5 contained several natural communities considered sensitive from a regional or statewide perspective. Joshua tree woodland is ranked S3 statewide, although it is widespread in the project area. The scalebroom scrub in the canyon floor is considered a sensitive natural community. Although no special-status plants were observed in the barren area on the eastern slope, it appeared to be potential habitat for a number of special-status plants, such as Mojave spineflower and Red Rock poppy. In addition to being sensitive on its own, the seep and spring habitat in the upper canyon provides potential habitat for Red Rock tarplant, Mojave tarplant, and alkali mariposa-lily, as well as streambank spring beauty, which was reported by DeDecker from Water Canyon. The rocky canyons with their many slopes and exposures contain potential habitat for Charlotte's phacelia, Mojave fish hook cactus, desert cymopterus, and limestone dudleya. The canyon floor could provide habitat for crowned muilla, solitary blazing star and creamy blazing star.

Disturbance factors. The lower portions of Water Canyon were criss-crossed with OHV tracks, but these lessened farther up the canyon when the bottom became too narrow and rocky for vehicle passage.

3.3.2 Sugarloaf Area Parcels

Parcel S-1 (APN 153-240-12)

This 617-acre parcel is located just west of the LADWP aqueducts and 1 mile north of Sugarloaf Peak. In addition to the Aqueduct service roads that define a portion of the eastern boundary of this parcel, a designated route (SC175) bisects Parcel S-1. This parcel is situated on gentle topography that slopes slightly to the east. It is divided by several well-defined washes that flow in a southeasterly direction. The elevation range for this parcel is about 200 feet, from 3,120 to 3,340 feet. The soils in this parcel are primarily Dovecanyon loamy sand in most of the western portion of the parcel, but about one-fifth of the parcel is mapped as Cutterbank soils formed in lakebed sediments; these are in the northeastern portion of the parcel.

Vegetation resources. Nearly all of the parcel was mapped as blackbrush-creosote bush scrub. Some small areas in the southern portion of the parcel were mapped as creosote bush scrub; these

were very sparse and barren. An area in the southwestern corner of the parcel was mapped as blackbrush scrub alone. Four washes were mapped as desert wash.

Special-status plant resources. The Cutterbank soils in the eastern part of the parcel have potential to support Mojave spineflower, while the sandy soils elsewhere have potential to support white pygmy-poppy, crowned muilla, Death Valley sandmat, and solitary blazing star.

Disturbance factors. This parcel is unusual in having several miles of roads identified on USGS Dove Spring quadrangle but are not designated routes. The airphoto indicates these roads are well-defined, as are some additional tracks.

Parcel S-2 (APN 153-240-14)

This 127-acre parcel is located just west of the LADWP aqueducts and about 2 miles north of Sugarloaf Peak. This parcel is situated on a nearly level plain that slopes gently to the east. The aqueduct road (LA2) is a short distance east of the eastern boundary of the parcel. The USGS Dove Spring topographic map shows a road passing east to west near the northern boundary of the parcel, but this is not a currently designated OHV road. The elevation range for Parcel S-2 is almost 900 feet, from 3,360 to 3,480 feet. The soils in Parcel S-2 are mostly Dovecanyon loamy sand in most of the northeastern portion of the parcel, but about one-third of the parcel is mapped as Cutterbank soils, finer-textured soils formed in lakebed sediments; these are in the southwestern portion of the parcel.

Vegetation resources. The uplands in Parcel S-2 were all mapped as blackbrush-creosote bush scrub. The uplands were remarkably uniform in this area, with relatively low diversity in the shrub layer. Two desert washes were well-defined, with broad sandy channels and floodplain and limited shrub cover consisting of rubber rabbitbrush and cheesebush with a little scalebroom along the active channel.

Special-status plant resources. The Cutterbank soils have potential to support Mojave spineflower, while the sandy soils elsewhere have potential to support white pygmy-poppy, crowned muilla, Death Valley sandmat, and solitary blazing star. Rocky areas may have potential to support Mojave fish hook cactus and desert cymopterus.

Disturbance factors. This parcel has a moderate amount of tracks criss-crossing the uplands and following the ridges. No weed infestations were noted.

Parcel S-3 (APN 153-240-16)

This 327-acre parcel is located at the eastern edge of the EKCA project area. It is bisected by the LADWP power line and service road, a designated OHV route. The power line and the service road follow somewhat different routes through the parcel as the service road ascends the much-dissected hills. The northern portion of the parcel contains a broad, gently sloping, sandy bajada, while the southern portion of the parcel contains highly dissected hills of moderate height. The elevation range of the parcel is almost 400 feet, from 2,800 to 3,180 feet. The soils in Parcel S-3 are mostly Cutterbank lakebed soils, with a small amount of Dovecanyon loamy sand in the northern portion.

Vegetation resources. The great majority of the uplands in Parcel S-3 were mapped as creosote bush-white bursage scrub; however, the density and cover were much higher in the Dovecanyon soils in the northern part of the parcel than in the Cutterbank soils in the south. On south-facing, exposed slopes the vegetation was mapped as white bursage scrub, while on the north-facing slopes a higher-diversity mix of shrubs was mapped as lower Mojave mixed desert scrub. Some

small areas with very sparse vegetation and a rocky substrate were mapped as California buckwheat scrub. The most extreme bare areas with gravelly clay were mapped as barren. An extensive system of desert wash habitat was mapped, much of it open sand with sparse rubber rabbitbrush, blackstem rabbitbrush, scalebroom, allscale, and cheesebush.

Special-status plant resources. Death Valley sandmat was observed in Parcel S-3 in two localities during field surveys; this species is expected to occur much more widely in suitable habitat. The relatively small barren area in the center of the parcel could support Mojave spineflower. Mojave fish hook cactus, limestone dudleya and desert cymopterus have potential to occur on the rocky slopes, while the open sandy soils could support crowned muilla, creamy blazing star, and solitary blazing star. Red Rock tarplant and Red Rock poppy could occur as outliers from their known distribution a few miles to the east.

Disturbance factors. The USGS Cinco quadrangle shows one road on the parcel that is not a designated OHV route. Airphotos show some tracks along ridgelines and some in the extensive wash in the northern part of the parcel. For the most part Parcel S-3 appears to have relatively limited OHV disturbance.

Parcel S-4 (APN 181-020-02)

This 614-acre parcel is located between the LADWP aqueducts on the west and the LADWP power line on the east. The parcel slopes generally eastward through dissected hills, with a couple of well-defined washes draining eastward. The southern wash is a designated route (SC 262), the only one in the parcel. The elevation range for Parcel S-4 is 560 feet, from 2,760 feet to 3,320 feet. Soils in most of Parcel S-4 are Cutterbank lakebed soils to the north of SC 262; to the south is Dovecanyon loamy sand.

Vegetation resources. As noted elsewhere, vegetation in the Dovecanyon soils is larger, denser, and more diverse than in the Cutterbank soils. In this parcel, this dense scrub was mapped as creosote bush scrub, while the less dense and less diverse expression on Cutterbank soils was mapped as creosote bush-white bursage scrub. Three broad and well-defined washes supported desert wash scrub dominated by rubber rabbitbrush. A small spring was mapped in the center of the parcel where desert riparian vegetation was observed. An unusually vigorous stand of creosote bush was noted in association with fresh alluvial deposits in the southern portion of Parcel S-4. This was traced back to a break in the LADWP aqueduct.

Special-status plant resources. The small area of desert riparian habitat was considered a sensitive vegetation type. Special-status plants with potential to occur in Parcel S-4 include Mojave fish hook cactus and limestone dudleya on the rocky ridges, Mojave spineflower, Red Rock poppy, and Red Rock tarplant on the terraces and washes in the Cutterbank soils, and Death Valley sandmat, solitary blazing star and crowned muilla on open sandy flats and terraces.

Disturbance factors. Few tracks were visible in this parcel; the more southern wash is a designated route, and the more northern washes were not investigated. No unusual infestations of weeds were noted in this parcel.

Parcel S-5 (APN 181-020-11)

This 613-acre parcel is located west of the LADWP aqueducts and includes Sugarloaf Peak, the highest point in the eastern acquisition area of the EKCA survey area. The elevation range for this parcel is over 1,100 feet, from 3,000 feet at the southeastern corner of the parcel to 4,132 feet at the top of Sugarloaf Peak. The only designated route is the LA Aqueduct and SC 175 along the eastern side of the parcel. The soils in Parcel S-5 are Typic Torriorthents-Rock Outcrops,

Jawbone Association, and a narrow strip of Cutterbank soils along the eastern margin of the parcel.

Vegetation resources. Vegetation on most of the steep slopes of Sugarloaf Peak was sparse, low-growing, and moderately diverse lower Mojave mixed woody scrub dominated by green rabbitbrush, California buckwheat, interior goldenbush, bladder sage, and cheesebush. The lower slopes and alluvial fans supported more typical creosote bush-white bursage scrub and cheesebush scrub. The eastern area of Cutterbank lakebed sediments was mapped as rock outcrop; this area had very low plant cover. The washes supported a sparse stand of desert wash scrub dominated by rubber rabbitbrush and cheesebush. Parcel S-5 contained the only stand of mesquite scrub observed in the survey area; this was found at a small seep on the eastern, lower slope of Sugarloaf Peak.

Special-status plant resources. Although very small, the example of mesquite scrub on the lower slope of Sugarloaf Peak was a unique and sensitive natural community. Because of the extensive rock outcrops with every aspect, this parcel has potential to support Mojave fish hook cactus, Charlotte's phacelia, and limestone dudleya. The sandy flats at lower elevations could support Death Valley sandmat, crowned muilla, solitary blazing star and creamy blazing star. The fine-textured lakebed soils on the eastern side of the parcel could support Mojave spineflower.

Disturbance factors. The USGS Cinco quadrangle shows a route up to the top of Sugarloaf Peak; although fenced off currently, this has been widely used by OHVs, both on and off the identified route. On the ridgeline track leading to the top of the peak, all vegetation and most soil was eroded away, and cross-country tracks on the side of the mountain have caused substantial erosion.

Parcel S-6 (APN 181-020-13)

This 622-acre parcel is located 1 mile east of the Sugarloaf Peak parcel. The LADWP power line and service road pass through the eastern portion of the parcel, and a designated route (SC 262) passes northwestward along a wash through the parcel. This parcel slopes southeastward through highly dissected hills toward Red Rock Canyon. Several broad washes drain east and southeastward; a well-developed spring is located just west of the parcel, and a less-developed spring and associated riparian habitat are present in the central portion of the parcel. Parcel S-6 has an elevation range of almost 470 feet, from 2,500 feet in the southeastern corner to 2,967 feet on a knoll at the northwestern corner. The soils throughout most of the parcel are Cutterbank lakebed soils, with a small area of Koehn coarse sands in the northeastern corner of the parcel.

Vegetation resources. Most of the parcel was mapped as either creosote bush scrub or creosote bush-white bursage shrub. The vegetation growing on Koehn coarse sands was, as usual, larger and denser than that found on the less productive Cutterbank soils. However, this parcel was unusual in having a large area of very barren, highly dissected soils that were some of the most extreme expression of the Cutterbank soils—dense, fine-textured soils with a gravelly surface. This parcel was also unique in supporting a fairly large area of creosote bush-desert senna scrub. This parcel also contained many well-defined washes with low cover, typically rubber rabbitbrush, cheesebush, and allscale. A small subsurface spring supporting a small stand of desert riparian forest dominated by Fremont cottonwood was observed in the central part of the parcel along a wash.

Special-status plant resources. The desert riparian forest is considered a sensitive natural community, although the example in this parcel is quite small. Several populations of Mojave spineflower were mapped in the barren areas of Cutterbank soils. The populations were small

compared to those from the previous year; in fact, the skeletons of the previous year's plants were more readily detected than the current year's plants. Other species with high potential to occur include Death Valley sandmat and crowned muilla in the open sandy soils, possibly Red Rock tarplant, solitary blazing star and Red Rock poppy in clay soils along the washes, and potentially Mojave fish hook cactus on rock outcrops.

Disturbance factors. OHV tracks were seen on ridgetops in some places, and in the washes to some extent. No infestations of weeds were noted in this parcel.

3.3.3 Dove Spring Area Parcels

Parcel D-1 (APN 153-130-01)

This 640-acre parcel is located about a quarter-mile south of Dove Spring. Dove Spring Road (SC 103) passes through the parcel from north to south. The parcel slopes moderately to the north and east toward Dove Spring Canyon. Several small and ephemeral watercourses drain to the north and east but do not have broad channels. The elevation range for Parcel D-1 is 640 feet, from 4,320 feet in the north to 4,960 feet in the southwest corner. The soils in this parcel are in the Goldpeak-Wingap-Pinyonpeak complex, all formed in granite and granitic alluvium.

Vegetation resources. The higher north-facing slopes in Parcel D-1 were mapped as supporting Joshua tree/blackbrush woodland, while the lower slopes supported blackbrush scrub. In general the blackbrush scrub was moderately diverse, with elements of upper Mojave mixed woody scrub such as spiny hopsage, horsebrush, Nevada ephedra, and Cooper's box thorn. A small area was mapped as annual grassland; this was near the road and may have been the result of a fire. Blackbrush recovers from fire very slowly, so this event could have occurred some years ago. A few shrubs, mainly Nevada ephedra, were beginning to reappear in the annual grassland, but most of the vegetation was redstem filaree, red brome, devil's lettuce (*Amsinckia tessellata*), and yellow tansy mustard (*Descurainia pinnata*).

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. The coarse sandy flats found in Parcel D-1 have potential to support Kern County evening-primrose, white pygmy-poppy and Death Valley sandmat, while the rocky outcrops and loose slopes could support limestone dudleya and Charlotte's phacelia. Sandy soils and washes throughout the site could provide habitat for solitary blazing star and crowned muilla.

Disturbance factors. A few tracks were evident on airphotos; these could have been from livestock or OHVs. No unusual weed infestations were noted in this parcel.

Parcel D-2 (APN 153-130-03)

This 640-acre parcel is situated along Dove Spring Canyon, which passes through the northern portion of the parcel. Dove Spring Canyon is a significant watercourse which contains springs at various points along its length. Several tributary watercourses flow northward into Dove Spring Canyon within the parcel, but these carry only ephemeral flows. The parcel as a whole slopes moderately to the north and east. One designated road, SC 103, originates at the Dove Springs Open Area and follows the canyon up to Gold Peak Well, in the northeastern corner of Parcel D-2, then turns to the southwest and ascends the hills. A fence has been constructed adjacent to the road, evidently to discourage OHV trespass. An historic road is shown continuing up Dove Spring Canyon, but it appears to be disused. The elevation range for Parcel D-2 is 540 feet, from 3,620 feet at the northeastern corner to 4,160 feet on the western side. The soils in this parcel are

Pinyonpeak-Wingap-Rock Outcrop and Goldpeak complex, all soils formed in granite and associated alluvial fans.

Vegetation resources. Parcel D-2 had some unusual and distinctive vegetation. First, Dove Spring Canyon contained a continuous band of desert riparian vegetation for over a quarter-mile consisting primarily of willow scrub, rushes, and salt grass, with a varied understory of herbs and grasses. Downstream from this extensive desert riparian scrub was an herbaceous-dominated area with only rushes and salt grass; this was mapped as meadow and seep. A narrow band of scalebroom scrub continued downstream from this point. Although too small to map, a dense band of fourwing saltbush (*Atriplex canescens*) was observed growing for several hundred feet along the north side of the wash; it appeared to be associated with lateral seepage. Still farther downstream was a broad wash and terrace supporting cheesebush scrub. The hills to the north of Dove Spring Canyon were steep, sandy, and sparsely vegetated; despite the high elevation, the species here were characteristic of lower Mojave mixed woody scrub—Acton's encelia, grape lupine, white bursage and Nevada ephedra. The uplands in most of Parcel D-2 were dominated by blackbrush scrub, much of which contains very sparse Joshua trees. Two broad, gently sloping areas had higher densities of Joshua tree and were mapped as Joshua tree/blackbrush woodland. Several north-facing slopes, perhaps with deeper soils, supported a diverse mix of shrubs containing spiny hopsage, narrow scaled felt thorn (*Tetradymia stenolepis*), Cooper's box thorn, and desert needlegrass; these were mapped as upper Mojave mixed woody scrub.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. The riparian scrub and meadow complex along Dove Spring Canyon was the largest single, continuous wetland and riparian area in the eastern acquisition area. In addition to being a sensitive natural community, this riparian and meadow habitat could support alkali mariposa-lily and Mojave tarplant, while the nearby washes could support solitary blazing star. Potential habitat was present in the sandy and gravelly uplands for white pygmy-poppy, Kern County evening-primrose, Death Valley sandmat and crowned muilla. Although talus slopes were limited, potential habitat also was present for Charlotte's phacelia.

Disturbance factors. We observed limited OHV use of the parcel west of the fenceline, and some of the tracks visible on the airphoto may be from livestock usage. Tracks were increasingly abundant east of the road and fenceline near the Dove Spring Open Area. No unusual weed infestations were noted.

Parcel D-3 (APN 153-130-05)

This 640-acre parcel is located about 1.5 miles southeast of Dove Spring. Dove Spring Road (SC 103) passes through the parcel and is intersected by designated routes SC 99 and SC 129 there. Parcel D-3 contains a high knoll, but most of the parcel drains to the east. One watercourse is detectable as an unvegetated channel draining eastward through the center of the parcel. The elevation range for the parcel is about 600 feet, from 4,040 feet in the southeastern corner to 4,606 feet at the top of the knoll. The soils in Parcel D-3 are mapped as Goldpeak-Wingap-Pinyonpeak complex, all soils formed over granite or alluvium formed from granite.

Vegetation resources. This parcel was dominated by blackbrush in the shrub layer; blackbrush scrub was mapped in the thinner and more rocky soils on the knolls and in the northern portion of the parcel. In deeper soils, Joshua trees provided significant cover and more shrubs were present, such as California buckwheat and green rabbitbrush. Here, the vegetation was mapped as Joshua tree/blackbrush woodland.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Special-status plants with potential to occur in Parcel D-3 include Kern County evening-primrose and white pygmy-poppy on gravelly flats; and Death Valley sandmat, solitary blazing star and crowned muilla in sandy washes and flats.

Disturbance factors. Some old tracks shown on the USGS Dove Spring quadrangle are not designated routes. A linear, apparently scraped, area extended slightly into the southeastern corner of the parcel; the cause or purpose of this disturbance is unknown. In addition, a few tracks were evident on airphotos, indicating a low level of existing disturbance.

Parcel D-4 (APN 153-150-04)

This 640-acre parcel is located about 3 miles southeast of Dove Spring. A designated road (SC 99) passes through the parcel from northwest to southeast, while another (SC 171) crosses from west to east. The parcel slopes gently eastward, with two ephemeral watercourses mapped on the USGS Dove Spring quadrangle. The elevation range in Parcel D-4 is about 300 feet, from 3,760 to 4,040 feet. The soils in Parcel D-4 are mapped entirely as Goldpeak gravelly loamy sand; these are soils formed in fan remnants of granitic origin.

Vegetation resources. This parcel was mapped entirely as Joshua tree/blackbrush woodland, although the Joshua trees barely provided 1 percent of cover in much of the parcel. Although the soils and vegetation mapping appear uniform at a broad scale, a modest amount of relief and variation in vegetation density is provided in the dissected topography of the old alluvial fans. The drainages contained a fair amount of cheesebush, while the rocky uplands contained species such as Cooper goldenbush (*Ericameria cooperi*) and spiny hopsage.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Death Valley sandmat was reported from this parcel in May 2012; systematic surveys would likely result in more observations of this species. Other species with at least moderate potential to occur include Kern County evening-primrose and white pygmy-poppy on sandy and gravelly flats, solitary blazing star in sandy washes, crowned muilla in open desert scrub, and Mojave fish hook cactus on rocky outcrops.

Disturbance factors. Several tracks cross Parcel D-4 in all directions. These are quite straight, suggesting OHV use more than cattle tracks. No invasive plant infestations were noted in this parcel.

3.3.4 Alphie Canyon Area Parcels

Alphie Canyon runs generally south-southeast through the survey area, from near Dove Spring southward to Blue Point, where it empties into Jawbone Canyon. Parcels are situated on both sides of the canyon. Several large tributary drainages empty into Alphie Canyon within the survey parcels.

Parcel A-1 (APN 153-140-05)

This 640-acre parcel is situated about 7 miles north of Jawbone Canyon and 2 miles south of Dove Spring Road. Alphie Springs Road (SC 176) passes more or less through the middle of the parcel, as does the central wash of Alphie Canyon. The parcel occupies the northernmost broad alluvial fans at the head of Alphie Canyon. The elevation range for the parcel is 480 feet, from 4,600 to 5,080 feet. The soils are Goldpeak-Pinyonpeak-Wingate complex and Wingate-

Pinyonpeak, soils formed over granite and alluvial fans formed from granite. The soils were gravelly and relatively thin.

Vegetation resources. Most of Parcel A-1 was mapped as Joshua tree/blackbrush woodland. As is typical in blackbrush supporting Joshua trees, the shrub layer was moderately diverse and supported other species characteristic of upper Mojave mixed woody scrub, such as horsebrush, big sage, and Nevada ephedra. As is typical for these thin, gravelly soils, the herbaceous layer was rather sparse. A bit of the southern portion of the parcel was mapped as blackbrush scrub, and desert wash was mapped along the main channel of Alphie Canyon for the length of the parcel.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. The gravelly and sandy flats in Parcel A-1 could support Kern County evening-primrose, white pygmy-poppy, and crowned muilla, while the sandy washes and alluvium could support Death Valley sandmat. Rock outcrops and talus slopes could support Mojave fish hook cactus and Charlotte's phacelia.

Disturbance factors. Aside from the designated trail, a few linear features can be seen on aerial photographs. Some connect with old trails shown on the USGS Dove Spring quadrangle and may be OHV trails, while others meander in a way that suggests they are cattle trails. The degree of disturbance in this parcel appears to be low to moderate. No infestations of invasive plants were noted during site surveys in 2012.

Parcel A-2 (APN 153-150-02)

This 400-acre parcel is situated about 6 miles north of Jawbone Canyon. It occupies more or less the northeastern diagonal half of a section and is almost entirely on the eastern side of Alphie Canyon and Alphie Springs Road (SC 176); both the canyon and the road pass through a corner of the parcel for a few hundred feet. In addition to Alphie Canyon, a narrow and poorly-defined draw drains eastward. The elevation range for this parcel is about 340 feet, from 4,280 feet in Alphie Canyon to 4,617 feet on a low knoll to the northwest. The soils in Parcel A-2 are Wingate-Pinyonpeak and Goldpeak-Pinyonpeak-Wingate complex, both soils formed over granite and alluvial fans formed from granite.

Vegetation resources. The vegetation in Parcel A-2 was mapped entirely as Joshua tree/blackbrush woodland. Although blackbrush was by far the most abundant and dominant shrub species, a variety of upper Mojave mixed woody scrub species were present, including Wiggins' cholla (*Cylindropuntia echinocarpa*), beavertail cactus (*Opuntia basilaris*), green rabbitbrush, and Nevada ephedra. A small wash was observed in this parcel; it had a defined channel but limited shrubby vegetation.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. The gravelly and sandy flats in Parcel A-2 could support Kern County evening-primrose, white pygmy-poppy, and crowned muilla, while the sandy washes and alluvium could support Death Valley sandmat. Rock outcrops and talus slopes could support Charlotte's phacelia.

Disturbance factors. The USGS Dove Spring quadrangle indicates an old road passing more or less northward through the parcel, but this is not a designated OHV route. It may still be seen on aerial photographs, along with a variety of linear features criss-crossing the parcel. It is not clear whether some of these are livestock trails or OHV trails. No infestations of invasive plants were noted during field surveys.

Parcel A-3 (APN 153-150-06)

This 280-acre parcel is located about 5 miles north of Jawbone Canyon. This is an “L”-shaped parcel with the southern leg crossing the wash in Alphie Canyon and the eastern, north-south leg on a plateau. Alphie Springs Road (SC 176) passes through this parcel, as does SC 171, the east-west connector to Dove Spring. The San Antonio Mine is nearby to the north and west of this parcel. The elevation range for Parcel A-3 is 400 feet, from 3,780 feet in Alphie Canyon to 4,200 feet on the plateau. The soils are Wingap-Pinyonpeak and Goldpeak soils which are formed over granite and alluvial fans derived from granite.

Vegetation resources. Most of the parcel was mapped as blackbrush scrub, although a portion of the northern arm was mapped as Joshua tree/blackbrush woodland, a diverse scrub with many cactus and large shrubs. Desert wash was mapped in the fairly broad bottom of Alphie Canyon as it passed through this parcel. It supported rubber rabbitbrush, shrubby ragwort, tarragon (*Artemisia dracunculus*), green rabbitbrush on the toe slopes, and grape lupine on the hillslopes above the wash.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. About 25 desert cymopterus plants were observed on a low ridge with loamy sand and a thinly crusted surface containing pebbles and gravel. This observation was unexpected because the nearest records for desert cymopterus are about 20 miles distant. Other species with potential to occur on Parcel A-3 include Death Valley sandmat in the deeper sands and washes, crowned muilla in open sandy places, and potentially Mojave fish hook cactus on rocky sites and Charlotte’s phacelia in loose gravel or talus.

Disturbance factors. In addition to the two designated roads, airphotos show a number of traces criss-crossing Parcel A-3. This site has moderate disturbance, and vulnerability because of its proximity to several roads and washes.

Parcel A-4 (APN 153-170-03)

This 640-acre parcel is located 4 miles north of Jawbone Canyon. It is located east of Alphie Canyon proper and Alphie Canyon Road (SC176). The parcel is deeply cut by a tributary wash to Alphie Canyon on the western half, while the eastern half of the parcel consists of very gently sloping uplands. The elevation range for Parcel A-4 is 540 feet, from 3,320 feet in the bottom of the tributary wash to 3,856 feet at the top of a low knoll on the northeastern corner of the parcel. The soils in Parcel A-4 are Wingap, Pinyonpeak, Goldpeak and Jawbone-Typic Haplargids-Rock Outcrop soils which are formed over granite hills and alluvial fans formed from granite.

Vegetation resources. The vegetation in most of the parcel is blackbrush scrub, which extends over all of the eastern uplands and well into the western portion of the parcel. In the steep and somewhat dissected canyon near the drainage were Joshua tree/blackbrush woodland, Joshua tree/Lower Mojave mixed woody scrub woodland, creosote bush-white bursage scrub, and barren. These mapping units were situated in more dissected and steeper terrain, with the steepest and most exposed areas containing barren areas, and the more sheltered canyon supporting Joshua tree woodland. A very small area of alkaline meadow and seep habitat was mapped in the central drainage, which also contained desert wash along its length. The meadow and seep area contained some sandbar willow and arroyo willow, as well as rushes and salt grass. The western wash and canyon contained a very diverse assemblage of plants typically seen in protected, somewhat moist habitats; these included thick pod milk vetch (*Astragalus pachypus*), toad rush (*Juncus bufonius*),

and California goosefoot (*Chenopodium californicum*). Nearly 100 species were observed during field surveys in 2012.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Death Valley sandmat was observed along several hundred feet of the main wash, and could be more extensive than what was mapped. Other species with potential to occur in Parcel A-4 include white pygmy-poppy and crowned muilla in the sandy or gravelly flats in the uplands; alkali mariposa-lily; Mojave tarplant and solitary blazing star in and near the alkaline seep in the main wash; and Charlotte's phacelia and Mojave fish hook cactus in the loose gravel or talus and rock outcrops in the higher uplands.

Disturbance factors. There are no designated routes in Parcel A-4. The USGS Dove Spring quadrangle shows a north-south road parallel to Alphie Canyon Road, and some roads in the eastern half of the parcel. These do not appear to be in active use by OHVs. Aerial photographs show light trails in the blackbrush scrub; and trails were observed along the ridgelines and tracks were seen in the washes. Recent fencing near Alphie Springs Road may curtail use. In terms of invasives, some tamarisk was noted in the central wash near the meadow and seep habitat.

Parcel A-5 (APN 153-170-06)

This estimated 640-acre parcel is located 3 miles north of Jawbone Canyon in Alphie Canyon. This feature extends the length of the parcel from north to south, as well as containing Alphie Canyon Road (SC 176). The parcel is steeply dissected near Alphie Canyon but contains more gradual topography to the west. In addition to Alphie Canyon, an intermittently flooded wash, the parcel contains a series of nine seeps and springs along the Sierra Nevada fault line on the western side of the wash. This is the greatest concentration of such features in the eastern acquisition area. The elevation range in Parcel A-5 is 880 feet, from 3,040 feet in Alphie Canyon to 3,920 in the uplands to the west. The soils are mapped as Wingap-Pinyonpeak and Jawbone-Typic Haplargids, both formed in granite. However, the geologic map (Smith 1964) shows some metamorphic formations west of the Sierra Nevada fault line.

Vegetation resources. The vegetation of Parcel A-4 was fairly complex. The uplands on the western side were all mapped as blackbrush scrub, while the dissected canyons contained barren areas at the top of the slopes, Joshua tree/creosote bush woodland, lower Mojave mixed woody scrub and creosote bush scrub on the upper slopes. Near the canyon bottom was Joshua tree/lower Mojave mixed woody scrub woodland, and in the wash itself was desert wash scrub. On the terraces and benches was allscale scrub. The seeps and springs perched on the side slopes to the west of Alphie Canyon, including Alphie Springs, supported meadow and seep vegetation with areas of desert riparian scrub too small to map. These meadow and riparian areas supported Fremont cottonwood, arroyo willow, and even alkali sacaton, as well as iris-leaved rush and cattails.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. The numerous seeps, springs and desert riparian vegetation are sensitive areas. Two special-status plants were found in this parcel. Mojave fish hook cactus was found on the slopes to the west of Alphie Springs, Charlotte's phacelia was found on a steep slope with loose gravel and small rocks on the eastern side of the parcel. The colony of Charlotte's phacelia was found in very early flower in early April 2012, but by May 3 all plants had dried and become undetectable. Similar habitat was present elsewhere in the parcel.

Other special-status plants with potential to occur in Parcel A-5 include alkali mariposa-lily and Mojave tarplant in and near the seeps and springs; limestone dudleya in the rock outcrops; Death Valley sandmat and solitary blazing star in the washes and canyons;

Disturbance factors. Airphotos show a moderate amount of trails on the ridges in Parcel A-5. Numerous OHV tracks were observed in the canyons to the east of Alphia Springs Road, but these may have been created before the fencing now in place was installed.

Parcel A-6 (APN 153-170-04)

This 600-acre parcel is located on the eastern side of Alphia Canyon about 3 miles north of Jawbone Canyon. It consists of fairly gently sloping uplands in the eastern portion of the parcel and two deeply dissected canyons draining toward Alphia Canyon. There are no designated roads in this parcel, but Alphia Springs Road (SC 176) runs parallel to and just west of the western side of the parcel. The elevation range for Parcel A-6 is 480 feet, from 3,200 feet in the canyons to 3,680 feet in the eastern uplands. The soils are Jawbone, Wingate-Pinyonpeak-Goldpeak, Typic Torriorthents, and Dovecanyon loamy sands; all are formed in granite or granite alluvium.

Vegetation resources. The vegetation in the eastern uplands was mapped primarily as blackbrush scrub; however, near the eastern side of the parcel blackbrush became co-dominant with creosote bush. The dissected canyons supported lower Mojave mixed woody scrub on the more sheltered north- and west-facing exposures, with bladder sage, interior goldenbush, and sticky snakeweed (*Gutierrezia microcephala*), and creosote bush-white bursage scrub on the more exposed south-facing slopes, with Acton's encelia, California buckwheat, and occasional grape lupine. The washes themselves supported desert wash scrub such as shrubby ragwort and desert baccharis, but no seeps were mapped in this parcel.

Special-status plant resources. Death Valley sandmat was observed along the wash in Parcel A-6, and it is likely that additional populations could be found elsewhere in the parcel in suitable habitat. Open sandy or gravelly flats could support white pygmy-poppy and crowned muilla; solitary blazing star and creamy blazing star could occur in canyons, rock outcrops and washes; Charlotte's phacelia, limestone dudleya and Mojave fish hook cactus in the loose gravel or talus and rock outcrops in the higher uplands.

Disturbance factors. Although there are no designated OHV routes in Parcel A-6, the USGS Dove Spring quadrangle shows an historic route from east to west, connecting Alphia Springs with some of the routes on the eastern side of the acquisition area. Airphotos of this parcel show a moderate degree of OHV disturbance, with tracks on ridgelines. The soils were noted as fairly erodible on the hills and slopes where plant cover is limited naturally.

Parcel A-7 (APN 444-070-05)

This 477-acre parcel is located about 2 miles north of Jawbone Canyon. It consists of moderately rugged, dissected uplands cut by several southwest-trending canyons that empty into Alphia Canyon. The elevation range for Parcel A-7 is 640 feet, from 2,960 feet in the canyons in the southwestern corner to 3,584 feet at a knoll on the eastern side. The soils are primarily Typic Torriorthents-Rock Outcrop soils with a small amount of Dovecanyon loamy sand on the eastern side. Both are formed from granite; the former are soils formed in granitic parent material and the latter are formed in fan remnants formed from granitic alluvium.

Vegetation resources. Some of the uplands on the eastern and northern portions of Parcel A-7 were mapped as blackbrush scrub, while most of the central and southern portion of the parcel was mapped as lower Mojave mixed woody scrub, reflecting the decreasing elevation in the

lower portion of Alphie Canyon. Both canyons had extensive areas of desert wash scrub with desert baccharis, blackstem rabbitbrush and scalebroom near the active channel and cheesebush and allscale on the floodplain. No seeps or springs were observed, although groundwater rises to near-surface in a number of places where the canyons are constricted by resistant rocks; these areas often support stands of baccharis and shrubby ragwort. As with the rest of the survey area, herbs tended to be larger, more numerous and more diverse in the wash where slightly more moisture accumulated in this dry year.

Special-status plant resources. Death Valley sandmat was observed along the wash in Parcel A-7, and it is likely that additional populations could be found elsewhere in the parcel in suitable habitat. Open sandy or gravelly flats could support desert cymopterus and crowned muilla; solitary blazing star and creamy blazing star could occur in canyons, rock outcrops and washes; Charlotte's phacelia, limestone dudleya and Mojave fish hook cactus could be found in the loose gravel or talus and rock outcrops in the higher uplands.

Disturbance factors. There are no designated routes within Parcel A-7, although the USGS Cinco quadrangle shows some older tracks following the draws from the southwestern portion of the parcel, heading north and east to the more gentle terrain farther east. Airphotos of the uplands on the eastern side of the parcel show a number of roads and tracks, many of them connecting with the upper ends of the washes.

Parcel A-8 (APN 444-070-09)

This 640-acre parcel is located 1 mile north of Jawbone Canyon. Alphie Springs Road (SC176) and Butterbredt Canyon Road (SC123) both pass through this parcel. This lower portion of Alphie Canyon is characterized by very broad washes and steep, dissected uplands. The elevation range for this parcel is 640 feet, from 2,680 feet in the lower portion of the canyon to 3,320 feet in the rocky uplands. The soils in Parcel A-8 are mostly Jawbone-Typic Haplargids-Rock Outcrop association, with Typic Torriorthents also found in the uplands and Koehn fine sands in the washes. All are associated with granite parent material.

Vegetation resources. This parcel was mapped with blackbrush scrub in the northwestern portion, with creosote bush-white bursage scrub occupying most of the central portion of the parcel. The very broad wash and associated terraces occupy much of the central and eastern portion of the parcel. In the eastern, rocky but somewhat sheltered slopes, the vegetation was mapped as lower Mojave mixed woody scrub, a fine-textured mosaic with no one species dominant. A small amount of Joshua tree/creosote bush woodland was mapped in the southern portion of the parcel. The barren area in the central portion of the parcel had low cover, but a relatively high diversity of perennial species, including chaparral yucca, and many species of buckwheat. The eastern wash supported some scalebroom, with allscale, rubber rabbitbrush, green ephedra, and some Joshua tree, suggesting only occasional flooding.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. In terms of potential for special-status plants, open sandy or gravelly flats could support crowned muilla; Death Valley sandmat and blazing star could occur in canyons, rock outcrops and washes; Charlotte's phacelia, limestone dudleya and Mojave fish hook cactus in the loose gravel or talus and rock outcrops in the higher uplands.

Disturbance factors. As indicated in the introduction to this parcel, two designated roads pass through Parcel A-8. Another track is shown on the USGS Cinco quadrangle. However, airphotos

show a high concentration of tracks in the broad and generally level washes, both along Alphia Canyon and along Butterbredt Canyon Road.

3.3.5 Butterbredt Area Parcels

Parcel B-1 (APN 153-070-05)

This 632-acre parcel is located at the head of Butterbredt Canyon, less than a mile west of Gold Peak. Butterbredt Canyon Road (SC 123) passes through the parcel, as does Gold Peak Road (SC 124); the two join just west of Parcel B-1. The Pacific Crest Trail skirts this parcel on the north and western sides. This parcel contains a ridge of Gold Peak that divides two watersheds; the southern portion drains down Butterbredt Canyon into Jawbone Canyon, while the northern portion drains toward Kelso Creek and eventually to the South Fork of the Kern River. Although watercourses are mapped on the USGS Pinyon Mountain quadrangle, these appear to be ephemeral drainages that carry water only briefly during and after major storm events. The elevation range for Parcel B-1 is 560 feet, from 5,000 feet to 5,560 feet on the shoulder of Gold Peak. The soils mapped here are essentially all Grandora-Pinyonpeak association; these are soils formed in colluvium or residuum weathered from granite.

Vegetation resources. Joshua tree woodland was mapped nearly throughout Parcel B-1, with varying shrub understory elements. The south-facing slopes supported Joshua tree/blackbrush woodland, while the north-facing slope of the same ridge had Joshua tree/big sage woodland; this was a diverse area with green ephedra, bitterbrush, spiny hopsage and other shrub and perennial grass species. The highest and most exposed slope supported Joshua tree/California buckwheat woodland, and the deeper soil in the upper valley supported Joshua tree/upper Mojave mixed woody scrub woodland. Some rock outcrops supported only California buckwheat with no Joshua tree, but these were limited in extent.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy or gravelly flats could support white pygmy-poppy, Kern County evening-primrose and crowned muilla; sandy washes could support Death Valley sandmat; rocky outcrops and gravel or talus slopes could support limestone dudleya and Charlotte's phacelia.

Disturbance. Based on reconnaissance survey and examination of airphotos, this parcel receives regular use on designated routes, but appeared to have limited off-route tracks. No unusual invasive plant infestations were noted.

Parcel B-2 (APN 153-140-08)

This 317-acre parcel is located in the upper portion of Butterbredt Canyon, about a mile south of Gold Peak. Butterbredt Canyon Road (SC 123) passes through the parcel, parallel to a drainage that is probably ephemeral and flows only during and immediately following major storm events. The elevation range for Parcel B-2 is 610 feet, from 4,720 to 5,360 feet. The soils in Parcel B-2 are Grandora-Pinyonpeak association and Goldpeak-Pinyonpeak-Wingap complex; both are soils formed on fans, hills and rocks of granitic origin.

Vegetation resources. Most of Parcel B-2 supported Joshua tree woodland with various understory shrub components. The deepest soils in the central part of Butterbredt Canyon supported Joshua tree/upper Mojave mixed woody scrub woodland, a diverse assemblage containing flat-topped buckwheat (*Eriogonum deflexum* var. *deflexum*), western desert penstemon (*Penstemon incertus*), grape lupine, and Cooper's box thorn, among others. The lower slopes supported Joshua tree/blackbrush woodland, lower in diversity than the preceding but with

considerable desert needlegrass. The higher rocky environments supported Joshua tree/California buckwheat woodland. The highest north-facing rocky slopes supported California buckwheat scrub alone.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy or gravelly flats could support white pygmy-poppy, Kern County evening-primrose and crowned muilla; sandy washes could support Death Valley sandmat; rocky outcrops could support limestone dudleya.

Disturbance factors. The site visit and aerial photography were consistent in indicating a low level of disturbance from vehicles in this parcel.

Parcel B-3 (APN 153-140-07)

This 320-acre parcel is located in the upper portion of Butterbredt Canyon, about a mile south of Gold Peak. Butterbredt Canyon Road (SC 123) passes through the southwestern corner of the parcel. The USGS Pinyon Mountain quadrangle shows other tracks crossing this parcel from south to north toward Gold Peak, but these currently are not designated roads. This parcel slopes moderately but steadily to the south, with one mapped watercourse draining due south from Gold Peak and another draining southeastward in the southern portion of the parcel; these appear to be ephemeral, flowing only during and immediately following major rainfall events. The elevation range for Parcel B-3 is 600 feet, from 4,600 to 5,200 feet. The soils in Parcel B-3 are Grandora-Pinyonpeak association and Goldpeak-Pinyonpeak-Wingap complex; both are soils formed on fans, hills and rocks of granitic origin.

Vegetation resources. Joshua tree woodland was present throughout Parcel B-3 with several understory shrub elements. The lowest part of Butterbredt Canyon supported Joshua tree/ upper Mojave mixed woody scrub woodland, a rich variety of shrubs containing western desert penstemon, Nevada ephedra, flat-topped buckwheat, Cooper's box thorn and Anderson thornbush (*Lycium andersonii*). The extensive slopes to the north and a little to the south of the canyon floor supported Joshua tree/blackbrush woodland. A small area of steeper, north-facing slopes in the southern part of the parcel contained Joshua tree/California buckwheat woodland. The rocky gravel soils throughout the parcel contained a sparse but fairly diverse assemblage of herbs, including desert calico (*Loeseliastrum matthewsii*), Pringle eriophyllum (*Eriophyllum pringlei*), coreopsis (*Leptosyne (=Coreopsis) bigelovii*), and winged pectocarya (*Pectocarya penicillata*).

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy or gravelly flats could support white pygmy-poppy, Kern County evening-primrose and crowned muilla; sandy washes could support Death Valley sandmat; rocky outcrops and talus or gravelly slopes could support limestone dudleya and Charlotte's phacelia.

Disturbance factors. A limited amount of evidence of off-route OHV use was noted in this parcel. No infestations of invasive weeds were noted.

Parcel B-4 (APN 153-160-02)

This 636-acre parcel is located farther down Butterbredt Canyon, and Butterbredt Canyon Road (SC 123) passes through the southwestern portion of the parcel. This parcel slopes steadily but moderately to the south-southeast, with several ephemeral drainages joining the main drainage in the parcel. Butterbredt Well is shown in the parcel on the USGS Pinyon Mountain quadrangle, but this water development is not currently operational. The elevation range of Parcel B-4 is 720

feet, from 4,320 to 5,040 feet. The soils in Parcel B-4 are almost all Goldpeak-Pinyonpeak-Wingap complex, soils formed on fans, hills and rocks of granitic origin.

Vegetation resources. The deeper soils in the canyon floor supported Joshua tree/upper Mojave mixed woody scrub woodland with a rich mix of rubber rabbitbrush, blackbrush, Cooper's box thorn, and horsebrush. Some of the west- and south-facing uplands supported Joshua tree/blackbrush woodland, while large areas supported blackbrush scrub alone.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy or gravelly flats could support white pygmy-poppy, Kern County evening-primrose and crowned muilla; sandy washes could support Death Valley sandmat; gravel or talus slopes could support Charlotte's phacelia.

Disturbance factors. The site of Butterbredt Well, located in the southern portion of the parcel, consisted of a disturbed area where the well was located and old equipment remained, while the east side had a large stock tank that was being taken over by rubber rabbitbrush, a native invader of disturbed sites. Some non-native weeds were noted around the stock tank, such as horehound (*Marrubium vulgare*) and farmer's foxtail (*Hordeum murinum* ssp. *leporinum*), but these did not appear to be invading nearby undisturbed areas.

Parcel B-5 (APN 153-160-06)

This 323-acre parcel is located on the steep western slopes of Butterbredt Canyon, about 3 miles south of Gold Peak and 2.5 miles northwest of Butterbredt Springs. It has no access by designated roads. The elevation range of this parcel is 700 feet, from 4,500 to 5,200 feet. The soils in Parcel B-5 are Goldpeak-Pinyonpeak-Wingap complex, soils formed on fans, hills and rocks of granitic origin.

Vegetation resources. A broad band of Joshua tree/blackbrush woodland covered some of the gentle, lower slopes of this parcel. The remainder was mapped as blackbrush scrub.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy or gravelly slopes could support white pygmy-poppy and Kern County evening-primrose; sandy slopes could support Death Valley sandmat; rocky outcrops could support limestone dudleya.

Disturbance factors. The USGS Dove Spring quadrangle shows a track passing through the parcel from south to north, traversing the slope. Traces of this track and another, leading from Butterbredt Well, may be seen on airphotos, as well as a few others. Overall, the disturbance from OHV and/or livestock use is light on this parcel. No weed infestations were noted.

Parcel B-6 (APN 153-160-04)

This 639-acre parcel is located on the east side of Butterbredt Canyon, with a very short portion of the designated road (SC 123) passing through the southwestern corner of the parcel. This parcel includes a portion of the ridgeline dividing Butterbredt and Alphie Canyon; most of the parcel slopes rather steeply to the southwest toward Butterbredt Canyon. Several ephemeral watercourses are shown on the parcel on the USGS Pinyon Mountain quadrangle. Although they have defined bed and bank, they most likely flow only during and following significant rainfall events. The elevation range for Parcel B-6 is 750 feet, from 4,060 to 4,818 feet. The soils in Parcel B-6 are Goldpeak-Pinyonpeak-Wingap complex, soils formed on fans, hills and rocks of granitic origin.

Vegetation resources. Almost all of the parcel was mapped as Joshua tree/blackbrush woodland. The Joshua trees were of varying density and cover, and in a few areas they were so sparse that the area was mapped as blackbrush scrub. Shrub diversity was fairly high, as is typical in Joshua tree/blackbrush; typical associates included Nevada ephedra, green rabbitbrush, and cheesebush in the lower areas. The wash contained a mix of cheesebush, green rabbitbrush, and rubber rabbitbrush, and the side slopes supported rock goldenbush, Acton's encelia, and grape lupine.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy or gravelly flats could support white pygmy-poppy, Kern County evening-primrose and crowned muilla; sandy washes could support Death Valley sandmat; steep gravel or talus slopes could support Charlotte's phacelia.

Disturbance factors. The USGS Dove Spring quadrangle shows a four-wheel drive track along the ridgeline on the eastern side of Parcel B-6, and a perpendicular track leading up to the ridge from Butterbredt Canyon. These are plainly evident on airphotos, as are some other tracks on the ridgeline and in the lower portions of Butterbredt Canyon. No invasive weed infestations were noted.

Parcel B-7 (APN 153-180-04)

This 200-acre parcel is situated on the very steep southeastern slopes of Butterbredt Peak. It is located about a half-mile north and upslope from upper Jawbone Canyon Road, but contains no designated roads. The elevation range for this parcel is almost 1,000 feet, from 4,420 feet to 5,409 feet. The soils in Parcel B-7 are Wingap-Pinyonpeak association, soils formed on granite rocks.

Vegetation resources. Because this parcel is situated on a high, exposed slope, most of the parcel supported California buckwheat scrub. A gentler south-facing slope with deeper soil was mapped as having Joshua tree woodland with upper Mojave mixed woody scrub understory. A southwest-facing slope on the lower slopes of the parcel was mapped as supporting blackbrush scrub.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Open, sandy washes or slopes could support Death Valley sandmat; rocky outcrops could support limestone dudleya.

Disturbance factors. The USGS Pinyon Mountain quadrangle shows a track passing through this parcel from Jawbone Canyon Road at Hoffman Grade along the mid-slope of Butterbredt Peak. This track is clearly evident in the field and on airphotos, as are other, recent tracks leading to Butterbredt Peak. This parcel appeared to be at risk of erosion because of the thin vegetation cover, steep slopes, and loose soils. No weed infestations were noted.

Parcel B-8 (APN 153-180-02)

This 80-acre parcel is located on the lower slopes of Butterbredt Peak, on the western side of Butterbredt Canyon. The parcel slopes moderately steeply to the east, has no designated roads, and no recorded drainages. The elevation range for Parcel B-8 is 360 feet, from 4,140 to 4,500 feet. The soils in Parcel B-8 are Wingap-Pinyonpeak association, soils formed on granite rocks.

Vegetation resources. This parcel was mapped as having entirely blackbrush scrub. Although scattered Joshua trees were present, they did not contribute 1 percent cover.

Special-status plant resources. Open, sandy or gravelly flats could support Kern County evening-primrose and crowned muilla; sandy slopes or washes could support Death Valley sandmat.

Disturbance factors. No tracks were shown through the parcel on the USGS Pinyon Mountain quadrangle, and no tracks were obvious on the reference airphotos for the project. Thus, human disturbance on this parcel was concluded to be light.

Parcel B-9 (APN 153-180-12)

This 80-acre parcel is located at the point where Butterbredt Canyon narrows from the broad uplands to a more confined canyon. Butterbredt Canyon Road (SC 123) touches the western side of this parcel, but otherwise it is roadless. Butterbredt Spring is a developed feature with a stock pond and watering basins for livestock, but the canyon bottom also has natural springs that provide surface or near-surface water perennially. The slopes on either side of the canyon are moderately steep, and the elevation range for the parcel is 280 feet, from 3,720 to 4,000 feet. The soils in Parcel B-9 are Wingap-Pinyonpeak association, soils formed on granite rocks.

Vegetation resources. Butterbredt Spring is probably the best-known desert spring feature in the eastern acquisition area. Although the riparian area in Parcel D-2 on Dove Spring Canyon may be larger, Butterbredt Spring has a developed and maintained pond, and the presence of surface water creates considerable plant diversity and wildlife habitat. In addition to Fremont cottonwood and three species of willows, the riparian habitat included mule fat and desert baccharis. A pond, too small to map, was noted in the riparian area; it supported cattails and iris-leaved rush, while the peripheral moist areas supported yerba mansa (*Anemopsis californica*), rushes and salt grass. Downstream from Butterbredt Spring, the wash supported rubber rabbitbrush scrub. The southwest-facing slope above Butterbredt Spring was mapped as Joshua tree/blackbrush woodland, as were most of the upper slopes on the northeast side of the canyon. An upland slope on the northeast-facing side of Butterbredt Canyon was mapped as blackbrush scrub only.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Also sensitive are the desert riparian, meadow and seep, and pond habitats, which are rare in the Mojave Desert. Death Valley sandmat was observed in this parcel, in the wash below the spring, as well as on the road just to the west of Parcel B-9. The alkaline seep in the wash below the spring could provide habitat for Mojave tarplant and alkali mariposa-lily, although these were searched for and not found in 2012. Open, sandy or gravelly flats could support Kern County evening-primrose.

Disturbance factors. OHV use at Butterbredt Spring has been curtailed by fencing around the area; human access is still possible on foot, and this site is a popular destination for birdwatchers. Maintenance is needed to keep open water habitat in the pond, and other maintenance may also be required to keep the water development functioning. Project airphotos show traces of former OHV activity in and around this parcel.

Just outside the parcel boundary on Butterbredt Canyon Road was a stand of tree-of-heaven (*Ailanthus altissimus*), a woody species that is highly invasive in riparian habitats. Although this species was not seen in Parcel B-9 or any other EKCA parcel, its potential to spread presents a risk to the ecological values of Butterbredt Spring.

Parcel B-10 (APN 153-170-01)

This 640-acre parcel includes the ridgeline between Butterbredt and Alphie canyons, about 2 miles north of the confluence of these features. There are no designated roads in the parcel, although the USGS Dove Spring quadrangle indicates the presence of an historic track to a

ridgeline peak just north of Parcel B-10. Most of the parcel slopes moderately steeply to the south toward Butterbredt Canyon, with two canyons that probably contain springs. The southwestern corner of Parcel B-10 contains a portion of Butterbredt Canyon, with a wide desert wash and some desert riparian habitat. The elevation range for this parcel is 920 feet, from 3,640 to 4,760 feet. The soils in Parcel B-10 are Wingap-Pinyonpeak association, soils formed on granite rocks.

Vegetation resources. The great majority of the steep uplands in Parcel B-10 were mapped as blackbrush scrub. However, the slopes facing and immediately adjacent to Butterbredt Canyon were mapped as Joshua tree/blackbrush woodland. Butterbredt Canyon itself was mapped as having several small areas of desert riparian forest and scrub; these were thickets of willow along the watercourse. Between these stands were a few patches of rush and salt grass, but most of the wash was covered with a fairly dense stand of rubber rabbitbrush. The parcel contained two side canyons mapped as desert wash, and one had a small area of desert riparian forest and scrub at a spring.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Also sensitive are the desert riparian and meadow and seep habitats, which are rare in the Mojave Desert. Death Valley sandmat was observed in the wash in this parcel. The alkaline seeps in the wash could provide habitat for Mojave tarplant and alkali mariposa-lily, although these were searched for and not found in 2012. Open, sandy or gravelly flats could support Kern County evening-primrose and crowned muilla. Rocky outcrops and gravel or talus slopes below the outcrops could support limestone dudleya and Charlotte's phacelia

Disturbance factors. The Dove Spring quadrangle shows a track along the ridgeline on the eastern portion of Parcel B-10; this is evident on airphotos. A few other tracks are evident in airphotos, and this parcel was concluded to have low to moderate human disturbance. No invasive plants were noted in the parcel. The effects of cattle grazing were evident in this parcel, which, unlike Parcel B-9, is not fenced. Plenty of cattle tracks and a lone cow were observed near the riparian area during field surveys.

3.3.6 Kelso Valley Area Parcels

Parcel K-1 (APN 153-080-02)

This 320-acre parcel is situated at the northern end of Kelso Valley. The southern end of the parcel is situated on the upper slopes of the valley floor, then rises steeply toward St. John Ridge. Two ranch roads provide access to the southern end of the parcel and a spring and stock pond. Several drainages are indicated on the USGS Pinyon Mountain quadrangle, but these are ephemeral due to the extremely steep slopes. The elevation range of Parcel K-1 is over 1,300 feet, from 4,480 to 5,800 feet. The soils on the extremely steep slopes are Xyno-Rock Outcrop-Canebrake association, the lower slopes are Chollawell and Inyo soils, all formed over granite rock or in granitoid alluvium.

Vegetation resources. The upper slopes of Parcel K-1 were mapped as rocky outcropping and California buckwheat scrub. The middle slopes were mapped as Wright's buckwheat scrub, a mid-elevation species of alluvial fans. Interspersed with Wright's buckwheat scrub were fingers of rubber rabbitbrush scrub extending up the draws in deeper soils. In canyons at the top of the alluvial fans were several areas of coffeeberry scrub, an unusual type was associated with subsurface water or springs. The westernmost spring supported willows and had a developed pond below it; these were too small to map but were adjacent to the westernmost coffeeberry

scrub. Desert riparian forest and scrub was mapped as a small polygon in a canyon midway up the steep slope.

Special-status plant resources. Wright's buckwheat scrub is state-ranked S3, meaning it is a sensitive natural community. Desert riparian forest and scrub is rare in the survey area and is a sensitive natural community. The pond, even though man-made, provides important habitat for many species. Finally, the coffeeberry scrub, although not considered rare statewide, is a locally-unique riparian habitat.

In terms of special-status plants, a small area of Death Valley sandmat was mapped in the open sandy rabbitbrush scrub in the lower portion of the parcel. This species is likely to occur elsewhere in Parcel K-1. Other species likely to be encountered on the sandy to gravelly soils of the lower slopes and fans include Kern County evening-primrose, white pygmy-poppy, Kern Canyon clarkia, Kelso Creek monkeyflower, and crowned muilla. Rocky outcrops could support limestone dudleya, and moist habitats around the ponds, seeps and springs could support Mojave tarplant.

Disturbance factors. This parcel has two developed and maintained ranch roads and a developed pond, as well as other evidence of past human use. No OHV tracks were noted. The main disturbance factor in much of Kelso Valley is wildfire, and this parcel had ample evidence; several different single-age stands of rubber rabbitbrush were present in this parcel, each following a wildfire event.

Parcel K-2 (APN 153-080-08)

This 322-acre parcel is adjacent to Parcel K-1 and is situated on the northern end of Kelso Valley. Similar to that parcel, K-2 rises from the alluvial fans surrounding Kelso Valley to the extremely steep and rugged south-facing slopes of St. John Ridge. Access to this parcel is limited to a ranch road passing through its southwestern corner. Several drainages are indicated on the USGS Pinyon Mountain quadrangle, but these are ephemeral due to the extremely steep slopes. The elevation range of Parcel K-2 is 1,250 feet, from 4,390 to 5,640 feet. The soils on the extremely steep slopes are Xyno-Rock Outcrop-Canebrake association, the lower slopes are Chollawell and Inyo soils, all formed over granite rock or in granitoid alluvium.

Vegetation resources. The upper slopes of Parcel K-2 were mapped primarily as rocky outcropping with smaller areas mapped as California buckwheat scrub. The middle slopes were mapped as Wright's buckwheat, a mid-elevation species of alluvial fans. Rubber rabbitbrush scrub extended up the draws in deeper soils. Similar to Parcel K-1, an area of coffeeberry scrub was mapped in one of the more sheltered, deeper draws. A long strip of Joshua tree woodland with rubber rabbitbrush understory was mapped on one of the eastern draws.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Wright's buckwheat scrub is also state-ranked S3, meaning it is a sensitive natural community. The coffeeberry scrub, although not considered rare statewide, is a locally-unique riparian habitat.

In terms of special-status plants, a small area of Death Valley sandmat was mapped in the open sandy rabbitbrush scrub in the lower portion of the parcel. This species is likely to occur elsewhere in Parcel K-2. Other species likely to be encountered on the sandy to gravelly soils of the lower slopes and fans include Kern County evening-primrose, white pygmy-poppy, Kern Canyon clarkia, Kelso Creek monkeyflower, and crowned muilla. Rocky outcrops could support limestone dudleya.

Disturbance factors. As with Parcel K-1, different single-age stands of rubber rabbitbrush are indications of past wildfires. A lightly used ranch road passes through the southwestern corner of this parcel; otherwise, no evidence of tracks or other human disturbance was noted.

Parcel K-3 (APN 153-070-03)

This 40-acre parcel is located midway from the floor of northern Kelso Valley to the eastern ridgeline. No road access is available for this parcel, but the Pacific Crest Trail passes on the ridge line about 0.2 mile to the east and 300 feet higher in elevation. The parcel slopes moderately steeply to the west and south toward Kelso Valley and includes one ephemeral drainage. The elevation range for Parcel K-3 is only 160 feet, from 4,680 to 4,840 feet. The soils are Chollawell-Inyo complex, soils formed on fan remnants from granite sources.

Vegetation resources. The entirety of this relatively small parcel was mapped as Joshua tree/blackbrush woodland. A desert wash was also mapped in the northwest corner.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Several special-status plants have potential to occur in Parcel K-3. The sandy to gravelly soils of the lower slopes and fans could support Death Valley sandmat, Kern County evening-primrose, white pygmy-poppy, Kern Canyon clarkia, Kelso Creek monkeyflower, and crowned muilla.

Disturbance factors. Wildfire appears to be less frequent on the eastern side of Kelso Valley. No roads or tracks were evident on maps, photos, or visual inspection of this parcel. Disturbance from any cause was low on this parcel.

Parcel K-4 (APN 153-070-02)

Although considered one of the Kelso Valley group of parcels, this 321-acre parcel is situated mostly on the north and eastern side of the ridgeline separating Kelso Creek (which drains to the South Fork Kern River) from Kelso Valley. Butterbrecht Canyon Road (SC 123) passes through the northeastern corner of the parcel; the Pacific Crest Trail passes through the southern portion of the parcel along the ridgeline. This site slopes fairly steeply to the north, with one well-defined, ephemeral drainage draining northward. This is a rocky site, with extensive granite outcroppings. The elevation range for the parcel is 620 feet, from 4,620 to 5,240 feet. The soils mapped here are all Grandora-Pinyonpeak association; these are soils formed in colluvium or residuum weathered from granite.

Vegetation resources. The lower, north-facing slopes of Parcel K-4 were mapped as big sage scrub. Although dominated by big sage, this area was a relatively rich mix of bitterbrush, ephedra and desert needlegrass, among others. The higher north-facing slopes were mapped as singleleaf pinyon pine woodland. Still rockier and more exposed slopes near the ridgeline were mapped as California buckwheat scrub. The two largest drainages were mapped as desert wash; they were generally unvegetated.

Special-status plant resources. Death Valley sandmat was mapped in the open sandy bottom of the north-draining draw in the northern portion of Parcel K-4. This species could occur elsewhere in this parcel in suitable habitat. Other species likely to be encountered on the sandy to gravelly soils include Kern County evening-primrose, white pygmy-poppy, Kern Canyon clarkia, Kelso Creek monkeyflower, and crowned muilla. Because of the extensive big sage habitat, this parcel may also contain habitat for intermontane lupine.

Disturbance factors. Butterbrecht Canyon Road passes through the northwest corner of this parcel; other than this, and the nearby Pacific Crest Trail, we did not observe other indications of off-road travel or other disturbance. No invasive plant infestations were noted.

Parcel K-5 (APN 153-080-05)

This 160-acre parcel is situated on alluvial fans at the northern end of Kelso Valley. Accessible by a ranch road, this parcel slopes very gently to the southeast, with a couple of draws dissecting the alluvial fans. The elevation range for Parcel K-5 is only 150 feet, from 4,240 to 4,390 feet. The soils in this parcel are Inyo-Riverwash, Inyo, and Chollawell, all coarse soils formed on stream terraces, alluvial fans, and alluvium from mixed rocks.

Vegetation resources. Most of the high, broad terrace comprising this parcel was mapped as rubber rabbitbrush scrub. An area in the south of the parcel was mapped as big sage scrub; this was evidently an area spared from wildfire. The footprint of a more recent wildfire in the center of the parcel was mapped as annual grassland dominated by cheatgrass. The rocky slopes on the western side of the parcel were mapped as California buckwheat scrub, and a lower alluvial fan on the eastern side was mapped as Joshua tree/rubber rabbitbrush woodland. This area evidently has not burned recently.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Special-status plant species likely to be encountered on the sandy to gravelly soils include Kern County evening-primrose, white pygmy-poppy, Death Valley sandmat, Kelso Creek monkeyflower, and crowned muilla.

Disturbance factors. Parcel K-5 has ranch roads passing through it, some of which appear not to be in current use. The airphotos and field reconnaissance indicated little if any OHV trails. Wildfire is a major disturbance factor in this area, as indicated by several different even-age stands of rabbitbrush.

Parcel K-6 (APN 153-080-04)

This 640-acre parcel occupies the center of northern Kelso Valley. Kelso Valley Road bisects the parcel from north to south, and bajadas rise from the valley floor to the northeast. Several defined drainages drain toward the center of Kelso Valley, but these are generally ephemeral and are dry washes most of the time. The elevation range for this parcel is 420 feet, from 4,220 feet at the valley floor to 4,643 feet at the top of a knoll on the eastern side. The soils in this parcel are mostly Chollawell-Inyo complex, with some Inyo-Riverwash soils in the main drainage. These soils are formed in fan remnants and alluvium, mostly from granite parent material.

Vegetation resources. The lowest elevation areas of this parcel supported an unusually dense stand of Joshua tree/rubber rabbitbrush woodland. Farther upslope, the Joshua trees were sparse and the areas were mapped as rubber rabbitbrush only. On the higher alluvial fans, blackbrush scrub, sometimes with a Joshua tree overstory, predominated. Also present on old terraces between the drainages in the lower portion of the parcel were areas dominated by California buckwheat.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Special-status plant species likely to be encountered on the sandy to gravelly soils include Kern County evening-primrose, white pygmy-poppy, Death Valley sandmat, Kelso Creek monkeyflower, and crowned muilla.

Disturbance factors. In addition to Kelso Valley Road, this parcel contains some ranch roads that serve the western side of Kelso Valley. Other than these, evidence of vehicle impacts appeared to be very limited.

Parcel K-7 (APN 153-070-07)

This 640-acre parcel is located on the eastern side of Kelso Valley and extends from the upper slopes to an unnamed, very rugged and rocky peak separating Kelso Valley from Butterbredt Canyon to the east and the Kelso Creek watershed to the north. No roads approach this rough country; Kelso Valley Road is about 1.6 miles to the west. The elevation range for Parcel K-7 is over 1,500 feet, from 4,270 to 6,274 feet. The soils mapped here are almost entirely Grandora-Pinyonpeak association; these are soils formed in colluvium or residuum weathered from granite. The lower slopes contain a little Chollawell-Inyo complex, and the upper slopes Wingap-Pinyonpeak soils. All are associated with granite parent material.

Vegetation resources. Due to the extremely rugged terrain, the vegetation in nearly half of Parcel K-7 was very sparse California buckwheat scrub. A little Joshua tree/California buckwheat woodland was mapped in the southeastern corner of the parcel, while the western areas on lower, gentler slopes were blackbrush scrub and Joshua tree/blackbrush woodland.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Special-status plant species likely to be encountered on the sandy to gravelly soils include Kern County evening-primrose, white pygmy-poppy, Death Valley sandmat, Kelso Creek monkeyflower, and crowned muilla. Rocky slopes could support limestone dudleya, and open alluvial areas could support Tracy's eriastrum.

Disturbance factors. Due to the rugged terrain and remoteness of the site, no ranch roads, OHV trails, or tracks of any kind were observed on the USGS Pinyon Mountain quadrangle or the airphotos used in field surveys.

Parcel K-8 (APN 153-030-05)

This 640-acre parcel is situated on the uppermost slopes of western Kelso Valley, and includes 7,704-foot Sorrell Peak, the highest peak surrounding Kelso Valley and the highest point in the survey area. A logging road touches Parcel K-8 along the western ridgeline in several points but no road access exists throughout most of this extremely steep and rugged east-facing slope. Parcel K-8 is the headwaters for Water Canyon, a perennial stream extending for nearly 3 miles before disappearing into the deep alluvium in Kelso Valley. The elevation range for Parcel K-8 is over 1,400 feet, from 5,280 to 7,704 feet. The soils here are almost all Sorrell-Martee-Rock Outcrop association; these are soils formed in residuum weathered from granitoid rocks.

Vegetation resources. This parcel was mapped as having Jeffrey pine forest on the very steep upper slopes and interior live oak on the lower, but still steep and rocky, slopes. The Jeffrey pine forest had scattered white fir, sugar pine, and ocean spray (*Holodiscus discolor*), species typical of high mountain forests. The relatively sparse cover in the interior live oak mapping unit suggested a relatively recent fire had occurred and the live oaks were sprouting afterward. Although cover was limited, this species would be expected to eventually develop into a closed-canopy forest in the absence of fire. It is likely that riparian habitat is present along the steep drainages in Parcel K-8, but these could not be investigated during 2012 surveys.

Special-status plant resources. This parcel could not be surveyed in detail for special-status plants, but the elevation range and variety of aspects provided in this rugged terrain suggest the possible occurrence of a number of species. The rock outcrops and talus slopes could provide habitat for Spanish Needle onion. Moist meadows along watercourses could support Palmer's mariposa-lily and Transverse Range phacelia. Rock outcrops could support unexpected larkspur and limestone dudleya, while shaded slopes could support pine fritillary. Open, gravelly areas could provide habitat for Tracy's eriastrium and Kern County evening-primrose. The lower, chaparral and woodland could contain habitat for Tehachapi monardella and fragile pentachaeta.

Disturbance factors. Aside from a forest road along the upper, western edge of the parcel, the rugged terrain precludes the development of roads and tracks in this parcel. It was concluded to have low levels of human disturbance. However, wildfire is clearly an important disturbance factor on the eastern slopes of Piute Mountain.

Parcel K-9 (APN 153-100-03)

This 640-acre parcel is located on the western slopes of Kelso Valley, 2 miles east of Sorrell Peak. It is located on moderately sloping, dissected bajadas above the valley floor and contains two significant watercourses, Water Canyon and Esperanza Creek. Ranch roads provide access to the center of the parcel and the northeastern corner. The elevation range of Parcel K-9 is about 500 feet, from 4,175 to 4,680 feet. The mapped soils for this parcel are fairly complex; most of the central portion slope is mapped as Chollawell, cobbly and gravelly complex, with Kernville-Faycreek Rock Outcrop on the higher slopes and Inyo gravelly loam on the lower slopes. The main drainage through the parcel is Inyo-Riverwash. These soils range from those formed over granitic parent material to those formed in cobbly colluvium, finer-textured alluvial fans, and floodplains, but all are of granitic origin.

Vegetation resources. This parcel had extensive evidence of recent fire; the central areas of big sage scrub were the unburned areas, while the adjacent rubber rabbitbrush scrub represented vegetation development several years following a fire. The hillsides on the southern portion of the parcel were mapped as wedge leaf ceanothus scrub, which is a successional type that would eventually be replaced by interior live oak. The Joshua tree/rabbitbrush woodland in the eastern part of the parcel represented an area that has not experienced major fire for a long time. The desert riparian scrub in this parcel was well developed, because Water Canyon flows as a perennial stream well into the deep alluvium of Kelso Valley; along it, nearly a half-mile of willows and other species such as desert olive grew abundantly. Desert olive was also mapped as a dominant riparian type along Esperanza Creek in the northwest corner of the parcel. Gray pine woodland followed the deep alluvium along another watercourse in the northern portion of Parcel K-9.

Special-status plant resources. Sensitive natural communities in Parcel K-9 include Joshua tree woodland, desert riparian forest and scrub, and desert olive riparian scrub. This was the only parcel with a mapped example of desert olive scrub.

A number of special-status plants could occur in this parcel, especially in light of the elevation range, variety of slopes and exposures, and the presence of seeps, springs, and streams. Parcel K-9 had a CNDDDB record (Occ. 13) of Kelso Creek monkeyflower, and a record for Palmer's mariposa-lily in the next section to the west (Occ. 66). This occurrence record was verified during field surveys, and an isolated individual Palmer's mariposa-lily was also observed within Parcel K-9 on a stream terrace. Somewhat moist stream terraces and seeps also could provide habitat for Mojave tarplant, which is known from two records on the adjacent section (CNDDDB occs. 67 and 68), as well as Mojave paintbrush. In addition to these known localities, the lower-elevation

gravelly and sandy flats could contain habitat for white pygmy-poppy, Kern County evening-primrose, crowned muilla, Kern Canyon clarkia and Death Valley sandmat. Higher slopes and flats could provide habitat for intermontane lupine and Transverse Range phacelia. Rocky outcrops could support limestone dudleya.

Disturbance factors. Fire is an ongoing disturbance factor on the west side of Kelso Valley. Several ranch roads cross the lower bajadas, but end at the base of the steep foothills of Piute Mountain. No evidence of off-road vehicle activity was noted in this parcel.

Parcel K-10 (APN 153-090-01)

This 640-acre parcel is located on the eastern side of Kelso Valley, on moderately sloping to fairly steep bajadas. The nearest access, then, is Kelso Valley Road, about 1.2 miles to the west. The elevation range for Parcel K-10 is 520 feet, from 4,180 to 4,700 feet. Soils are almost entirely Chollawell-Inyo complex, formed on fan remnants of granitic material. Some finer-textured soils are present at the lower elevations near the bottom of Kelso Valley.

Vegetation resources. The great majority of this parcel was mapped on the mid- to upper slopes as Joshua tree/blackbrush woodland. Nearer the valley floor, Joshua tree combined with rubber rabbitbrush as the primary understory species. The wash in the northwest corner was mapped as desert wash, but may have only an unvegetated channel.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Special-status species likely to be encountered on the sandy to gravelly soils of the lower flats, slopes and fans include Kern County evening-primrose, white pygmy-poppy, Death Valley sandmat, Kern Canyon clarkia, Kelso Creek monkeyflower, intermontane lupine, Tracy's eriastrum, and crowned muilla. Rocky outcrops could support limestone dudleya.

Disturbance factors. The USGS Pinyon Mountain quadrangle shows a track on the eastern side of this parcel traversing the slope up to the ridgeline; several other tracks traverse the parcel from east to west and north to south.

Parcel K-11 (APN 153-090-03)

This 640-acre parcel is situated on the ridgeline separating Kelso Valley from Butterbredt Canyon. It contains steep and rugged terrain, rising 1,000 feet from 4,800 feet on the upper slopes of Kelso Valley to the ridgeline peaks at 5,803 feet. About one-fourth of the parcel drains toward Butterbredt Canyon, while the remainder drains toward Kelso Valley. The USGS Pinyon Mountain quadrangle shows several ephemeral watercourses draining to the east, south and west. The soils in Parcel K-11 are Wingap-Pinyonpeak association, soils formed on granite rocks.

Vegetation resources. The highest and most exposed portions of the ridgetop were mapped as California buckwheat scrub, while lower areas were mapped as blackbrush scrub, Joshua tree/blackbrush woodland, and Joshua tree/California buckwheat woodland.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Special-status likely to be encountered on the sandy to gravelly soils of the lower slopes and fans include Kern County evening-primrose, white pygmy-poppy, Death Valley sandmat, and Kelso Creek monkeyflower. Rocky outcrops could support limestone dudleya.

Disturbance factors. Although one track was noted crossing the ridgeline from Butterbredt Canyon to Kelso Valley, the overall level of disturbance on this parcel appeared to be light.

Parcel K-12 (APN 153-100-13)

This 603-acre parcel is located on the western side of Kelso Valley, rising from mid-slope to the ridgeline to the west. This parcel is accessible only at the upper portion from some lightly used roads that provide access to a mine on the upper ridgeline. The slope generally descends in an eastward direction, although the slope also contains several prominent ridges. Several drainages and a spring are indicated on the USGS Claraville quadrangle. The elevation range for this parcel is over 2,100 feet, from 4,600 to 6,760 feet. The soils here are almost all Sorrell-Martee-Rock Outcrop association; these are soils formed in residuum weathered from granitoid rocks.

Vegetation resources. The great majority of this parcel was mapped as interior live oak woodland, on the upper slopes and the main north-facing lower slopes. Dense singleleaf pinyon pine woodland was mapped in the central north-facing slope, and California juniper woodland was mapped on the exposed south-facing slopes.

Special-status plant resources. The tremendous elevation range and variety of aspects provided in this rugged terrain suggest the possible occurrence of a number of species. The rock outcrops and talus slopes could provide habitat for Spanish Needle onion at the higher elevations and possibly limestone dudleya at the lower elevations. Moist meadows, seeps and springs along watercourses could support Palmer's mariposa-lily, Mojave tarplant and Transverse Range phacelia. Shaded slopes could support pine fritillary. The lower chaparral and woodland could contain habitat for Tehachapi monardella.

Disturbance factors. There is little evidence of human disturbance within Parcel K-12. Fire is a frequent disturbance factor on the western side of Kelso Valley and the eastern side of Piute Mountain.

Parcel K-13 (APN 153-100-10)

This 640-acre parcel is located in the valley floor of Kelso Valley. Kelso Valley Road passes through the parcel on the eastern side, and other ranch roads, not accessible for this survey, cross the parcel from east to west. The parcel contains Green Spring, and a ranch headquarters with a number of buildings and corrals. The spring itself is not as evident as the very extensive meadows surrounding it, which extend for several hundred acres and extending well beyond this parcel. The elevation range for Parcel K-13 is only 150 feet, from 4,020 to 4,175 feet. The soils in the central meadow and wetland portion of the parcel are mapped as Kelval fine sandy loam, occasionally flooded; and in the lowest areas, Kernfork loam, saline-sodic, occasionally flooded. The surrounding uplands are mostly Inyo gravelly loamy coarse sand and other valley floor soils formed in alluvium from granitic origin.

Vegetation resources. The most spectacular vegetation feature in this parcel was the very large meadow surrounding Green Spring. Occupying nearly 100 acres within Parcel K-13, this wetland had seasonally ponded water and rushes in the lowest portion, then a mix of salt grass, alkali sacaton, and other seasonal wetland species. The perimeter contained southern checkerbloom (*Sidalcea sparsiflora*), California hesperochiron (*Hesperochiron californicum*), and a species of blue-eyed grass believed to be Nevada blue-eyed grass (*Sisyrinchium* cf. *halophilum*). The spring itself contained desert riparian vegetation including Fremont cottonwood and willows. Also present in this area was a ranch headquarters, including a residence, some outbuildings, and corrals, all mapped as developed. Surrounding the wetland was a large area of rubber rabbitbrush scrub; slightly upslope was Joshua tree/rubber rabbitbrush woodland. Also within this parcel was

a large area of annual grassland, evidently the result of a recent wildfire. On the western slope of Kelso Valley, this parcel also included a small area of California juniper woodland. A small pond was present near the developed ranch headquarters.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Meadow and spring, desert riparian and pond are all locally unique or considered sensitive statewide.

Three special-status plants were either observed or reported from Parcel K-13. CNDDDB Occurrence 35 for alkali mariposa-lily is at Green Spring; although checked several times this spring, we did not locate any flowering individuals, but suitable habitat was very extensive. Death Valley sandmat was found in open fine sand in uplands around the eastern periphery of the marshes, and it is expected that more colonies could be present elsewhere in the parcel. Mojave paintbrush was observed under rubber rabbitbrush along the eastern edge of the marsh and also is likely to be present elsewhere in the parcel as well.

A number of special-status plants could also occur in lower-elevation gravelly and sandy flats in this parcel, such as white pygmy-poppy, Kern County evening-primrose and crowned muilla. Kelso Creek monkeyflower has been reported nearby and would be expected in the small streamlets in the uplands.

Disturbance factors. This parcel has a moderate level of disturbance from cattle ranching, including buildings, corrals, ranch roads, and other development features. Wildfire is also a factor, as evidenced by the recent fire and resulting loss of shrubland. No evidence of OHV use was noted.

Parcel K-14 (APN 153-090-05)

This 640-acre parcel is located on the southeastern part of Kelso Valley about a quarter-mile east of Kelso Valley Road and two miles north of Jawbone Canyon Road. No designated roads pass through this parcel. It is situated on a lower bajada dissected by many small ephemeral watercourses. These coalesce into some large and well-defined watercourses at the lower, southwestern portion of the parcel. The elevation range for this parcel is 570 feet, from 4,230 to 4,900 feet. Most of the soils in Parcel K-14 are mapped as Chollawell gravelly loamy coarse sand formed on fan remnants.

Vegetation resources. Most of this alluvial slope was vegetated with Joshua tree/blackbrush woodland; some areas were blackbrush scrub only. The two primary wash systems supported Joshua tree/goldenbush woodland on the higher reaches, while the lower reach supported Joshua tree/rubber rabbitbrush woodland.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Several special-status plants could occur in this parcel. CNDDDB Occurrence 12 for Kelso Creek monkeyflower is located within Parcel K-14. The lower-elevation gravelly and sandy flats could contain habitat for white pygmy-poppy, Kern County evening-primrose, Tracy's eriastrum, crowned muilla, and Death Valley sandmat.

Disturbance factors. The USGS Pinyon Mountain quadrangle shows two tracks passing through the parcel. Several other lightly used tracks were evident on aerial photographs; this parcel appeared to have a light level of disturbance. No invasive weed infestations were noted during field surveys.

Parcel K-15 (APN 153-051-03)

This 634-acre parcel is located on the slope of Piute Mountain west of southern Kelso Valley. Geringer Grade, a steep portion of Jawbone Canyon Road, passes through the southwestern corner of the parcel; this is the only road access to the parcel. The Pacific Crest Trail passes less than a quarter-mile west of Parcel 15. Cottonwood Creek, a perennial stream that eventually empties into Jawbone Canyon several miles to the southeast, runs through the center of the parcel. The parcel slopes steeply to the south and east. The elevation range for this parcel is 1,600 feet, from 4,880 to 6,480 feet. The soils in this parcel are in the Sorrell-Martee-Rock Outcrop group; these are soils formed in residuum weathered from granitoid rocks.

Vegetation resources. Most of this parcel was mapped as interior live oak woodland. Some of the more sheltered north-facing slopes were mapped as Jeffrey pine forest, and a few areas were mapped as annual grassland. However, the mapping unit near Geringer Grade was high in species diversity and native species richness. It appeared to be an area of naturally thin soil supporting an herbaceous-dominated grassland rather than the result of wildfire, as was the case for many other parcels in Kelso Valley. Typical species in this area included blue field gilia, Arizona popcorn flower, California poppy, coreopsis, and variable linanthus. Unfortunately, time did not allow the Cottonwood Creek drainage to be investigated to determine its characteristics.

Special-status plant resources. This parcel could not be surveyed in detail for special-status plants, but the elevation range and variety of aspects provided in this rugged terrain suggest the possible occurrence of a number of species. The rock outcrops and talus slopes could provide habitat for Spanish Needle onion. Moist meadows along watercourses could support Palmer's mariposa-lily and Transverse Range phacelia. Rock outcrops could support unexpected larkspur and limestone dudleya, while shaded slopes could support pine fritillary. Open, gravelly areas could provide habitat for Tracy's eriastrum and Kern County evening-primrose. The lower, chaparral and woodland could contain habitat for Tehachapi monardella and fragile pentachaeta.

Disturbance factors. Human disturbance appeared to be limited on this parcel, due to the steep terrain and limited accessibility.

Parcel K-16 (APN 153-120-02)

This 640-acre parcel is located on the steep slopes on the west side of the southern end of Kelso Valley, about a mile west of Jawbone Canyon Road as it passes through the valley. This parcel is west-facing, with several deep canyons. A spring known as Quail Spring is located near the lower, eastern edge of the parcel. The elevation range for Parcel K-16 is over 1,000 feet, from 4,200 to 5,280 feet. The soils in the steep uplands in this parcel are mostly in the Sorrell-Martee-Rock Outcrop and Kernville-Faycreek-Rock Outcrop groups; these are soils formed in residuum weathered from granitoid rocks.

Vegetation resources. Most of this steep and rugged parcel was mapped as singleleaf pinyon pine woodland, especially where fire has not recently cleared the woody vegetation. On a north-facing slope, California juniper dominated; this appeared to be situated in an area that may have burned in recent years. The lowest area on the south side of Parcel K-16 was mapped as annual grassland; this appeared to be a recently-burned area. On the steep, exposed slope above the grassland, California buckwheat occupied the most exposed areas, but this was a very diverse area with many woody species showing recovery from the fire; California fremontia (*Fremontodendron californicum*), penstemon, wedge leaf ceanothus, and chaparral yucca were present. Gray pine, interior live oak and a mix of these species were mapped in the more sheltered

areas, some of which may have burned. A small area of rocky outcropping was mapped along the watercourse in the center of the parcel.

Special-status plant resources. The tremendous elevation range and variety of aspects provided in this rugged terrain suggest the possible occurrence of a number of species. Death Valley sandmat was observed in the lower slopes of this varied parcel. The rock outcrops and talus slopes could provide habitat for Spanish Needle onion at the higher elevations and possibly limestone dudleya at the lower elevations. Moist meadows, seeps and springs along watercourses could support Palmer's mariposa-lily, Mojave tarplant and Transverse Range phacelia. Shaded slopes could support pine fritillary. Open, gravelly areas could provide habitat for white pygmy-poppy, Tracy's eriastrum, Kelso Creek monkeyflower, Kern Canyon clarkia and Kern County evening-primrose. The lower, chaparral and woodland could contain habitat for Tehachapi monardella and fragile pentachaeta. Moist edges of meadows could support Mojave paintbrush.

Disturbance factors. This parcel is essentially roadless, and little indication of vehicle access was evident on the project airphotos. Wildfire is a notable disturbance factor on the western side of Kelso Valley. However, livestock grazing was noted as a disturbance factor in the burned area in the southeastern corner of the parcel.

Parcel K-17 (APN 153-120-04)

This 120-acre parcel is located just to the south of Parcel K-13 on the floor of Kelso Valley. It contains more of the extensive wetlands arising from Green Springs and environs. This parcel is nearly level, extending across the valley floor from Kelso Valley Road. The elevation range for Parcel K-17 is only 90 feet, from 4,000 to 4,090 feet. The soils in the low-lying central meadow and wetland are mapped as Kernfork loam, saline-sodic, occasionally flooded. The surrounding uplands are mostly Chollawell and Inyo gravelly loamy coarse sand, valley floor soils formed in alluvium from granitic origin.

Vegetation resources. The most prominent vegetation feature in this parcel was the very large rush-dominated meadow that occupied nearly half of Parcel K-17. Surrounding the meadow was rubber rabbitbrush scrub, except for a large area of annual grassland dominated by cheatgrass. This appeared to be the location of a recent wildfire.

Special-status plant resources. Death Valley sandmat was found in open fine sand in uplands around the southern periphery of the marshes, and it is expected that more colonies could be present elsewhere in the parcel. Alkali mariposa-lily and Mojave paintbrush are reported from marsh habitat and marsh edges on the adjacent Parcel K-13 and could occur in Parcel K-17 as well. Gravelly and sandy flats in this parcel could support species such as white pygmy-poppy, Kern County evening-primrose and crowned muilla. Kelso Creek monkeyflower has been reported nearby and could be found in small streamlets in the uplands.

Disturbance factors. Wildfire is a significant disturbance factor in the shrublands, periodically removing the shrub cover and replacing it with annual grassland. Many native shrubs are sensitive to fire, and may not recover if subjected to repeated, frequent fires. The hydrology of this area has doubtless been affected by the adjacent landing strip, construction and maintenance of nearby Kelso Valley Road and the ranch road running east-west through this parcel. Although wildfire and hydrology disturbance are substantial, disturbance from OHV usage was not noted.

Parcel K-18 (APN 153-110-01)

This 632-acre parcel is located in the southern portion of Kelso Valley, mostly north and east of the intersection of Jawbone Canyon Road and Kelso Valley Road. The parcel consists of a gently

sloping, southwest-facing dissected bajada. A meadow or drainage flowing southward is noted along the western edge of the parcel. The elevation range for Parcel K-18 is 260 feet, from 3,950 to 4,210 feet. The soils in this parcel are mostly Chollawell and Inyo gravelly sandy soils formed on fan remnants and alluvium formed from granitic rocks.

Vegetation resources. This parcel supported several unusual or unique mapping units. As with most of Kelso Valley, the lower portion of the valley supported rubber rabbitbrush scrub, and Joshua tree/rabbitbrush woodland, while much of the uplands supported blackbrush scrub and Joshua tree/blackbrush woodland. However, this parcel was distinctive in that its north-facing slopes supported extensive areas of California juniper/blackbrush woodland and Joshua tree/Nevada ephedra woodland, which were not mapped elsewhere in the survey area. These seem to be more cold-tolerant vegetation types. The large drainage on the northern portion of Parcel K-18 supported a stand of cheesebush scrub, a vegetation type more common in the eastern acquisition area.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Several special-status plants could occur in this parcel. The lower-elevation gravelly and sandy flats could contain habitat for white pygmy-poppy, Kern County evening-primrose, Tracy's eriastrum, crowned muilla, intermontane lupine, Kelso Creek monkeyflower, fragile pentachaeta and Death Valley sandmat.

Disturbance factors. Identified roads have been mapped on all sides of this parcel, including Jawbone Canyon Road, Kelso Valley Road, and tracks mapped on the USGS Pinyon Mountain quadrangle. The level of disturbance was high around the periphery and low in the center of the parcel, where no obvious human disturbance or tracks were noted.

Parcel K-19 (APN 153-110-03)

This 634-acre parcel is located just west of Butterbredt Peak on the gently sloping slopes above Kelso Valley. Jawbone Canyon Road passes through the parcel, and several ephemeral watercourses drain to the west toward Kelso Valley. The elevation range for Parcel K-19 is 200 feet, from 4,000 to 4,200 feet. The soils here are Wingap-Pinyonpeak in the uplands, Chollawell gravelly sands on the upper bajadas, and Hoffman-Tips-Pilotwell association soils formed on middle and lower slopes; all are formed in granite parent material or alluvium formed from granitoid rocks. The southern portion of the parcel was mapped as having non-marine sedimentary substrate, perhaps formed from eroding granitic formations.

Vegetation resources. As in Parcel K-18, California juniper provided a substantial contribution to vegetation cover in this parcel. The north-facing slopes to the south of Jawbone Canyon Road supported primarily California juniper/blackbrush woodland, while the upper slopes farther north supported California juniper-Joshua tree/blackbrush woodland, and the most rocky areas supported California juniper/California buckwheat woodland. The lower slopes supported Joshua tree/blackbrush woodland. Most of the desert wash scrub supported typical species such as cheesebush and goldenbush, but the lower reaches of the wash were much more diverse, and were mapped as upper Mojave mixed woody scrub.

Special-status plant resources. Although widespread and abundant in the survey area, Joshua tree woodland is state-ranked S3, meaning it is a sensitive natural community. Several special-status plants could occur in this parcel. The gravelly and sandy flats could contain habitat for white pygmy-poppy, Kern County evening-primrose, Tracy's eriastrum, Kelso Creek monkeyflower,

crowned muilla, and Death Valley sandmat. The edges of juniper stands could contain fragile pentachaeta, and the rocky outcrops could support limestone dudleya.

Disturbance factors. Apart from the presence of Jawbone Canyon Road, which passes through this parcel, both historic and recent OHV tracks seemed limited or absent. As noted elsewhere, the eastern side of Kelso Valley experiences less wildfire than the western side.

Parcel K-20 (APN 153-120-07)

This 513-acre parcel is located at the southern end of Kelso Valley, in the low, marshy area south of the intersection of Jawbone Canyon Road and Kelso Valley Road. This parcel contains a feature labeled “Schoolhouse Well” on the USGS Cross Mountain quadrangle. The parcel is low, gently sloping to the south, and has an elevation range of 230 feet, from 3,870 to 4,100 feet. This parcel contains some of the lowest-lying land in Kelso Valley, and the soils in the low-lying wetland are mapped as Kernfork loam, saline-sodic, occasionally flooded. The surrounding uplands are mostly Chollawell gravelly loamy coarse sand, valley floor soils formed in alluvium from granitic origin.

Vegetation resources. Parcel K-20 was perhaps one of the most interesting parcels in Kelso Valley. It contained a very extensive area of meadow and seep in the eastern portion, but it was more alkaline in general than the meadows farther north, supporting mainly rushes as well as California hesperochiron, yerba mansa, salt grass, alkali sacaton and even western nitrophila (*Nitrophila occidentalis*). Much of the parcel also supported annual grassland, evidently the result of recent wildfire. The habitat immediately adjoining the meadow was rubber rabbitbrush scrub, while further upland is California juniper/rubber rabbitbrush woodland. The slopes on the southern tip of Parcel K-20 contained the only example of blue oak woodland found in the Kelso Valley parcels. This was an open woodland with a few gray pine and a variety of understory perennials, such as shrubby ragwort, wedge leaf ceanothus, and Sandberg bluegrass. An extensive desert wash was mapped on the western side of the parcel; this contained a beautiful stand of California evening-primrose.

Special-status plant resources. Death Valley sandmat was found in open fine sand in uplands around the periphery of the marshes, and it is expected that more colonies could be present elsewhere in the parcel. The marsh and peripheral habitat could support alkali mariposa-lily and Mojave paintbrush. Less likely, but possible in a high rainfall year in alkaline clay soil in the margins of the marshes is pale yellow layia. Gravelly and sandy flats could support species such as white pygmy-poppy, Kern County evening-primrose, Tracy’s eriastrum, and crowned muilla. Kelso Creek monkeyflower has been reported nearby and would be expected in the small streamlets in the uplands. Fragile pentachaeta could occur in the uplands near the junipers.

Disturbance factors. Jawbone Canyon Road bisects the parcel from north to south, and a ranch road provides access to Schoolhouse Well. The roads almost certainly interfere with the natural hydrology of the meadows, and grading associated with the landing strip to the north may have altered the hydrology as well. Wildfire plays a role in the ecology of this part of Kelso Valley, as evidenced by the large area of annual grassland on the parcel. Groundwater pumping, whether for ranching, domestic use, and possibly for wind energy development, could also affect the natural hydrology of this site.

3.3.7 Landers Meadow Parcels

As the name suggests, the Landers Meadow parcels are located in a mountain meadow on the eastern side of the crest of Piute Mountain.

Parcel L-1 (APN 153-012-03)

This 123-acre parcel is situated at the western end of Landers Meadow on the eastern side of Piute Mountain, about a mile from the camp of Claraville. Piute Mountain Road passes through this parcel, and the Pacific Crest Trail skirts around the northern and western edges of the parcel. The parcel slopes very gently to the west, emptying into Landers Creek a short distance farther west; Landers Creek is a tributary of Kelso Creek, in the South Fork Kern River watershed. The elevation range for Parcel L-1 is 170 feet, from 6,210 to 6,380 feet. The soils include the Wind River-Dome Rock group of soils formed in residuum from metamorphic, metasedimentary or granitic rock; Monache soils, marshy soils formed in alluvium from granite; and a small amount of Scodie, Sacatar-Canebrake complex soils formed in residuum weathered from granitoid rocks. Since Smith (1964) shows the parent material in and around Landers Meadow as granitic, any metamorphic influences on the soils are probably limited.

Vegetation resources. A meadow extended the entire length of Parcel L-1; this was mainly dominated by rushes, but transitioned into big sage scrub forming dry meadows in the adjacent uplands. These contained big sage with rubber rabbitbrush, beardless wildrye (*Elymus triticoides*), desert needlegrass, and prickly poppy. The gently sloping uplands to the north and south of the meadow supported open Jeffrey pine forest. Big sage, greenleaf manzanita, and sticky-leafed rabbitbrush were present in the forest understory, along with pine bluegrass, lupine, and leafy daisy (*Erigeron* sp.). A very small pond was situated near the southern border of Parcel L-1; it supported veronica and spikerush.

Special-status plant resources. The marsh and pond habitats are considered sensitive because they are limited statewide. Two special-status plants are reported from the marshes and dry meadows at Landers Meadow and are assumed to be present in both parcels L-1 and L-2: Palmer's mariposa-lily (CNDDDB Occ. 10) and Mojave paintbrush (CCH, 2012). A number of other species could occur here: Kern Canyon clarkia on dry slopes; Breedlove's buckwheat in Jeffrey pine forest; fragile pentachaeta in grassy openings in conifer forest; Transverse Range phacelia in sandy or rocky slopes, flats and meadows; and San Bernardino aster in the marshes of Landers Meadow.

Disturbance factors. As indicated in preceding paragraphs, Piute Mountain Road passes through Parcel L-1. No other roads are indicated on the USGS Claraville quadrangle, but airphotos indicate at least one unimproved road provides access to Landers Meadow from the paved road. No indication of off-road vehicle activity was noted during field surveys.

Parcel L-2 (APN 153-012-05)

This 41-acre parcel is located in the central portion of Landers Meadow, immediately to the east of Parcel L-1. This parcel is a very short distance south of Piute Mountain Road. As with Parcel L-1, this parcel slopes very gently to the west, eventually draining into Landers Creek, a tributary of Kelso Creek, in the South Fork Kern River watershed. The elevation range for this nearly level parcel is only 30 feet, from 6,320 to 6,350 feet. The soils here are Deerspring fine sandy loams and Monache variant soils in the lowlands and Scodie-Sacatar-Canebrake complex on the uplands.

Vegetation resources. The meadow was vegetated with rush-dominated meadow and seep vegetation, with periodically saturated adjacent sites dominated by big sagebrush. The uplands supported open Jeffrey pine forest.

Special-status plant resources. The marsh habitat is considered sensitive because it is limited statewide. Two special-status plants are reported from the marshes and dry meadows at Landers Meadow and are assumed to be present in both parcels L-1 and L-2: Palmer's mariposa-lily (CNDDDB Occ. 10) and Mojave paintbrush (CCH, 2012). A number of other species could occur here: Kern Canyon clarkia on dry slopes; Breedlove's buckwheat in Jeffrey pine forest; fragile pentachaeta in grassy openings in conifer forest; Transverse Range phacelia in sandy or rocky slopes, flats and meadows; Shevock's bristle moss in shaded rocky underhangs in granite rock; and San Bernardino aster in the marshes of Landers Meadow.

Disturbance factors. No roads are indicated on either USGS Claraville quadrangle or on airphotos for Parcel L-2. No indication of off-road vehicle activity was noted during field surveys.

Parcel L-3 (APN 153-012-07)

This 81-acre parcel is located just to the southeast of Parcel L-2 and is situated on the north-facing uplands to the south of Landers Meadow. It is located about a quarter-mile south of Piute Mountain Road. Some minor and probably ephemeral watercourses drain from Parcel L-3 toward Landers Meadow, which drains into Landers Creek, a tributary of Kelso Creek, in the South Fork Kern River watershed. The elevation range for this parcel is 440 feet, from 6,400 feet near Landers Meadow to 6,840 feet on the upper slopes. The soils are mapped as Scodie-Sacatar-Canebrake association, and the Sorrell-Martee-Rock Outcrop association, both formed in residuum from weathered granitoid rocks.

Vegetation resources. All of this parcel was mapped as open Jeffrey pine forest. Associated species included singleleaf pinyon pine, canyon live oak, and Oregon oak. The understory contained patchy areas of shrubs, including big sage, wedge leaf ceanothus, Bridge's penstemon (*Penstemon rostriflorus*), and sulfur buckwheat (*Eriogonum umbellatum*). Boulder outcrops added to the habitat diversity of this parcel.

Special-status plant resources. Several special-status species could occur here: Kern Canyon clarkia on dry slopes; Breedlove's buckwheat in Jeffrey pine forest; fragile pentachaeta in grassy openings in conifer forest; Transverse Range phacelia in sandy or rocky slopes, flats and meadows; Shevock's bristle moss in shaded rocky underhangs in granite rock; pine fritillary on shaded granitic slopes; and Spanish Needle onion, limestone dudleya and unexpected larkspur on rock outcrops.

Disturbance factors. A road is shown on the USGS Claraville quadrangle just north of the northern edge of Parcel L-3, and there may be some traces of roads through the forest within the parcel. There were no designated roads or tracks, and the airphotos indicated little if any off-road activity.

3.3.8 Caliente Creek Parcels

The Caliente Creek parcels are situated on the western slope of Piute Mountain, in the Caliente Creek watershed. These parcels were not visited during the 2012 surveys, and information on soils and vegetation is taken from CALVEG (US Forest Service, 2012).

Parcel C-1 (APN 442-020-20)

This 640-acre parcel is situated in Hugh Mann Canyon. The watercourse passing through the center of the parcel is unnamed on USGS geologic maps, but is a tributary of Weaver Creek, a tributary of Caliente Creek. The USGS Emerald Mountain quadrangle indicates the presence of one spring on the parcel; additional, smaller springs may be present as well. The elevation range for the parcel is 1,250 feet, from 3,480 feet at the bottom of the canyon to 4,730 at the ridgeline

on the northern edge of the parcel. The soils on Parcel C-1 are primarily Tunis-Tollhouse-Sorrell Association, soils of steep mountain slopes formed in residuum from weathered gneiss and/or granitoid rocks. Since the geologic map (Smith, 1964) indicates the presence of extensive metamorphic formations in this area, the soils are likely to be formed from gneiss in this area.

Vegetation resources. Much of the lower, south-facing slopes of Hugh Mann Canyon are mapped as California juniper woodland, while the upper slopes support California buckwheat shrubland. Near the ridgeline are some smaller areas of gray pine woodland and big sage scrub. Openings in the shrubland and woodland support annual grassland. In the deepest, north-facing portion of the canyon is blue oak woodland; elsewhere on the north-facing slope are annual grassland, California buckwheat scrub, gray pine woodland and big sage scrub (US Forest Service, 2012).

Special-status plant resources. A number of special-status plants could occur within this parcel. Meadows and seeps could support California androsace and streambank spring beauty; open areas of shale or loose alluvium could support Tracy's eriastrum; gabbro or granodiorite soils could support Piute cypress; bare, sunny, shrubby areas could support calico monkeyflower; sandy or gravelly soils could contain habitat for slender threadplant; red clay soils or gravelly loam in woodland or grassland could support Piute Mountains navarretia; openings in woodland and chaparral could support fragile pentachaeta and aromatic canyon gooseberry.

Disturbance factors. The USGS Emerald Mountain quadrangle shows a four-wheel drive road traversing the south-facing slope up the canyon, passing from the northwest portion of the parcel across the canyon, the rising up the steep north-facing slope to the ridge on the south side of the parcel. A second light-duty road more or less follows the drainage eastward through the parcel. Airphotos indicate more well-defined roads at the top of the ridge on the south side of the parcel.

Parcel C-2 (APN 442-010-10)

This 160-acre parcel is located on the south side Hugh Mann Canyon, which contains an unnamed watercourse that is tributary to Weaver Creek, itself a tributary of Caliente Creek. The parcel is perched on a steep north-facing slope with an elevation range of 620 feet, from 4,000 feet at the streambed to 4,620 feet at the ridge. No watercourses or springs are indicated on the parcel, although small seeps and springs may be present. The soils on Parcel C-2 are Tunis-Tollhouse-Sorrell Association, soils of steep mountain slopes formed in residuum from weathered gneiss and/or granitoid rocks. The geologic map for this region (Smith, 1964) indicates the presence of extensive metamorphic formations in this area, so the soils are likely to be formed from gneiss parent material.

Vegetation resources. Vegetation is mapped as blue oak woodland in the lower portion of the canyon. One area of gray pine is indicated on the mid-slopes, and the remaining mid- to upper portions of the slopes support big sage scrub, with annual grassland in openings (US Forest Service, 2012).

Special-status plant resources. A number of special-status plants could occur within this parcel. Meadows and seeps could support California androsace and streambank spring beauty; open areas of shale or loose alluvium could support Tracy's eriastrum; gabbro or granodiorite soils could support Piute cypress; bare, sunny, shrubby areas could support calico monkeyflower; sandy or gravelly soils could contain habitat for slender threadplant; red clay soils or gravelly loam in woodland or grassland could support Piute Mountains navarretia; openings in woodland and chaparral could support fragile pentachaeta.

Disturbance factors. A four-wheel drive road passes from the adjacent Parcel C-1 through the northwestern corner of Parcel C-2, then descends to the canyon bottom. Just to the north of the parcel, the topographic map shows several old structures near the creek floodplain. The dense brushy vegetation and steep slopes make it unlikely that this area would have much ongoing human disturbance.

Parcel C-4 (APN 442-030-01)

This 640-acre parcel is situated on the upper slopes of Back Canyon and includes the ridge separating this canyon from Hugh Mann Canyon. The elevation range for the parcel is 1,400 feet, from 3,600 feet in the lower draws of Back Canyon to 5,000 feet on the highest portion of the ridgeline on the northern portion of the parcel. Most of the parcel has south- and west-facing steep slopes. Although some watercourses are shown on the USGS map, the high, exposed position on the ridge suggests that these are ephemeral streams. The soils in Parcel C-4 are Locobill-Backcanyon-Sesame complex (steep mountainous slopes with soils formed from weathered granitoid and metamorphic rocks) and Tunis-Tollhouse-Sorrell association (mountain slopes with soils formed from weathered gneiss or from granitoid rocks. As with Parcel C-1, the geologic map indicates the presence of extensive igneous-derived metamorphic parent material in this area.

Vegetation resources. About half of the parcel and most of the south- and west-facing slopes support extensive areas of California juniper woodland. Some areas near the ridgetop support blue oak woodland and annual grassland, with a few patches of California buckwheat scrub in the more rocky areas. The north-facing slopes at the top of the ridge support big sage scrub and a dense stand of gray pine and interior live oak woodland. More sheltered north-facing slopes farther downslope nearer Back Canyon support dense singleleaf pinyon pine woodland (US Forest Service, 2012).

Special-status plant resources. A number of special-status plants could occur within this parcel. Meadows and seeps could support California androsace and streambank spring beauty; open areas of shale or loose alluvium could support Tracy's eriastrium; gabbro or granodiorite soils could support Piute cypress; bare, sunny, shrubby areas could support calico monkeyflower; sandy or gravelly soils could contain habitat for slender threadplant; red clay soils or gravelly loam in woodland or grassland could support Piute Mountains navarretia; and openings in woodland and chaparral could support fragile pentachaeta.

Disturbance factors. The USGS Emerald Mountain quadrangle indicates a single unimproved road running along the ridgeline near the northern edge of the parcel and then ending on a ridge in the center of the parcel. Several roads approach the parcel on the western side but do not enter the parcel.

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**Appendix A. Special-status Species Considered as
Potentially Occurring in the Eastern Kern County
Acquisition Survey Area**

Appendix A. Special-status Plant Species Considered as Potentially Occurring in the Eastern Kern County Acquisition Project Area.

<i>Scientific Name</i> Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Allium shevockii</i> Spanish needle onion	--/--/S/1B.3	S. Sierra Nevada, Piute and Tehachapi mountains; Spanish Needle Peak, Emerald Mountain, Sand Canyon, Horse Canyon	Metamorphic outcrops, clay, gravel or talus; pinyon-juniper woodlands and upper montane coniferous forests; 2,800- 8,200 feet	Perennial bulbiferous herb/ May – July	Moderate. Mapped at North Sky River Wind Farm (2010) and rock outcrops S of Jawbone Canyon. Metamorphic substrate possibly present at Landers Meadow, generally lacking elsewhere, but outliers could occur.
<i>Amsinckia douglasiana</i> Douglas' fiddleneck	--/--/--/4/2	Widely distributed in cismontane California, primarily in South Coast and Transverse Ranges; records from Oregon to Baja California	Dry, hard soil in valley and foothill grassland, oak woodland; usually on shale soils; 0-6,400 feet	Annual herb/March-May	Unlikely to occur. Nearest record is from Keene quadrangle, Caliente Road near Hwy. 58, Piute Mountains. Caliente Creek parcels are >15 miles out of known range and lack shale substrate.
<i>Androsace elongata</i> ssp. <i>acuta</i> California androsace	--/--/--/4.2	Ranges from Oregon to Baja California, mostly cismontane	Highly localized; clay soils in meadows and seeps; cismontane woodland, chaparral, valley and foothill grassland, coastal scrub, pinyon and juniper woodland, 500-4,000 feet	Annual herb/February- May	High. Nearby records from Woolstaff Creek, N of Tehachapi Pass, and Glennville suggest species could be present in Caliente Creek parcels; less likely in Kelso Valley parcels.
<i>California macrophylla</i> Round-leaved filaree	--/--/S/1B.1	Widely distributed in cismontane California from Lassen to San Diego counties	Clay flats in cismontane woodland, valley and foothill grassland; 50- 4,000 feet	Annual herb/March-July	Unlikely to occur. Several records from N of Tehachapi and near Glennville, >15 miles from Caliente Creek parcels which may lack clay substrate.

Scientific Name Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa-lily	--/--/S/1B.2	Tehachapi Mountain area, Inner Coast Ranges, Transverse Ranges, San Jacinto Mountains	Meadows, vernal moist places in yellow-pine forest, chaparral; 3,300-7,900 feet	Perennial bulbiferous herb/ May-July	Present. Reported from Landers Meadow and observed on one parcel in Kelso Valley; likely to occur on other parcels along western side of Kelso Valley.
<i>Calochortus striatus</i> Alkali mariposa-lily	--/--/S/1B.2	Central Valley, Sierra Nevada and deserts; from Delano south to Los Angeles and E to Red Rock Canyon	Alkaline meadows, moist creosote-bush scrub, chaparral, chenopod scrub; 200-5,300 feet	Perennial bulbiferous herb, April-June	Present. CNDDDB records from Green Spring in Kelso Valley. Likely in alkaline seeps in Alphie Canyon, Butterbredt and Dove Spring areas; not observed in 2012.
<i>Camissonia integrifolia</i> Kern River evening-primrose	--/--/S/1B.3	Limited to Kern River Canyon, Kern County	Chaparral, open brushy slopes; sometimes reported from floodplain; 2,200-3,300 feet	Annual herb/May	Unlikely to occur. Appears to be restricted to Kern River watershed, several miles north of project area.
<i>Camissonia kernensis</i> ssp. <i>kernensis</i> Kern County evening-primrose	--/--/--/4.3	Southeast Sierra Nevada, western Mojave Desert (Piute, El Paso Mtns.; Grapevine Canyon, Kern County)	Sandy slopes, granitic flats, generally in sagebrush scrub or Joshua-tree woodland; 2,600–7,000 feet	Annual herb/ March-May	High. A CNDDDB occurrence is near Parcel K-9 on Esperanza Creek. Suitable habitat in several parcels in Kelso Valley, Landers Meadow, Alphie Canyon, Butterbredt Canyon areas.
<i>Canbya candida</i> White pygmy-poppy	--/--/--/4.2	Southern California deserts from Inyo National Forest south to San Bernardino, southern Sierra Nevada, Tehachapi Mountain area	Joshua tree woodland, Mojavean desert scrub - sandy places; 1,900-4,900 feet	Annual herb/ April – May	High. Mapped at North Sky River Wind Farm; other records from Dove Spring Canyon, 9 mi. N of Ricardo. Suitable habitat present in many parcels in Kelso Valley, Butterbredt Canyon, Alphie Canyon, Jawbone and Sugarloaf areas.

Scientific Name Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Castilleja plagiotoma</i> Mojave paintbrush	--/--/--/4.3	Southern Sierra Nevada, Tehachapi Mountain area, Inner South Coast Ranges, Transverse Ranges, Mojave Desert	Dry sagebrush scrub, pinyon woodland; 950-8,200 feet	Perennial herb (hemiparasitic)/April - June	Present. Observed near Green Spring in Kelso Valley, reported from Landers Meadow; high potential to occur in moist, alluvial habitats elsewhere, especially in Kelso Valley.
<i>Chamaesyce vallis-mortae</i> Death Valley sandmat	--/--/--/4.2	East of the Sierra Nevada, Mojave Desert	Mojavean desert scrub; dry, sandy places; < 4,800 feet	Perennial herb/May - October	Present. Observed at many parcels in Kelso Valley, Butterbred Canyon, reported from parcels in Sugarloaf area and likely to occur on many more parcels.
<i>Chorizanthe spinosa</i> Mojave spineflower	--/--/--/4.2	Western Mojave Desert; Kern, Fresno, Los Angeles and San Bernardino counties	Sand or gravel, also with clay; 50-4,800 feet	Annual herb/April - July	Present. Observed on Parcel S-6, suitable habitat present at several other parcels; reported from several more sites in general area.
<i>Clarkia xantiana</i> ssp. <i>parviflora</i> Kern Canyon clarkia	--/--/--/4.2	Southern Sierra Nevada (especially Kern River drainage); Kern, Tulare, Inyo, Los Angeles counties	Dry slopes, sandy or rocky substrate; chaparral, valley and foothill grassland, cismontane woodland, Great Basin scrub - 2,400-5,200 feet.	Annual herb/May-June	Moderate. Most records are north of project area in the Kern River drainage. Nearest record is on Piute Mountain Road 3.5 miles W of Kelso Valley Road, en route to Landers Meadow.
<i>Claytonia lanceolata</i> var. <i>peirsonii</i> Peirson's spring beauty	--/--/--/3.1	Most records from San Gabriel Mts., San Bernardino County; also from Eastern Tehachapi Mountains	Gravelly woodland, meadows in upper and subalpine coniferous forests; 4,900-9,000 feet	Perennial herb/May - July	Unlikely to occur. Most records are from San Bernardino County, with a single record from Jawbone Canyon near the summit of Cross Mountain. Suitable habitat limited in project area.

Scientific Name Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Claytonia parviflora</i> ssp. <i>grandiflora</i> Streambank spring beauty	--/--/--/4.2	Sierra Nevada foothills, Tehachapi Mountain area; Butte to Kern counties	Vernally moist, rocky, often disturbed sites in cismontane woodlands; 500-4,800 feet	Annual herb/ May - July	Moderate. Herbarium record from Caliente Canyon suggests species may be present in Caliente Creek parcels; also reported from Aqueduct road near Water Canyon S of Jawbone Canyon.
<i>Cymopterus deserticola</i> Desert cymopterus	--/--/S/1B.2	Mojave Desert; Kern, Los Angeles and San Bernardino counties	Joshua tree woodland, Mojavean desert scrub; sandy soils; 2,000-5,000 feet	Perennial herb/March-May	Present. Observed in Parcel A-3, an extension of known range; low potential to occur elsewhere in project area.
<i>Deinandra arida</i> Red Rock tarplant	--/SR/S/1B.2	Western Mojave Desert (El Paso Mountains, eastern Kern County), primarily in Red Rock Canyon	Mojavean desert scrub, washes, canyon slopes, edges of springs, seeps; clay and volcanic tuff substrates; 1,000-3,300 feet	Annual herb/ April– November	Moderate. All known records are from Red Rock Canyon, several miles east of project area; suitable clay substrate may be present in some Eastern Acquisition area parcels.
<i>Deinandra mohavensis</i> Mojave tarplant	--/SE/S/1B.3	Southern Sierra Nevada, San Bernardino Mtns (extirpated), Peninsular Ranges, western edge of Mojave Desert	Moist sites, sand bars, grassy riparian habitats, openings in chaparral, desert scrub, woodland; 1,500-5,300 feet	Annual herb/May -January	High. Nearest record is a side canyon near Blue Point. Suitable habitat in project area, most likely in Butterbredt, Alphie Canyon areas.
<i>Delphinium inopinum</i> Unexpected larkspur	--/--/--/4.3	S. Sierra Nevada; Kings Canyon National Park, Inyo National Forest south to mountains east of Bakersfield	Rock outcrops, meta-morphic and limestone substrates; upper montane conifer forest, red fir forest and western white pine forest; 6,000-9,800 feet	Perennial herb/ May-August	Moderate. Closest known occurrence is near Piute Peak, 5 miles W of project area. Possibly suitable substrate could be found at Landers Meadow.

<i>Scientific Name</i> Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Delphinium parryi</i> <i>ssp. purpureum</i> Mount Pinos larkspur	--/--/4.3	Tehachapi Mountain area, outer South Coast Ranges, western Transverse Ranges	Often on white calcareous rock; dry chaparral; sagebrush scrub, Mojavean desert scrub, pinyon-juniper woodland, 3,300-8,500 feet	Perennial herb/April - June	Unlikely to occur. Mapped at nearby North Sky River Wind Farm in 2010 but project area somewhat out of range and calcareous substrate lacking.
<i>Delphinium purpusii</i> Rose-colored larkspur	--/--/S/1B.3	Kern, Tulare counties; most records are in Kern River Canyon	Chaparral, cismontane woodland, pinyon and juniper woodland; rocky areas with granite or carbonate substrate; 980-4,400 feet	Perennial herb/April-May	Unlikely to occur. Known records are all restricted to the Kern River Canyon to the north of the project area.
<i>Dudleya abramsii</i> <i>ssp. calcicola</i> Limestone dudleya	--/--/4.3	S. Sierra Nevada; Inyo, Kern and Tulare counties	Open, rocky, granite or limestone outcrops in chaparral or pinyon-juniper woodlands; 1,600-8,500 feet	Perennial herb/April-August	High. Several records within five miles of project parcels. Suitable habitat is present in rocky areas throughout project area.
<i>Eriastrum brandegeeeae</i> Brandegee's eriastrum	--/--/1B.1	Inner North Coast ranges and southern Sierra Nevada; most authorities currently restrict species to North Coast Ranges	Open flats of volcanic soils, shales in chaparral and woodlands; 1300-3280 feet	Annual herb, April-August	Unlikely to occur. Although some recent records are 2.5 miles from project area, volcanic and shale substrate are absent in project area.
<i>Eriastrum tracyi</i> Tracy's eriastrum	--/CR/--/ 3.2	Klamath Ranges, Modoc Plateau, San Francisco Bay Area Inner North Coast Ranges, S Sierra Nevada	Open areas on shale or alluvium in chaparral or cismontane woodland; 1,300-3,300 feet	Annual herb/ May-August	Moderate. Mapped at nearby North Sky River Wind Farm in 2010. Shale habitat lacking but alluvium and apparently potential habitat is present in Kelso Valley and Caliente Creek parcels.

Scientific Name Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Eriogonum breedlovei</i> var. <i>breedlovei</i> Breedlove's buckwheat	--/--/1B.2	Piute Mountains, Kern County	Pinyon and juniper woodland, upper montane coniferous forest; carbonate, quartzite; 7,500-8,200 feet.	Perennial herb, June-September	Moderate in Landers Meadow parcels. Nearest records are 2-4 miles to NW at slightly higher elevations.
<i>Eriogonum kennedyi</i> var. <i>pinicola</i> Kern buckwheat	--/--/1B.1	Southeastern Sierra Nevada foothills (Sweet Ridge, south of Cache Peak, SE Kern County)	Gravel in chaparral and pinyon juniper woodlands; carbonate and basalt substrate; 5,500-5,900 feet	Perennial herb/May - June	Unlikely to occur. Mapped at North Sky River Wind Farm, 10 miles distant. Basalt and carbonate substrate lacking in project area.
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i> Red Rock poppy	--/--/1B.2	Deserts E of Bakersfield to NE of Lancaster; most records in Rand and El Paso Mountains	Mojavean desert scrub, desert washes, flats slopes; usually on volcanic substrate; <8,500 feet	Annual herb/ March – May	Moderate. Many nearby records from Rand and El Paso Mtns. Volcanic soils not present in project area. Outliers could occur in eastern portion of project area in clay soils.
<i>Eschscholzia procera</i> Kernville poppy	--/--/3	Kern County; apparently limited to region of Kernville, Kern River Canyon	Sandy floodplains in cismontane woodland; 2,600-3,400 ft	Perennial herb/June- September	Unlikely to occur. Appears to be limited to the Kern River drainage. Nearest records are N of Lake Isabella, >15 miles NW of project area
<i>Fritillaria pinetorum</i> Pine fritillary	--/--/4.3	Central Sierra Nevada, Tehachapis, Transverse Ranges; Mono, Tuolumne, Inyo, to Los Angeles, San Bernardino cos.	Shaded metamorphic or granitic slopes in chaparral, coniferous forest, and pinyon-juniper woodlands; 5,900-10,500 feet	Perennial bulbiferous herb/ May-September	Moderate. Nearest occurrence is approximately 4.5 miles from western edge of project area. Suitable habitat in western Kelso Valley, Landers Meadow areas.
<i>Hesperocyparis nevadensis</i> Piute cypress	--/--/1B.2	S Sierra Nevada; Fresno, Kern and Tulare counties	Granodiorite, gabbro, limestone; pinyon/juniper or oak/pine woodland,	Perennial evergreen tree	Moderate. Nearest records are from Back Canyon, W side of Piute Mountains. Could be

Scientific Name Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
			chaparral, closed-cone cypress forest; 2,400-5,900 feet		found in Caliente Creek parcels.
<i>Heterotheca shevockii</i> Shevock's golden- aster	--/--/S/1B.1	Lower Kern River Canyon, Greenhorn Mountains; Kern County	Sandy soils; chaparral, cismontane woodland; 700-3,000 ft	Perennial herb/August- November	Unlikely to occur. Nearest record is about 20 miles NW of project area at lower elevation.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	--/--/S/1B.1	Central Valley southward through coastal counties, Tehachapi Range and Mojave Desert; Baja California	Marshes and swamps, coastal salt marshes, playas, and vernal pools; 3-4,000 feet	Annual herb/ February-June	Unlikely to occur. Nearest record, possibly extirpated, is from Tehachapi. Suitable playa and vernal pool habitat unlikely in Caliente Creek parcels.
<i>Layia heterotricha</i> Pale yellow layia	--/--/S/1B.2	S Inner Coast Ranges to San Joaquin Valley edges; many extirpated records	Pinyon and juniper woodland, cismontane woodland, valley and foothill grassland; open areas in alkaline or clay soils; 900-5,600 feet	Annual herb/ March-June	Moderate. Nearest location is Sand Canyon; only potentially suitable habitat would be in Caliente Creek parcels.
<i>Lupinus pusillus</i> var. <i>intermontanus</i> Intermontane lupine	--/--/--/2.3	E of Sierra Nevada; Lassen, Inyo, Modoc and Mono counties to Washington, Montana, Arizona	Great basin scrub, open, sandy areas; 4,000-5,300 feet	Annual herb/ May - June	Moderate. Closest occurrence is one mile south of the project area and is dated 1956. Suitable habitat most likely in Kelso Valley parcels.
<i>Mentzelia eremophila</i> Solitary blazing star	--/--/PI/4.2	Western Mojave desert; Inyo, Kern, San Bernardino counties	Canyons, rocky slopes and washes, roadsides, creosote-bush scrub; 1,900-4,100 feet	Annual herb/ March - May	High. Many occurrences from Red Rock Canyon SP and environs. Suitable habitat present in Alphonse Canyon, Butterbrecht Canyon, Dove Spring and Kelso Valley areas.

<i>Scientific Name</i> Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Mentzelia tridentata</i> Creamy blazing star	--/--/S/1B.3	S California deserts from east of the Inyo National Forest south to Imperial and San Diego counties	Creosote bush scrub; mud hills; 2,300-4,300 feet	Annual herb/ April-May	High. Closest known occurrence is one mile east of project area; suitable present habitat, esp. in Sugarloaf and Jawbone areas.
<i>Mimulus pictus</i> Calico monkeyflower	--/--/S/1B.2	Southern Central Valley and foothills of Sierras from Visalia to north of Lancaster	Bare, sunny, shrubby areas around granite outcrops in forests and woodlands; 300-4,300 feet	Annual herb, March-May	Moderate. Nearest known occurrences to Caliente Creek parcels are at Keene Station and grade to Walker Basin.
<i>Mimulus shevockii</i> Kelso Creek monkeyflower	--/--/S/1B.2	S Sierra Nevada foothills (Cortez and Cyrus Canyons), W edge of Mojave Desert (Kelso Creek) Kern County	Alluvial fans, dry streamlets, generally on granitic soils; 2,900-4,300 feet	Annual herb/March – May	Present. Records show this species is present in the project area within Kelso Valley and suitable habitat is present on many parcels there.
<i>Monardella linoides</i> ssp. <i>oblonga</i> Tehachapi monardella	--/--/S/1B.3	Tehachapi Mountain area, northwestern Transverse Ranges; mostly on W side of Sierra Nevada	Chaparral, conifer woodland to forest, gravelly, dry slopes, flats; 4,900-8,500 feet	Perennial rhizomatous herb/ June - August	Moderate. Mapped at nearby North Sky River Wind Farm in 2010. Project area is slightly out of range but suitable habitat may be present in western Kelso Valley and Landers Meadow.
<i>Muilla coronata</i> Crowned muilla	--/--/--/4.2	East side S Sierra Nevada, Mojave Desert, expected in Tehachapi Mountains; W Nevada	Open Mojave desert scrub, Joshua tree woodland, pinyon-juniper woodland; 3200-5300 feet	Perennial bulbiferous herb/ March-May	High. Suitable habitat in project area; known occurrences are recorded to the north, east and south.

Scientific Name Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Navarretia setiloba</i> Piute Mountains navarretia	--/--/S/1B.1	West side of Piute Mountains, Kern and Tulare counties	Red clay soils, clay soils, gravelly loam; cismontane woodland, pinyon juniper woodland, valley and foothill grassland; 1,000- 3,700 feet	Annual herb/April-July	Low to Moderate. Nearest record is from Caliente Road near Walker Basin about 12 miles from Caliente Creek parcels; suitable habitat may be present.
<i>Nemacladus gracilis</i> Slender threadplant	--/--/--/4.3	S San Joaquin Valley and Sierra Nevada foothills to Los Angeles County	Sandy or gravelly soils; cismontane woodland, valley and foothill grassland; 400-6,300 feet	Annual herb/March-May	High. Known occurrences from Caliente and foothills of Tehachapi Mountains; most likely in Caliente Creek parcels.
<i>Orthotrichum shevockii</i> Shevock's bristle moss	--/--/S/1B.3	Piute Mountains, southern Sierra Nevada; Kern and Tulare counties	Underhangs of granitic rock; lower montane coniferous forest, Joshua tree woodland, pinyon and juniper woodland; 2,500- 7,000 feet	Moss	Moderate. Only reported records are from Scodie Mountains to the north. Suitable habitat may be present in Landers Meadow parcels.
<i>Pentachaeta fragilis</i> Fragile pentachaeta	--/--/--/4.3	S Sierra Nevada, San Joaquin Valley, southern South Coast Ranges, western Transverse Ranges	Grassy areas, chaparral, arid woodland, conifer forest; 160-6,900 feet	Annual herb/ March – June	High. Reported in S Kelso Valley. Suitable habitat may be present in Landers Meadow and several Kelso Valley parcels.
<i>Perideridia pringlei</i> Adobe yampah	--/--/--/4.3	Tehachapi Mountain area, South Coast Ranges, Western Transverse Ranges	Grassy slopes, red clay, calcareous and serpentine outcrops in coastal scrub, chaparral, cismontane woodland, pinyon and juniper woodland; 980- 5,900 feet	Perennial herb, April -June	Unlikely to occur. Mapped at North Sky River Wind Farm, Caliente, and Keene Ranch, but no serpentine or calcareous substrate known from project area.

<i>Scientific Name</i> Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
<i>Phacelia exilis</i> Transverse Range phacelia	--/--/4.3	S Sierra Nevada, western Transverse Ranges, San Gabriel and San Bernardino Mountains	Sandy or rocky slopes, flats, and meadows in montane coniferous forests and pebble plains; 3,600- 8,900 ft.	Annual herb/May- August	High. An occurrence record is about 1 mile from Landers Meadow; suitable habitat is present in this area and possibly in western Kelso Valley parcels.
<i>Phacelia hubbyi</i> Hubby's phacelia	--/--/4.2	N South Coast, Santa Cruz Island, W Transverse Ranges; east of Bakersfield	Gravelly or rocky slopes, chaparral, grassland; < 3,300 feet	Annual herb/April – July	Unlikely to occur. Although reported in 1975 from Water Canyon, all other records are >40 miles distant. Record may be a misidentification of a more common species.
<i>Phacelia nashiana</i> Charlotte's phacelia	--/--/1B.2	S Sierra Nevada, eastern Tehachapi Mountains and the western edge of the Mojave Desert.	Sandy to rocky, granitic east-facing slopes, generally Joshua tree or pinyon/juniper woodland; 2,000- 7,900 feet	Annual herb, March – June	Present. Observed on one parcel in 2012; known localities on other parcels; suitable habitat extensive in eastern portion of project area.
<i>Ribes menziesii</i> var. <i>ixoderme</i> Aromatic canyon gooseberry	--/--/1B.2	S Sierra Nevada; Fresno, Kern, Tulare counties	In forest openings; chaparral, cismontane woodland; 2,000-3,800 feet	Shrub/April	Moderate. Nearest known locality is in Caliente Canyon, on Loraine quadrangle; suitable habitat likely present on Caliente Creek parcels.
<i>Sclerocactus</i> <i>polyancistrus</i> Mojave fish hook cactus	--/--/4.2	Mojave Desert from Inyo to San Bernardino counties; Nevada	Great Basin scrub, Joshua tree woodland, Mojavean desert scrub; usually on carbonate; 2,100-7,700 feet	Shrub (stem succulent)/April- July	Present. Observed on Parcel A- 5; suitable habitat present in many parcels.
<i>Streptanthus</i> <i>cordatus</i> var. <i>piutensis</i>	--/--/1B.2	Southern high Sierra Nevada (Piute Mountains)	Roadbanks, cliffs on meta- morphic red clay soils; broadleaved upland forest, closed-cone coniferous	Perennial herb/June-July	Moderate. Mapped at nearby North Sky River Wind Farm in 2010; metamorphic substrate present in Caliente Creek area.

<i>Scientific Name</i> Common Name	Status Fed/CA/ BLM/CRPR	Distribution	Habitat	Life form/ Flowering period	Potential to Occur in Project Area
Piute Mountains jewel-flower			forest, pinyon-juniper woodland, open chaparral, Piute cypress stands; 3,900-5,600 feet		
<i>Symphytotrichum</i> <i>defoliatum</i> San Bernardino aster	--/--/S/1B.2	Primarily San Gabriel, San Bernardino Mountains, and Peninsular Ranges; Kern to San Luis Obispo, San Diego, Imperial counties	Vernally moist sites, often disturbed places; meadows, seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous forest, grassland; < 6,700 feet	Perennial rhizomatous herb/July– November	Present. Reported by Twisselmann (1967) from Landers Meadow
^a Status explanations: Federal: -- = Not listed as endangered, threatened or candidate for listing State: SE= Listed as endangered under the California Endangered Species Act. California Rare Plant Rank (CRPR): *=Known populations believed extirpated from that county. 1A= List 1A species: Presumed extinct in California. 1B= List 1B species: Rare, threatened, or endangered in California and elsewhere. 2=List 2 species: Rare, threatened, or endangered in California but more common elsewhere. 3=List 3 species: Plants about which more information is needed to determine their status. 4= List 4 species. Plants of limited distribution- a watch list. Threat Code extensions and their meanings: .1 - Seriously endangered in California .2 - Fairly endangered in California .3 - Not very endangered in California Bureau of Land Management Rank (BLM, 2011): S= Special status plant (Ridgecrest Resource Area or Bakersfield Resource Area)			^b Potential Occurrence explanations: Present: Species was observed during project surveys, or species records documented from literature are known within the project area. High: The CNDDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area. High-quality suitable habitat is present within the project area. Moderate: Species does not meet all terms of High or Low category. For example: CNDDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented. Low: The CNDDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area. Unlikely to occur: CNDDDB or other documents do not record the occurrence of the species within or reasonably near the project area, and components of suitable habitat are lacking within or adjacent to the project area		

Sources: Bureau of Land Management (2011), California Natural Diversity Database (2012), Consortium of California Herbaria (2012), CalFlora database (2012), California Native Plant Society (2012)

Appendix B. Plant Species Observed, by Parcel, Eastern Kern County Acquisition Project, Eastern Parcels

APPENDIX B. PLANT SPECIES OBSERVED, BY PARCEL, EASTERN KERN COUNTY ACQUISITION PROJECT, EASTERN PARCELS			J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	
Taxon	Synonymy	Common name																																		
BOLD indicates special-status species																																				
AGAVACEAE		AGAVE FAMILY																																		
<i>Hesperoyucca whipplei</i>	<i>Yucca whippleyi</i>	Chaparral yucca	X		X		X					X									X				X											
<i>Yucca brevifolia</i>		Joshua tree						X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AMARANTHACEAE		AMARANTH FAMILY																																		
<i>Amaranthus</i> sp.		Amaranthus													X						X															
APIACEAE		CARROT FAMILY																																		
<i>Cymopterus deserticola</i>		Desert cymopterus																			X															
<i>Lomatium</i> sp.		Lomatium					X																				X									
<i>Lomatium mohavense</i>		Mohave wild parsley										X	X		X	X	X	X	X	X	X	X				X	X	X	X		X					
ARACEAE		ARUM FAMILY																																		
<i>Lemna minor</i>		Smaller duckweed																																		X
ASTERACEAE		SUNFLOWER FAMILY																																		
<i>Acamptopappus sphaerocephalus</i>		Goldenhead		X									X		X	X							X											X	X	
<i>Acamptopappus sphaerocephalus</i> var. <i>hirtellus</i>		Hairy goldenhead								X												X	X													
<i>Ambrosia acanthicarpa</i>		Annual bursage								X	X		X																							
<i>Ambrosia dumosa</i>		White bursage	X	X	X	X	X	X	X	X	X	X	X		X						X		X	X	X											
<i>Ambrosia salsola</i> var. <i>salsola</i>	<i>Hymenoclea salsola</i> var. <i>salsola</i>	Cheesebush	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X		X			X	X
<i>Anisocoma acaulis</i>		Scale bud			X									X	X																					X
<i>Artemisia dracunculus</i>		Tarragon																		X		X														
<i>Artemisia tridentata</i>		Big sage																X								X										
<i>Baccharis salicifolia</i>	<i>B. glutinosa</i>	Mule fat, seep willow	X		X										X							X	X											X	X	
<i>Baccharis sergiloides</i>		Desert baccharis	X				X															X	X	X	X									X	X	
<i>Bebbia juncea</i>	<i>Bebbia juncea</i> v. <i>aspera</i>	Sweetbush	X	X			X																													
<i>Brickellia</i> sp.		California brickellia	X																			X	X		X											
<i>Brickellia californica</i>		California brickellia					X																													
<i>Brickellia desertorum</i>		Desert brickellia	X									X				X						X	X	X	X	X									X	
<i>Brickellia microphylla</i>		Little leaved brickellia	X		X																															
<i>Calycoseris parryi</i>		Yellow tackstem			X																						X									
<i>Chaenactis</i> sp.		Pincushion	X								X	X		X									X	X		X	X									
<i>Chaenactis carphoclinia</i> var. <i>carphoclinia</i>		Pebble pincushion				X	X			X		X																								
<i>Chaenactis fremontii</i>		Fremont pincushion	X		X																						X									
<i>Chaenactis macrantha</i>		Mojave pincushion																				X														
<i>Chaenactis stevioides</i>		Esteve pincushion	X																									X								X
<i>Cirsium</i> sp.		Thistle													X																					
<i>Corethrogyne filaginifolia</i>	<i>Lessingia filaginifolia</i>	Common sandaster																									X									
<i>Encelia actoni</i>		Acton's encelia	X	X	X	X	X		X	X		X		X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Ericameria cooperi</i> var. <i>cooperi</i>		Cooper goldenbush	X								X	X		X	X	X	X	X	X	X	X	X	X	X	X			X	X							
<i>Ericameria cuneata</i>		Rock goldenbush	X		X										X	X				X		X	X	X	X	X								X	X	

BOLD indicates special-status species		PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10			
Taxon	Synonymy	Common name																																				
<i>Ericameria linearifolia</i>		Interior goldenbush	X								X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X					X	X		
<i>Ericameria nauseosa</i>	<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush			X			X	X	X	X		X	X	X			X		X	X	X	X		X		X	X	X	X					X	X		
<i>Ericameria paniculata</i>	<i>Chrysothamnus paniculatum</i>	Blackstem rabbitbrush		X	X	X	X			X		X												X														
<i>Ericameria teretifolia</i>	<i>Chrysothamnus teretifolium</i>	Green rabbitbrush	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X				X	X		
<i>Eriophyllum</i> sp.		Woolly sunflower																								X												
<i>Eriophyllum ambiguum</i>		Annual woolly sunflower	X	X	X		X	X		X	X				X					X		X	X	X	X	X	X		X							X		
<i>Eriophyllum ambiguum</i> var. <i>paleaceum</i>		Annual woolly sunflower																				X														X		
<i>Eriophyllum pringlei</i>		Pringle eriophyllum	X							X	X	X		X	X	X	X	X	X	X	X	X		X		X	X	X	X	X		X				X		
<i>Eriophyllum wallacei</i>		Wallace eriophyllum								X														X	X	X			X									
<i>Gutierrezia microcephala</i>		Sticky snakeweed	X				X					X	X								X	X	X	X	X													
<i>Gutierrezia sarothrae</i>		Matchweed					X																															
<i>Lactuca serriola</i>		Prickly lettuce														X																						
<i>Lasthenia californica</i>		Goldfields						X				X	X				X			X	X			X														
<i>Layia glandulosa</i>		White layia													X	X											X	X	X									
<i>Lepidospartum squamatum</i>		Scalebroom	X	X	X	X	X		X	X	X		X		X							X		X	X											X		
<i>Leptosyne bigelovii</i>	<i>Coreopsis bigelovii</i>	Coreopsis	X		X		X			X		X		X		X		X	X	X	X	X	X	X	X		X	X							X	X		
<i>Lessingia glandulifera</i> var. <i>peirsonii</i>		Vinegar weed																								X		X										
<i>Logfia depressa</i>	<i>Filago depressa</i>	Dwarf cottonrose		X																																		
<i>Logfia filaginoides</i>	<i>Filago californica</i>	California cottonrose	X																																			
<i>Malacothrix glabrata</i>		Desert dandelion	X			X				X						X					X	X		X											X	X		
<i>Pseudognaphalium luteoalbum</i>	<i>Gnaphalium luteoalbum</i>	White cudweed														X																						
<i>Senecio flaccidus</i>		Shrubby ragwort	X				X									X				X	X	X	X	X	X										X	X		
<i>Sonchus asper</i> ssp. <i>asper</i>		Sow thistle														X																						
<i>Stephanomeria exigua</i>		Small wirelettuce										X										X				X	X	X					X					
<i>Stephanomeria parryi</i>		Parry rock pink														X					X																	
<i>Stephanomeria pauciflora</i>		Wire lettuce	X	X	X		X			X	X	X	X		X					X	X	X	X	X	X							X			X	X		
<i>Stylocline</i> sp.		Stylocline										X																										
<i>Stylocline gnaphaloides</i>		Everlasting stylocline											X																									
<i>Syntrichopappus fremontii</i>		Fremont's syntrichopappus												X		X	X			X	X			X					X	X								
<i>Tetradymia axillaris</i> var. <i>axillaris</i>		Catclaw horsebrush										X						X											X	X								
<i>Tetradymia axillaris</i> var. <i>longispina</i>		Catclaw horsebrush		X				X																		X											X	
<i>Tetradymia glabrata</i>		Little leaf horsebrush																					X															
<i>Tetradymia stenolepis</i>		Mojave horsebrush	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X		X		X	X		
<i>Uropappus lindleyi</i>		Silver puffs													X	X																				X		
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>		Mojave aster	X	X	X		X	X		X		X								X	X	X	X	X														
BORAGINACEAE		BORAGE FAMILY																																				
<i>Amsinckia intermedia</i>	<i>Amsinckia menziesii</i> var. <i>i.</i>	Common fiddleneck														X																				X		
<i>Amsinckia menziesii</i>		Fiddleneck			X																																	
<i>Amsinckia tessellata</i> var. <i>tessellata</i>		Devil's lettuce	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X				X	X		

BOLD indicates special-status species		PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	
Taxon	Synonymy	Common name																																		
<i>Cryptantha</i> sp.		Cryptantha	X				X			X						X												X								
<i>Cryptantha barbiger</i>		Bearded cryptantha	X																			X														
<i>Cryptantha circumscissa</i>		Western forget me not	X	X	X					X				X		X				X		X	X	X											X	
<i>Cryptantha circumscissa</i> var. <i>circumscissa</i>		Cushion cryptantha								X																										
<i>Cryptantha micrantha</i>		Purple root cryptantha	X							X	X	X	X		X					X	X		X													
<i>Cryptantha nevadensis</i>		Nevada forget me not															X																			
<i>Cryptantha pterocarya</i>		Winged nut forget me not	X		X							X		X		X				X	X		X	X			X									
<i>Cryptantha utahensis</i>		Scented forget me not	X																								X									
<i>Emmenanthe penduliflora</i> var. <i>penduliflora</i>		Whispering bells	X																																	
<i>Eucrypta chrysanthemifolia</i> var. <i>chrysan.</i>		Common eucrypta																																	X	
<i>Heliotropium curassavicum</i>		Chinese parsley													X						X	X	X											X	X	
<i>Pectocarya</i> sp.		Pectocarya	X									X											X													
<i>Pectocarya heterocarpa</i>		Chuckwalla pectocarya										X																X								
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>		Slender comb seed	X							X										X																
<i>Pectocarya penicillata</i>		Winged pectocarya		X	X					X	X	X	X	X	X	X				X	X	X					X								X	
<i>Pectocarya platycarpa</i>		Broad nutted comb bur										X																								
<i>Pectocarya setosa</i>		Moth combseed	X							X		X	X	X	X	X				X	X															
<i>Phacelia</i> sp.		Phacelia	X	X	X			X		X											X	X	X													
<i>Phacelia crenulata</i>		Notch leaved phacelia					X			X											X		X													
<i>Phacelia distans</i>		Common phacelia																			X															
<i>Phacelia fremontii</i>		Fremont's phacelia										X														X		X								
<i>Phacelia nashiana</i>		Charlotte's phacelia																				X														
<i>Phacelia tanacetifolia</i>		Tansy leaved phacelia	X	X	X																	X				X	X						X	X		
<i>Pholisma arenarium</i>		Dune food	X		X																															
<i>Pholistoma membranaceum</i>		White fiesta flower	X		X		X								X													X						X		
<i>Plagiobothrys arizonicus</i>		Arizona popcorn flower	X	X	X	X				X	X	X	X	X					X			X		X												
BRASSICACEAE		MUSTARD FAMILY																																		
<i>Boechera</i> sp.		Rockcross																																X		
<i>Brassica tournefortii</i>		Saharan mustard	X		X	X		X																												
<i>Caulanthus coulteri</i>		Coulter's jewel flower																																	X	
<i>Caulanthus lasiophyllus</i>	<i>Guillenia lasiophylla</i>	California mustard	X		X		X			X		X									X	X		X												
<i>Descurainia pinnata</i>		Yellow tansy mustard			X									X	X							X	X		X	X		X	X					X		
<i>Lepidium flavum</i>		Yellow pepper grass	X									X									X															
<i>Lepidium fremontii</i>	<i>L. fremontii</i> var. <i>stipitatum</i>	Desert pepper grass		X	X	X	X			X	X		X								X	X	X	X	X											
<i>Lepidium lasiocarpum</i> ssp. <i>lasiocarpum</i>		Sand peppergrass																			X															
<i>Lepidium nitidum</i>	<i>L. n.itidum</i> var. <i>howellii</i> ; var. <i>oreganum</i>	Shining pepper grass										X																								
<i>Sisymbrium</i> sp.		Tumble mustard					X																													
<i>Stanleya pinnata</i> var. <i>pinnata</i>		Prince's plume					X														X	X	X	X										X	X	
<i>Tropidocarpum gracile</i>		Slender tropidocarpum	X							X	X	X		X	X																					

BOLD indicates special-status species		PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10		
Taxon	Synonymy	Common name																																			
CACTACEAE		CACTUS FAMILY																																			
<i>Cylindropuntia echinocarpa</i>	<i>Opuntia echinocarpa</i>	Silver cholla	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X					X		
<i>Echinocactus polycephalus</i>		Cottontop cactus			X		X																														
<i>Opuntia basilaris</i> var. <i>basilaris</i>		Beavertail cactus	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		
Sclerocactus polyancistrus		Mojave fish hook cactus																				X															
CARYOPHYLLACEAE		PINK FAMILY																																			
<i>Loeflingia squarrosa</i>		Spreading loeflingia											X																								
CHENOPODIACEAE		GOOSEFOOT FAMILY																																			
<i>Atriplex canescens</i> var. <i>canescens</i>		Fourwing saltbush		X				X				X		X									X	X	X	X	X	X	X	X				X	X		
<i>Atriplex confertifolia</i>		Shadscale								X												X															
<i>Atriplex hymenelytra</i>		Desert holly					X																														
<i>Atriplex polycarpa</i>		Allscale	X		X	X	X			X		X	X								X	X	X	X	X												
<i>Chenopodium californicum</i>		California goosefoot													X							X															
<i>Grayia spinosa</i>		Hop-sage	X	X	X							X	X	X	X	X	X				X	X	X	X	X												
<i>Krascheninnikovia lanata</i>		Winter fat	X		X		X			X		X										X	X	X	X	X									X	X	
CLEOMACEAE		SPIDERFLOWER FAMILY																																			
<i>Peritoma arborea</i> var. <i>angustata</i>	<i>Isomeris arborea</i> var. <i>arborea</i>	Bladderpod	X	X	X	X	X			X		X	X																								
CONVOLVULACEAE		MORNING-GLORY FAMILY																																			
<i>Cuscuta californica</i>		California dodder																				X															
<i>Cuscuta denticulata</i>		Desert dodder			X						X	X																									
CUPRESSACEAE		CYPRESS FAMILY																																			
<i>Juniperus californica</i>		California juniper											X		X							X	X			X		X							X		
CYPERACEAE		SEDGE FAMILY																																			
<i>Carex</i> sp.		Sedge													X							X															
<i>Carex praegracilis</i>		Field sedge																				X															
<i>Schoenoplectus pungens</i> var. <i>longispicatus</i>	<i>Scirpus americanus</i> var. <i>longispicatus</i>	Common threesquare														X																					
EPHEDRACEAE		EPHEDRA FAMILY																																			
<i>Ephedra nevadensis</i>		Nevada ephedra	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X				X	X		
<i>Ephedra viridis</i>		Green ephedra																							X	X	X										
EUPHORBIACEAE		SPURGE FAMILY																																			
<i>Chamaesyce</i> sp.		Rattlesnake weed					X																														
<i>Chamaesyce albomarginata</i>		Rattlesnake weed							X												X	X	X	X											X	X	
<i>Chamaesyce micromera</i>		Desert spurge							X																												
Chamaesyce vallis-mortae		Death valley sandmat							X												X	X												X	X		
<i>Croton setigerus</i>	<i>Eremocarpus setigerus</i>	Dove weed										X																									
FABACEAE		PEA FAMILY																																			
<i>Acmispon</i> sp.		Lotus				X																X	X														
<i>Acmispon strigosus</i>	<i>Lotus subpinnatus</i>	Strigose lotus	X		X		X								X						X	X															
<i>Acmispon wrangelianus</i>	<i>Lotus w.; L. subpinnatus</i>	Lotus	X																																		

BOLD indicates special-status species			PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10		
Taxon	Synonymy	Common name																																				
<i>Astragalus</i> sp.		Milkvetch							X		X								X																			
<i>Astragalus didymocarpus</i> var. <i>didymocarpus</i>		Common dwarf milkvetch									X																											
<i>Astragalus lentiginosus</i> var. <i>variabilis</i>		Freckled milkvetch													X													X	X	X								
<i>Astragalus pachypus</i> var. <i>pachypus</i>		Thick pod milkvetch																				X	X															
<i>Lupinus concinnus</i>		Bajada lupine	X					X														X		X											X	X		
<i>Lupinus excubitus</i> var. <i>excubitus</i>		Grape lupine	X		X		X					X				X					X	X	X	X	X	X		X	X			X			X			
<i>Lupinus shockleyi</i>		Shockley lupine																											X									
<i>Melilotus indicus</i>	<i>Melilotus indica</i>	Annual yellow sweetclover																				X	X		X												X	
<i>Prosopis glandulosa</i> var. <i>torreyana</i>		Mesquite											X																									
<i>Psoralea argyrea</i> var. <i>minuti</i>		Mojave indigo bush	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X												
<i>Senna armata</i>		Desert senna		X	X	X	X						X													X												
FAGACEAE		OAK FAMILY																																				
<i>Quercus turbinella</i>		Shrub live oak													X																							
GERANIACEAE		GERANIUM FAMILY																																				
<i>Erodium cicutarium</i>		Redstem filaree	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
JUNCACEAE		RUSH FAMILY																																				
<i>Juncus</i> sp.		Rush																				X																
<i>Juncus balticus/mexicanus</i>		Baltic rush/Mexican rush														X						X	X	X	X											X	X	
<i>Juncus bufonius</i> var. <i>bufonius</i>		Toad rush																				X																
<i>Juncus xiphioides</i>		Iris leaved rush					X																X															
LAMIACEAE		MINT FAMILY																																				
<i>Marrubium vulgare</i>		Horehound																																				X
<i>Salvia columbariae</i>		Chia sage	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X			X	X		
<i>Salvia dorrii</i> var. <i>dorrii</i>		Dorr's sage										X								X		X			X													
<i>Scutellaria mexicana</i>	<i>Salazaria mexicana</i>	Bladder sage	X	X	X	X	X	X		X	X	X	X		X						X	X	X	X	X	X											X	
LILIACEAE		LILY FAMILY																																				
<i>Allium or Calochortus</i>		Onion or mariposa-lily																			X																	
<i>Calochortus kennedyi</i> var. <i>kennedyi</i>		Desert mariposa													X		X	X				X	X															
LOASACEAE		LOASA FAMILY																																				
<i>Eucnide urens</i>		Desert bush nettle			X		X																															
<i>Mentzelia</i> sp.		Blazing star			X		X								X		X	X											X									
<i>Mentzelia albicaulis</i>		White stemmed blazing star	X																			X		X													X	
<i>Mentzelia veatchiana</i>		Veatch's blazing star																					X				X											
<i>Petalonyx nitidus</i>		Shiny leaf sandpaper plant	X		X																																	
MALVACEAE		MALLOW FAMILY																																				
<i>Eremalche exilis</i>		White mallow	X																																			
<i>Sphaeralcea ambigua</i> var. <i>ambigua</i>		Apricot mallow	X									X				X	X	X	X	X	X	X	X					X	X	X		X			X	X		
MONTIACEAE		MINER'S LETTUCE FAMILY																																				
<i>Calandrinia ciliata</i>		Redmaids	X									X																										

BOLD indicates special-status species			PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10			
Taxon	Synonymy	Common name																																					
NYCTAGINACEAE			FOUR-O'CLOCK FAMILY																																				
<i>Mirabilis laevis</i>	<i>Includes M. californica, M. bigelovii</i>	Desert wishbone bush	X	X	X		X				X	X	X	X	X							X	X	X	X	X											X		
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	<i>M. californica</i>	California four o'clock										X																											
<i>Mirabilis laevis</i> var. <i>retrorsa</i>	<i>M. bigelovii</i> var. <i>retrorsa</i>	Wishbone bush																				X															X		
OLEACEAE			OLIVE FAMILY																																				
<i>Camissonia</i> sp.		Primrose												X														X											
<i>Camissonia campestris</i>		Field primrose									X				X	X		X			X	X	X	X	X			X								X			
<i>Chylismia claviformis</i> ssp. <i>claviformis</i>	<i>Camissonia claviformis</i>	Evening-primrose	X	X	X		X				X		X									X	X	X	X		X										X		
<i>Eremothera boothii</i> ssp. <i>desertorum</i>	<i>Camissonia boothii</i> ssp. <i>desertorum</i>	Woody bottle washer	X	X	X	X	X				X		X								X	X	X	X	X		X												
<i>Oenothera</i> sp.		Evening primrose							X																														
<i>Tetrapteron palmeri</i>	<i>Oenothera palmeri</i>	Evening primrose															X				X																		
OROBANCHACEAE			BROOMRAPE FAMILY																																				
<i>Castilleja chromosa</i>	<i>Castilleja angustifolia</i>	Desert paintbrush																					X																
<i>Castilleja foliolosa</i>		Texas paintbrush	X																			X		X															
PAPAVERACEAE			POPPY FAMILY																																				
<i>Eschscholzia californica</i>		California poppy	X																																				
<i>Eschscholzia minutiflora</i> var. <i>minutiflora</i>		Coville's poppy	X													X							X	X	X														
<i>Platystemon californicus</i>		Cream cups	X																																				
PLANTAGINACEAE			PLAINTAIN FAMILY																																				
<i>Penstemon incertus</i>		Western desert penstemon			X										X												X	X											
<i>Plantago ovata</i>		Desert plantain			X	X	X				X		X										X																
<i>Veronica anagallis-aquatica</i>		Water speedwell														X																							
POACEAE			GRASS FAMILY																																				
<i>Bromus berterioanus</i>	<i>Bromus trinii</i>	Chilean chess											X																										
<i>Bromus diandrus</i>		Rippgut brome																																			X		
<i>Bromus madritensis</i> ssp. <i>rubens</i>		Red brome	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<i>Bromus tectorum</i>		Cheatgrass	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<i>Distichlis spicata</i>		Salt grass														X						X	X													X			
<i>Elymus elymoides</i> var. <i>elymoides</i>		Squirreltail										X		X	X						X	X				X	X	X	X	X	X	X	X	X	X	X			
<i>Elymus multisetus</i>		Big squirreltail									X											X															X		
<i>Elymus triticoides</i>		Beardless wild rye																				X	X														X		
<i>Festuca microstachys</i>	<i>Vulpia microstachys</i>	Fescue											X																										
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>		Barley																					X																
<i>Hordeum murinum</i> ssp. <i>leporinum</i>		Farmer's foxtail														X						X								X									
<i>Melica</i> sp.		California melic																																			X		
<i>Muhlenbergia rigens</i>		Deergrass					X																																
<i>Poa secunda</i> ssp. <i>secunda</i>		Sandberg's bluegrass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<i>Polypogon monspeliensis</i>		Annual beard grass					X															X	X																
<i>Schismus</i> sp.		Mediterranean grass	X	X	X	X	X	X	X	X	X	X			X	X	X					X	X	X	X	X				X									

BOLD indicates special-status species			PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10		
Taxon	Synonymy	Common name																																				
<i>Schismus barbatus</i>		Mediterranean grass																			X														X	X		
<i>Sporobolus airoides</i>		Alkali sacaton																					X															
<i>Stipa hymenoides</i>	<i>Achnatherum hymenoides</i>	Sand grass									X	X		X													X											
<i>Stipa speciosa</i>	<i>Achnatherum speciosum</i>	Desert needlegrass	X	X	X		X	X	X	X	X	X		X	X		X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
POLEMONIACEAE			PHLOX FAMILY																																			
<i>Eriastrum</i> sp.		Desert woollystar	X	X							X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<i>Eriastrum densifolium</i> ssp. <i>mohavense</i>		Perennial woolly star												X													X	X										
<i>Eriastrum diffusum</i>		Miniature woolly star	X								X										X	X	X	X		X												
<i>Gilia</i> sp.		Gilia	X		X																						X	X										
<i>Gilia brecciarum</i>		Small gilia															X																					
<i>Gilia scopulorum</i>		Rock gilia	X																				X															
<i>Leptosiphon aureus</i> ssp. <i>aureus</i>	<i>Linanthus aureus</i> ssp. <i>aureus</i>	Golden linanthus									X								X	X							X											
<i>Loeseliastrum matthewsii</i>		Desert calico	X				X			X					X	X		X	X	X	X	X	X	X	X	X			X	X				X	X			
POLYGONACEAE			BUCKWHEAT FAMILY																																			
<i>Centrostegia thurberi</i>		Red triangles										X					X	X			X		X	X			X											
<i>Chorizanthe brevicornu</i>		Brittle spine flower									X															X												
<i>Chorizanthe spinosa</i>		Mojave spineflower												X																								
<i>Chorizanthe watsonii</i>		Watson's spineflower															X			X																		
<i>Eriogonum</i> sp.		Buckwheat									X			X			X	X	X	X						X	X		X	X				X				
<i>Eriogonum brachyanthum</i>		Yellow buckwheat													X																							
<i>Eriogonum brachypodum</i>		Parry's buckwheat															X																					
<i>Eriogonum clavatum</i>		Buckwheat						X			X														X													
<i>Eriogonum davidsonii</i>		Davidson buckwheat	X																		X		X															
<i>Eriogonum deflexum</i>		Flat topped buckwheat	X	X			X			X	X						X			X	X	X														X		
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>		California buckwheat	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<i>Eriogonum gracillimum</i>		Rose and white buckwheat									X												X															
<i>Eriogonum heermannii</i>		Heerman buckwheat			X		X																													X		
<i>Eriogonum inflatum</i> var. <i>inflatum</i>		Desert trumpet	X	X	X		X			X	X	X	X					X		X	X	X	X	X	X	X												
<i>Eriogonum maculatum</i>		Angle stemed buckwheat	X																																			
<i>Eriogonum nidularium</i>		Whisk broom									X																											
<i>Eriogonum nudum</i>		Weston's buckwheat			X								X											X	X		X											
<i>Eriogonum nudum</i> var. <i>westonii</i>		Weston's buckwheat	X				X						X							X	X	X	X	X														
<i>Eriogonum plumatella</i>		Flat topped buckwheat																											X	X	X		X		X	X		
<i>Eriogonum pusillum</i>		Yellow turban	X	X	X	X				X	X				X								X	X	X	X		X								X		
<i>Eriogonum reniforme</i>		Kidney leaf buckwheat			X																																	
<i>Eriogonum trichopes</i>		Little desert buckwheat		X																																		
<i>Mucronea perfoliata</i>		California spineflower																			X																	
<i>Oxytheca perfoliata</i>		Saucer plant												X								X																
<i>Rumex</i> sp.		Dock														X																						

BOLD indicates special-status species		PARCEL CODE	J-1	J-2	J-3	J-4	J-5	S-1	S-2	S-3	S-4	S-5	S-6	D-1	D-2	D-3	D-4	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	
Taxon	Synonymy	Common name																																		
RANUNCULACEAE		BUTTERCUP FAMILY																																		
<i>Delphinium</i> sp.		Larkspur			X																	X														
ROSACEAE		ROSE FAMILY																																		
<i>Coleogyne ramosissima</i>		Blackbush	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Prunus andersonii</i>		Desert peach													X																					
<i>Prunus fasciculata</i> var. <i>fasciculata</i>		Desert almond	X		X		X																													
<i>Purshia tridentata</i>		Bitterbrush																				X	X	X	X		X									
RUBIACEAE		MADDER FAMILY																																		
<i>Galium</i> sp.		Bedstraw			X																		X													
SALICACEAE		WILLOW FAMILY																																		
<i>Populus fremontii</i> ssp. <i>fremontii</i>		Fremont cottonwood											X									X											X	X		
<i>Salix</i> sp.		Willow										X		X																						
<i>Salix exigua</i> var. <i>exigua</i>		Sandbar willow																				X													X	
<i>Salix laevigata</i>		Polished willow					X					X																						X	X	
<i>Salix lasiolepis</i>		Arroyo willow																				X		X	X									X	X	
SAURURACEAE		LIZARD'S TAIL FAMILY																																		
<i>Anemopsis californica</i>		Yerba mansa													X							X														
SIMAROUBACEAE		SIMAROUBA FAMILY																																		
<i>Ailanthus altissima</i>		Tree of heaven																																	X	
SOLANACEAE		POTATO FAMILY																																		
<i>Datura wrightii</i>		Jimsonweed	X		X		X																		X										X	
<i>Lycium andersonii</i>		Anderson's box thorn	X	X	X		X			X	X			X	X	X		X	X	X	X	X	X	X			X	X	X					X	X	
<i>Lycium cooperi</i>		Cooper's box thorn	X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	
TAMARICACEAE		TAMARISK FAMILY																																		
<i>Tamarix chinensis</i>		Chinese tamarisk																				X		X	X											
<i>Tamarix ramosissima</i>		Tamarisk																					X	X												
TYPHACEAE		CATTAIL FAMILY																																		
<i>Typha latifolia</i>		Cattail					X															X													X	
URTICACEAE		NETTLE FAMILY																																		
<i>Urtica dioica</i> ssp. <i>holosericea</i>		Stinging nettle																																	X	
ZYGOPHYLLACEAE		CALTROP FAMILY																																		
<i>Larrea tridentata</i>		Creosote bush	X	X	X	X	X	X	X	X	X	X				X	X			X	X	X	X	X	X	X			X	X					X	

Appendix C. Plant Species Observed, by Parcel, Eastern Kern County Acquisition Project, Western Parcels

APPENDIX C. PLANT SPECIES OBSERVED, BY PARCEL, EASTERN KERN COUNTY ACQUISITION PROJECT, WESTERN PARCELS		PARCEL CODE	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-1	L-2	L-3	C-1	C-2	C-4
Taxon	Synonymy	Common name																										
ADOXACEAE		MUSKROOT FAMILY																										
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	<i>Sambucus mexicana</i>	Blue elderberry									X																	
AGAVACEAE		AGAVE FAMILY																										
<i>Hesperoyucca whipplei</i>	<i>Yucca whippleyi</i>	Chaparral yucca	X	X							X						X											
<i>Yucca brevifolia</i>		Joshua tree	X	X	X	X	X	X			X	X			X	X			X	X	X	X						
AMARANTHACEAE		AMARANTH FAMILY																										
<i>Nitrophila occidentalis</i>		Western nitrophila																				X						
APIACEAE		CARROT FAMILY																										
<i>Apium graveolens</i>		Celery or smallage													X													
<i>Lomatium</i> sp.		Lomatium				X				X	X											X						
<i>Lomatium macrocarpum</i>		Large fruited lomatium								X																		
<i>Lomatium mohavense</i>		Mohave wild parsely	X	X		X					X					X		X		X	X							
<i>Perideridia parishii</i>		Parish's yampah																					X					
<i>Tauschia parishii</i>		Parish's tauschia	X															X										
APOCYNACEAE		DOGBANE FAMILY																										
<i>Apocynum</i> sp.		Dogbane											X															
ASCLEPIADACEAE		MILKWEED FAMILY																										
<i>Asclepias californica</i>		California milkweed	X	X							X							X										
<i>Asclepias erosa</i>		Desert milkweed																		X								
<i>Asclepias fascicularis</i>		Milkweed									X		X		X							X						
ARACEAE		ARUM FAMILY																										
<i>Lemna</i> sp.		Duckweed													X													
ASTERACEAE		SUNFLOWER FAMILY																										
<i>Acamptopappus sphaerocephalus</i>		Goldenhead														X												
<i>Achillea millefolium</i>		Yarrow																						X				
<i>Agoseris heterophylla</i>		Mountain dandelion													X													
<i>Ambrosia acanthicarpa</i>		Annual bursage													X													
<i>Ambrosia salsola</i> var. <i>salsola</i>	<i>Hymenoclea salsola</i> var. <i>salsola</i>	Cheesebush					X	X					X			X				X	X							
<i>Anaphalis margaritacea</i>		Pearly everlasting																					X					
<i>Anisocoma acaulis</i>		Scale bud				X											X	X										
<i>Artemisia dracuncululus</i>		Tarragon																					X	X				
<i>Artemisia tridentata</i>		Big sage	X			X	X	X		X	X			X	X	X		X	X	X	X	X	X	X		X	X	X
<i>Baccharis salicifolia</i>	<i>B. glutinosa</i>	Mule fat, seep willow	X								X		X		X							X						
<i>Brickellia desertorum</i>		Desert brickellia																X										
<i>Chaenactis stevioides</i>		Esteve pincushion				X																						
<i>Chrysothamnus viscidiflorus</i> ssp. <i>viscidiflorus</i>		Sticky leaved rabbitbrush																					X	X	X			
<i>Cirsium arvense</i>		Canada thistle													X													
<i>Cirsium occidentale</i>		Western thistle									X							X										

BOLD indicates special-status species			PARCEL CODE	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-1	L-2	L-3	C-1	C-2	C-4
Taxon	Synonymy	Common name																											
<i>Corethrogyne filaginifolia</i>	<i>Lessingia filaginifolia</i>	Common sandaster	X	X								X						X	X										
<i>Encelia actoni</i>		Acton's encelia	X														X												
<i>Ericameria cuneata</i>		Rock goldenbush	X			X					X			X				X	X										
<i>Ericameria linearifolia</i>		Interior goldenbush	X	X		X	X	X			X	X			X	X					X	X	X						
<i>Ericameria nauseosa</i>	<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	X	X		X	X	X		X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X		
<i>Ericameria teretifolia</i>	<i>Chrysothamnus teretifolium</i>	Green rabbitbrush	X		X		X	X	X								X				X	X							
<i>Erigeron foliosus</i>		Fleabane				X											X	X											
<i>Erigeron foliosus</i> var. <i>foliosus</i>		Thread stemmed fleabane									X																		
<i>Erigeron foliosus</i> var. <i>hartwegii</i>		Hartweg's fleabane									X																		
<i>Eriophyllum</i> sp.		Woolly sunflower									X																		
<i>Eriophyllum ambiguum</i>		Annual woolly sunflower		X														X											
<i>Eriophyllum ambiguum</i> var. <i>paleaceum</i>		Annual woolly sunflower																					X						
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>		Golden yarrow								X	X								X										
<i>Eriophyllum lanatum</i> var. <i>obovatum</i>		Southern sierra woolly sunflower																X											
<i>Eriophyllum pringlei</i>		Pringle eriophyllum	X	X		X	X	X			X	X					X	X	X	X	X	X							
<i>Gutierrezia microcephala</i>		Sticky snakeweed													X						X								
<i>Heterotheca sessiliflora</i>		Goldenaster		X													X	X				X							
<i>Hieracium horridum</i>		Shaggy hawkweed									X																		
<i>Iva axillaris</i>		Poverty weed																					X						
<i>Lasthenia californica</i>		Goldfields									X				X				X	X		X							
<i>Layia glandulosa</i>		White layia	X	X		X	X	X									X												
<i>Lepidospartum squamatum</i>		Scalebroom											X																
<i>Leptosyne bigelovii</i>	<i>Coreopsis bigelovii</i>	Coreopsis				X					X						X	X											
<i>Lessingia glandulifera</i> var. <i>peirsonii</i>		Vinegar weed	X	X		X	X	X				X				X					X	X		X					
<i>Logfia filaginoides</i>	<i>Filago californica</i>	California cottonrose									X																		
<i>Malacothrix glabrata</i>		Desert dandelion													X				X										
<i>Matricaria discoidea</i>	<i>Chamomilla suaveolens</i>	Pineapple weed, chamomile													X							X	X						
<i>Senecio flaccidus</i>		Shrubby ragwort									X					X		X	X	X		X							
<i>Senecio flaccidus</i> var. <i>monoensis</i>		Mono groundsel	X																										
<i>Sonchus asper</i> ssp. <i>asper</i>		Sow thistle		X							X																		
<i>Stephanomeria exigua</i>		Small wirelettuce	X	X			X	X							X	X					X		X						
<i>Stephanomeria exigua</i> ssp. <i>exigua</i>		Mitra		X																									
<i>Stephanomeria pauciflora</i>		Wire lettuce									X							X				X							
<i>Syntrichopappus fremontii</i>		Fremont's syntrichopappus															X												
<i>Taraxacum officinale</i>		Red seeded dandelion													X														
<i>Tetradymia</i> sp.		Horsebrush									X																		
<i>Tetradymia axillaris</i> var. <i>axillaris</i>		Catclaw horsebrush										X	X		X				X	X		X							
<i>Tetradymia axillaris</i> var. <i>longispina</i>		Catclaw horsebrush														X						X							
<i>Tetradymia canescens</i>		Gray horsebrush									X												X	X					

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Taxon	Synonymy	Common name																										
<i>Tetradymia glabrata</i>		Little leaf horsebrush					X	X																				
<i>Tetradymia stenolepis</i>		Mojave horsebrush					X	X			X					X				X	X							
<i>Xanthium strumarium</i>		Cocklebur	X																									
BORAGINACEAE		BORAGE FAMILY																										
<i>Amsinckia tessellata</i> var. <i>tessellata</i>		Devil's lettuce	X	X		X	X	X		X	X			X	X	X	X	X	X	X	X							
<i>Cryptantha</i> sp.		Cryptantha		X						X																		
<i>Cryptantha circumscissa</i>		Western forget me not		X		X	X	X		X					X	X				X	X		X					
<i>Cryptantha echinella</i>		Prickly cryptantha								X																		
<i>Cryptantha micrantha</i>		Purple root cryptantha															X			X								
<i>Cryptantha nevadensis</i>		Nevada forget me not															X											
<i>Cryptantha oxygona</i>		Sharp nut cryptantha								X																		
<i>Cryptantha pterocarya</i>		Winged nut forget me not				X											X											
<i>Heliotropium curassavicum</i>		Chinese parsley										X		X					X				X					
<i>Hesperochiron californicus</i>		California hesperochiron												X														
<i>Pectocarya</i> sp.		Pectocarya					X	X												X		X						
<i>Pectocarya heterocarpa</i>		Chuckwalla pectocarya					X	X																				
<i>Pectocarya penicillata</i>		Winged pectocarya					X	X						X					X									
<i>Pectocarya setosa</i>		Moth combseed								X				X	X					X	X							
<i>Phacelia cicutaria</i>		Caterpillar phacelia															X											
<i>Phacelia crenulata</i>		Notch leaved phacelia		X																								
<i>Phacelia davidsonii</i>		Davidson's phacelia								X																		
<i>Phacelia distans</i>		Common phacelia				X																						
<i>Phacelia fremontii</i>		Fremont's phacelia				X									X													
<i>Phacelia imbricata</i>		Imbricate phacelia														X	X											
<i>Phacelia ramosissima</i>		Branching phacelia								X																		
<i>Phacelia</i> species		Phacelia	X	X						X																		
<i>Pholisma arenarium</i>		Dune food										X																
<i>Pholistoma auritum</i> var. <i>auritum</i>		Blue fiesta flower								X																		
<i>Pholistoma membranaceum</i>		White fiesta flower										X																
<i>Plagiobothrys</i> sp.		Popcorn flower								X																		
<i>Plagiobothrys arizonicus</i>		Arizona popcorn flower					X	X		X						X				X								
BRASSICACEAE		MUSTARD FAMILY																										
<i>Boechera pulchra</i>	<i>Arabis pulchra</i>	Beautiful rockcress								X												X						
<i>Boechera</i> sp.		Rockcress								X																		
<i>Caulanthus lasiophyllus</i>	<i>Guillenia lasiophylla</i>	California mustard																				X						
<i>Descurainia pinnata</i>		Yellow tansy mustard				X														X								
<i>Descurainia sophia</i>		Herb sophia												X								X	X					
<i>Erysimum capitatum</i> var. <i>capitatum</i>	<i>incl. E. capitatum</i> var. <i>angustatum</i>	Sanddune wallflower								X							X											
<i>Erysimum capitatum</i> var. <i>purshii</i>		Pursh's wallflower								X													X					

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Taxon	Synonymy	Common name																										
<i>Hirschfeldia incana</i>		Summer mustard													X							X						
<i>Hornungia procumbens</i>	<i>Hutchinsia procumbens</i>	Prostrate hutchinsia																				X						
<i>Lepidium</i> sp.		Pepper grass													X							X						
<i>Lepidium appelianum</i>	<i>Cardaria pubescens</i>	Hairy whitetop													X													
<i>Lepidium draba</i>	<i>Cardaria draba</i>	Whitetop																				X						
<i>Lepidium perfoliatum</i>		Klamath pepper grass													X				X	X		X						
<i>Nasturtium officinale</i>	<i>Rorippa nasturtium-aquaticum</i>	Watercress	X																									
<i>Sisymbrium</i> sp.		Tumble mustard																		X		X						
<i>Sisymbrium altissimum</i>		Tumble mustard								X					X				X				X					
<i>Stanleya pinnata</i> var. <i>pinnata</i>		Prince's plume											X															
CACTACEAE		CACTUS FAMILY																										
<i>Cylindropuntia echinocarpa</i>	<i>Opuntia echinocarpa</i>	Silver cholla	X	X		X	X	X			X	X			X	X			X	X	X							
<i>Opuntia basilaris</i> var. <i>basilaris</i>		Beavertail cactus	X	X		X	X	X			X				X	X		X	X	X	X	X						
CAMPANULACEAE		BELLFLOWER FAMILY																										
<i>Nemacladus</i> sp.		Thread plant				X																						
CAPRIFOLIACEAE		HONEYSUCKLE FAMILY																										
<i>Symphoricarpos rotundifolius</i>		Mountain snowberry																								X		
CARYOPHYLLACEAE		PINK FAMILY																										
<i>Minuartia</i> sp.		Sandwort															X											
CHENOPODIACEAE		GOOSEFOOT FAMILY																										
<i>Atriplex canescens</i> var. <i>canescens</i>		Fourwing saltbush	X								X		X		X					X								
<i>Chenopodium album</i>		Lambs quarters	X												X							X						
<i>Chenopodium californicum</i>		California goosefoot	X																			X						
<i>Grayia spinosa</i>		Hop-sage													X							X						
CLEOMACEAE		SPIDERFLOWER FAMILY																										
<i>Cleomella parviflora</i>		Slender cleomella													X							X						
CONVOLVULACEAE		MORNING-GLORY FAMILY																										
<i>Calystegia longipes</i>		Piute morning glory									X																	
<i>Cuscuta</i> sp.		Dodder	X																									
<i>Cuscuta californica</i>		California dodder										X																
<i>Cuscuta denticulata</i>		Desert dodder																		X								
CRASSULACEAE		STONECROP FAMILY																										
<i>Dudleya lanceolata</i>		Southern california dudleya									X																	
CUPRESSACEAE		CYPRESS FAMILY																										
<i>Juniperus californica</i>		California juniper	X	X										X	X	X				X	X	X				X		X
CYPERACEAE		SEDGE FAMILY																										
<i>Carex</i> sp.		Sedge													X							X	X	X				
<i>Eleocharis parishii</i>		Parish's spike rush	X	X											X													
<i>Eleocharis quinqueflora</i>		Fewflower spikerush													X													

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Taxon	Synonymy	Common name																											
EPHEDRACEAE		EPHEDRA FAMILY																											
<i>Ephedra nevadensis</i>		Nevada ephedra	X	X			X	X			X	X	X			X					X	X							
<i>Ephedra viridis</i>		Green ephedra	X			X	X	X			X							X			X	X							
EQUISETACEAE		HORSETAIL FAMILY																											
<i>Equisetum</i> sp.		Horsetail									X																		
ERICACEAE		HEATHER FAMILY																											
<i>Arctostaphylos glauca</i>		Bigberry manzanita									X																		
<i>Arctostaphylos patula</i>		Green leaf manzanita																							X	X			
EUPHORBIACEAE		SPURGE FAMILY																											
<i>Chamaesyce albomarginata</i>		Rattlesnake weed	X	X		X	X	X			X		X			X		X	X	X	X	X							
<i>Chamaesyce vallis-mortae</i>		Death valley sandmat	X	X		X	X	X					X		X	X		X	X			X							
FABACEAE		PEA FAMILY																											
<i>Acmispon</i> sp.		Lotus		X		X					X																		
<i>Acmispon argophyllus</i>	<i>Lotus argophyllus</i>	Lotus	X	X														X											
<i>Acmispon strigosus</i>	<i>Lotus subpinnatus</i>	Strigose lotus	X														X	X											
<i>Acmispon wrangelianus</i>	<i>Lotus w.; L. subpinnatus</i>	Lotus		X																									
<i>Astragalus lentiginosus</i> var. <i>variabilis</i>		Freckled milkvetch				X	X	X				X			X	X					X	X							
<i>Glycyrrhiza lepidota</i>		Wild licorice																										X	
<i>Hosackia crassifolia</i> var. <i>crassifolia</i>	<i>Lotus crassifolius</i> var. <i>crassifolius</i>	Broad leaved lotus									X																		
<i>Lotus corniculatus</i>		Bird's foot trefoil													X													X	
<i>Lupinus</i> sp.		Lupine								X	X													X					
<i>Lupinus bicolor</i>		Miniature lupine															X	X											
<i>Lupinus breweri</i> var. <i>grandiflorus</i>		Showy brewer's lupine								X																			
<i>Lupinus elatus</i>		Silky lupine																											
<i>Lupinus excubitus</i> var. <i>excubitus</i>		Grape lupine	X	X						X		X		X	X	X	X	X	X	X	X	X							
<i>Melilotus indicus</i>	<i>Melilotus indica</i>	Annual yellow sweetclover	X																									X	
<i>Trifolium</i> sp.		Clover													X														
FAGACEAE		OAK FAMILY																											
<i>Quercus agrifolia</i>		Coast live oak																X											
<i>Quercus chrysolepis</i>		Gold cup live oak								X																X			
<i>Quercus douglasii</i>		Blue oak																				X				X	X	X	
<i>Quercus garryana</i> var. <i>breweri</i>		Oregon oak								X															X				
<i>Quercus wislizeni</i>		Interior live oak, chaparral oak								X	X		X				X											X	
<i>Quercus wislizeni</i> var. <i>frutescens</i>		Interior scrub oak																X				X							
GARRYACEAE		SILKTASSEL FAMILY																											
<i>Garrya flavescens</i>		Ashy silk tassel											X					X											
GERANIACEAE		GERANIUM FAMILY																											
<i>Erodium cicutarium</i>		Redstem filaree	X	X		X	X	X			X	X			X	X	X	X	X	X	X	X							
<i>Geranium californicum</i>		California geranium																						X					

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Taxon	Synonymy	Common name																										
GROSSULARIACEAE		GOOSEBERRY FAMILY																										
<i>Ribes quercetorum</i>		Oak gooseberry	X	X							X																	
IRIDACEAE		IRIS FAMILY																										
<i>Sisyrinchium</i> sp. (may be <i>S. halophilum</i>)		Blue eyed grass													X							X						
JUNCACEAE		RUSH FAMILY																										
<i>Juncus balticus/mexicanus</i>		Baltic rush/Mexican rush	X										X		X				X			X	X	X				
<i>Juncus bufonius</i> var. <i>bufonius</i>		Toad rush													X													
<i>Juncus xiphioides</i>		Iris leaved rush									X		X										X					
LAMIACEAE		MINT FAMILY																										
<i>Monardella exilis</i>		Mojave monardella					X	X								X												
<i>Monardella linoides</i>		Narrow leaved monardella																							X			
<i>Monardella linoides</i> ssp. <i>linoides</i>		Flax like monardella								X	X																	
<i>Monardella odoratissima</i> ssp. <i>glauca</i>		Monardella																X										
<i>Salvia columbariae</i>		Chia sage	X	X		X					X					X	X		X	X	X							
<i>Salvia dorrii</i> var. <i>dorrii</i>		Dorr's sage																		X	X							
<i>Scutellaria mexicana</i>	<i>Salazaria mexicana</i>	Bladder sage																			X							
LILIACEAE		LILY FAMILY																										
<i>Calochortus kennedyi</i> var. <i>kennedyi</i>		Desert mariposa																				X						
<i>Calochortus palmeri</i> var. <i>palmeri</i>		Palmer's mariposa-lily									X																	
<i>Calochortus venustus</i>		Butterfly mariposa-lily									X																	
LOASACEAE		LOASA FAMILY																										
<i>Mentzelia</i> sp.		Blazing star				X										X												
<i>Mentzelia congesta</i>		Clustered blazing star															X	X										
MALVACEAE		MALLOW FAMILY																										
<i>Eremalche exilis</i>		White mallow																			X							
<i>Fremontodendron californicum</i>		California fremontia									X			X				X										
<i>Malacothamnus fremontii</i>		Fremont's bush mallow									X																	
<i>Sidalcea</i> sp.		Checkerbloom													X													
<i>Sidalcea sparsifolia</i>		Southern checkerbloom													X							X						
<i>Sphaeralcea ambigua</i> var. <i>ambigua</i>		Apricot mallow													X	X			X	X	X							
<i>Sphaeralcea ambigua</i> var. <i>rosacea</i>		Rosy apricot mallow									X											X						
MONTIACEAE		MINER'S LETTUCE FAMILY																										
<i>Calyptridium monandrum</i>		Common pussypaws	X															X										
NYCTAGINACEAE		FOUR-O'CLOCK FAMILY																										
<i>Abronia pogonantha</i>		Mohave sand verbena																					X					
<i>Mirabilis laevis</i>	Includes <i>M. californica</i> , <i>M. bigelovii</i>	Desert wishbone bush		X		X										X												
<i>Mirabilis laevis</i> var. <i>retrorsa</i>	<i>M. bigelovii</i> var. <i>retrorsa</i>	Wishbone bush																			X							
OLEACEAE		OLIVE FAMILY																										
<i>Forestiera pubescens</i>		Desert olive									X																	

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Taxon	Synonymy	Common name																											
<i>Camissonia sp.</i>		Primrose																								X			
<i>Camissonia campestris</i>		Field primrose				X	X	X				X									X								
<i>Chylismia claviformis ssp. claviformis</i>	<i>Camissonia claviformis</i>	Evening-primrose	X	X																									
<i>Epilobium canum ssp. canum</i>		California fuchsia								X																			
<i>Oenothera californica ssp. californica</i>		California evening primrose	X	X			X	X		X				X	X		X	X				X							
OROBANCHACEAE		BROOMRAPE FAMILY																											
<i>Castilleja sp.</i>		Paintbrush								X	X			X															
<i>Castilleja applegatei</i>		Wavy leaf paintbrush																					X						
<i>Castilleja applegatei ssp. martinii</i>		Martin's paintbrush								X																			
<i>Castilleja minor ssp. spiralis</i>		Lesser paintbrush															X												
<i>Castilleja plagiotoma</i>		Mojave paintbrush												X															
<i>Pedicularis semibarbata</i>		Pine woods lousewort								X																			
PAPAVERACEAE		POPPY FAMILY																											
<i>Argemone munita</i>		Prickly poppy												X	X			X						X					
<i>Eschscholzia californica</i>		California poppy		X						X							X	X											
<i>Platystemon californicus</i>		Cream cups															X												
PHYRMACEAE		LOPSEED FAMILY																											
<i>Mimulus sp.</i>		Monkeyflower												X															
<i>Mimulus aurantiacus</i>		Sticky monkeyflower	X	X														X											
<i>Mimulus guttatus</i>		Yellow monkeyflower	X							X				X															
PINACEAE		PINE FAMILY																											
<i>Abies concolor</i>		White fir								X																			
<i>Pinus jeffreyi</i>		Jeffrey pine		X			X	X		X			X				X						X	X	X				
<i>Pinus lambertiana</i>		Sugar pine								X																			
<i>Pinus monophylla</i>		Single leaf pinyon	X										X				X	X					X	X	X			X	
<i>Pinus sabiniana</i>		Gray pine								X							X	X				X				X	X	X	
PLANTAGINACEAE		PLAINTAIN FAMILY																											
<i>Keckiella breviflora</i>		Gaping keckiella																					X						
<i>Penstemon sp.</i>		Penstemon				?				X																			
<i>Penstemon incertus</i>		Western desert penstemon	X			X	X	X		X				X	X		X		X	X									
<i>Penstemon rostriflorus</i>		Bridge's penstemon																					X		X				
<i>Penstemon speciosus</i>		Showy penstemon								X													X						
<i>Plantago lanceolata</i>		Ribwort																				X							
<i>Veronica anagallis-aquatica</i>		Water speedwell	X	X						X				X															
POACEAE		GRASS FAMILY																											
<i>Agrostis sp.</i>		Bent grass	X																										
<i>Avena barbata</i>		Slender wild oat								X		X																	
<i>Avena fatua</i>		Wild oat															X												
<i>Bromus berterioanus</i>	<i>Bromus trinii</i>	Chilean chess	X							X																			

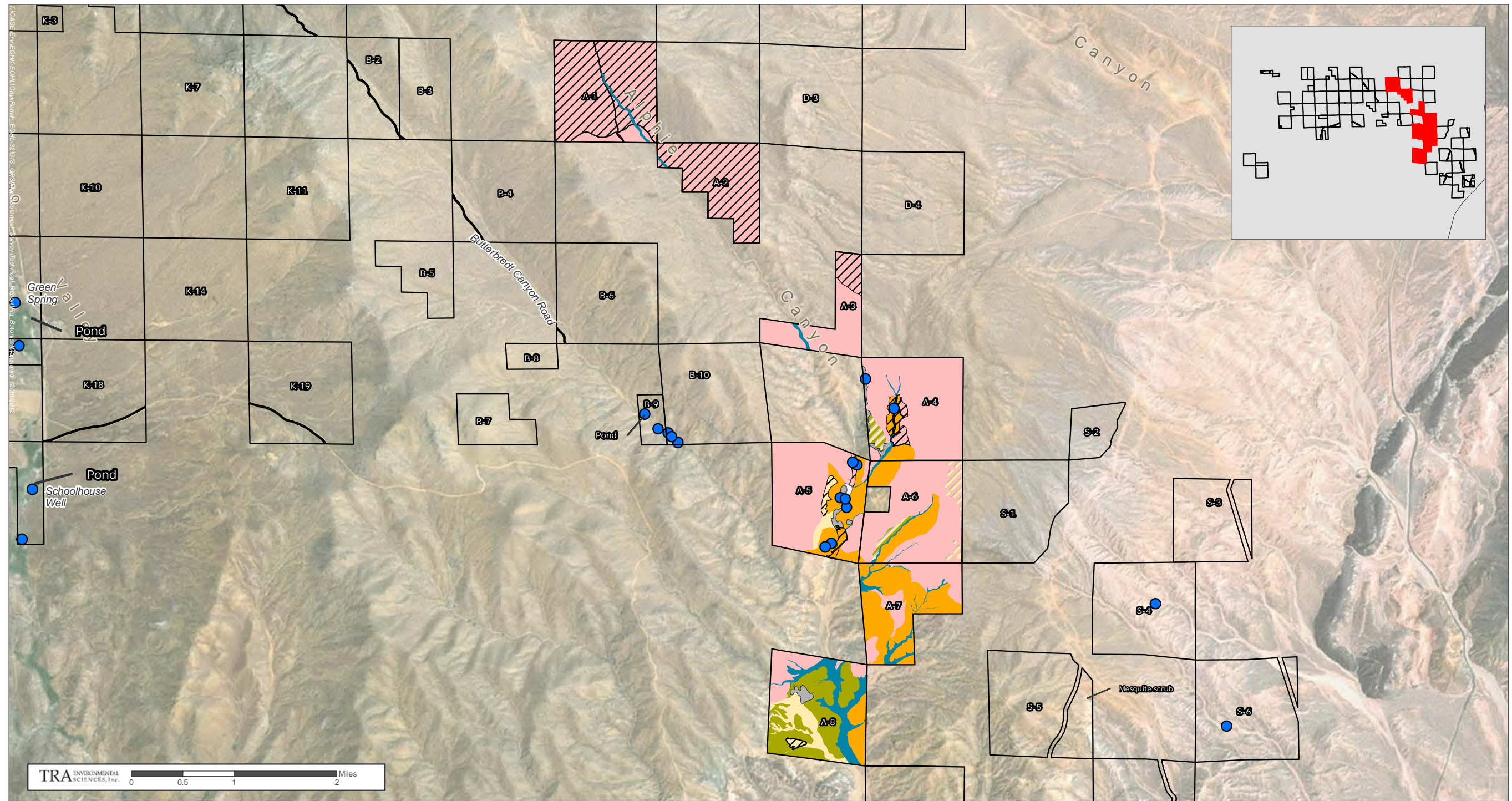
BOLD indicates special-status species		PARCEL CODE	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-1	L-2	L-3	C-1	C-2	C-4
Taxon	Synonymy	Common name																										
<i>Bromus carinatus</i> var. <i>carinatus</i>		California brome	X																									
<i>Bromus diandrus</i>		Ripgut brome	X								X				X	X						X						
<i>Bromus hordeaceus</i>		Soft chess												X								X						
<i>Bromus madritensis</i> ssp. <i>rubens</i>		Red brome		X		X	X	X			X	X		X	X			X	X	X	X	X						
<i>Bromus tectorum</i>		Cheatgrass	X	X		X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Distichlis spicata</i>		Salt grass	X											X					X			X	X					
<i>Elymus elymoides</i> var. <i>elymoides</i>		Squirreltail				X				X												X	X	X	X			
<i>Elymus multisetus</i>		Big squirreltail	X	X		X	X	X		X	X	X	X	X	X					X	X							
<i>Elymus triticoides</i>		Beardless wild rye											X	X					X			X	X	X				
<i>Festuca</i> sp.		Fescue												X														
<i>Festuca bromoides</i>	<i>Vulpia bromoides</i>	Brome fescue															X											
<i>Festuca octoflora</i>	<i>Vulpia octoflora</i>	Sixweeks grass										X				X			X	X	X							
<i>Festuca perennis</i>	<i>Lolium multiflorum</i>	Rye grass												X														
<i>Hordeum brachyantherum</i>		Meadow barley												X								X						
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>		Barley																				X						
<i>Hordeum murinum</i> ssp. <i>leporinum</i>		Farmer's foxtail	X											X								X						
<i>Melica imperfecta</i>		Coast range melic	X	X		X					X	X					X				X							
<i>Melica stricta</i>		Rock melic												X														
<i>Muhlenbergia rigens</i>		Deergrass								X							X											
<i>Poa annua</i>		Annual blue grass												X														
<i>Poa bulbosa</i>		Bulbous blue grass												X														
<i>Poa secunda</i> ssp. <i>secunda</i>		Sandberg's bluegrass	X			X	X	X		X	X	X			X	X				X	X	X	X	X				
<i>Polypogon interruptus</i>		Ditch beard grass	X																									
<i>Polypogon monspeliensis</i>		Annual beard grass								X		X		X														
<i>Schismus barbatus</i>		Mediterranean grass												X														
<i>Sporobolus airoides</i>		Alkali sacaton												X								X						
<i>Stipa hymenoides</i>	<i>Achnatherum hymenoides</i>	Sand grass																					X					
<i>Stipa speciosa</i>	<i>Achnatherum speciosum</i>	Desert needlegrass	X	X		X	X	X		X	X	X		X	X		X		X	X	X	X		X				
POLEMONIACEAE		PHLOX FAMILY																										
<i>Eriastrum</i> sp.		Desert woollystar		X											X													
<i>Eriastrum densifolium</i>		Giant eriastrum								X										X								
<i>Eriastrum densifolium</i> ssp. <i>mohavense</i>		Perennial woolly star												X							X							
<i>Eriastrum diffusum</i>		Miniature woolly star										X																
<i>Eriastrum pluriflorum</i>		Many flowered eriastrum								X																		
<i>Eriastrum sapphirinum</i>		Sapphire eriastrum	X			X														X	X							
<i>Eriastrum signatum</i>		Eriastrum								X				X					X	X								
<i>Gilia</i> sp.		Gilia								X													X	X				
<i>Gilia capitata</i>		Blue field gilia															X	X										
<i>Gilia ochroleuca</i> ssp. <i>bizonata</i>		Volcanic gilia															X											

BOLD indicates special-status species		PARCEL CODE	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-1	L-2	L-3	C-1	C-2	C-4	
Taxon	Synonymy	Common name																											
<i>Leptosiphon aureus</i> ssp. <i>aureus</i>	<i>Linanthus aureus</i> ssp. <i>aureus</i>	Golden linanthus	X			X	X	X			X											X							
<i>Leptosiphon parviflorus</i>	<i>Linanthus parviflorus</i>	Variable linanthus															X												
<i>Linanthus parryae</i>		Parry s linanthus				X															X								
<i>Loeseliastrum matthewsii</i>		Desert calico	X	X		X	X	X				X				X					X	X							
<i>Phlox austromontana</i>		Southern mountain phlox								X																			
POLYGONACEAE		BUCKWHEAT FAMILY																											
<i>Centrostegia thurberi</i>		Red triangles				X										X													
<i>Chorizanthe watsonii</i>		Watson's spineflower														X						X							
<i>Eriogonum</i> sp.		Buckwheat								X		X			X	X							X	X					
<i>Eriogonum baileyi</i> var. <i>baileyi</i>		Bailey's buckwheat				X					X				X	X				X	X	X							
<i>Eriogonum davidsonii</i>		Davidson buckwheat													X					X									
<i>Eriogonum deflexum</i>		Flat topped buckwheat	X																										
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>		California buckwheat	X	X	X	X	X	X	X		X	X			X	X		X			X						X	X	
<i>Eriogonum gracile</i> var. <i>gracile</i>		Slender buckwheat													X														
<i>Eriogonum inflatum</i> var. <i>inflatum</i>		Desert trumpet									X																		
<i>Eriogonum nudum</i>		Weston's buckwheat															X												
<i>Eriogonum nudum</i> var. <i>westonii</i>		Weston's buckwheat									X					X		X			X								
<i>Eriogonum plumatella</i>		Flat topped buckwheat					X	X				X	X									X							
<i>Eriogonum pusillum</i>		Yellow turban				X																							
<i>Eriogonum roseum</i>		Wand buckwheat																X					X						
<i>Eriogonum umbellatum</i>		Sulphur buckwheat																								X			
<i>Eriogonum wrightii</i> var. <i>subscaposum</i>		Wright's buckwheat									X																		
<i>Eriogonum wrightii</i> var. <i>wrightii</i>		Wright's buckwheat	X	X		X				X	X			X	X	X		X			X	X	X						
<i>Polygonum</i> sp.		Knotweed																					X						
<i>Pterostegia drymarioides</i>		Fairy mist																	X										
<i>Rumex</i> sp.		Dock	X								X				X								X	X					
<i>Rumex salicifolius</i>		Willow leaved dock	X																										
POTAMOGETONACEAE		PONDWEED FAMILY																											
<i>Stuckenia pectinata</i>	<i>Potamogeton pectinata</i>	Sago pondweed	X																										
PTERIDACEAE		BRAKE FAMILY																											
<i>Cheilanthes covillei</i>		Coville's lip fern	X	X															X			X							
RANUNCULACEAE		BUTTERCUP FAMILY																											
<i>Clematis ligusticifolia</i>		Creek clematis									X																		
<i>Delphinium hansenii</i> ssp. <i>kernense</i>		Kern larkspur									X																		
<i>Delphinium parryi</i> ssp. <i>parryi</i>		San bernardino larkspur									X																		
RHAMNACEAE		BUCKTHORN FAMILY																											
<i>Ceanothus cuneatus</i> var. <i>cuneatus</i>		Wedgeleaf ceanothus								X	X			X				X				X				X			
<i>Ceanothus leucodermis</i>		Chaparral whitethorn															X	X											
<i>Ceanothus vestitus</i>		Mojave ceanothus									X																		

BOLD indicates special-status species		PARCEL CODE	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-1	L-2	L-3	C-1	C-2	C-4
Taxon	Synonymy	Common name																										
<i>Frangula californica</i> ssp. <i>tomentella</i>	<i>Rhamnus tomentella</i> ssp. <i>tomentella</i>	Hoary coffeeberry	X	X							X						X											
<i>Rhamnus crocea</i>		Redberry									X																	
<i>Rhamnus ilicifolia</i>		Evergreen buckthorn									X																	
ROSACEAE		ROSE FAMILY																										
<i>Cercocarpus</i> sp.		Mountain mahogany								X																		
<i>Cercocarpus betuloides</i> var. <i>betuloides</i>		Birch leaf mountain mahogany									X						X						X					
<i>Coleogyne ramosissima</i>		Blackbush		X	X	X	X	X	X		X	X			X	X				X	X	X						
<i>Holodiscus discolor</i>		Oceanspray								X																		
<i>Potentilla gracilis</i>		Northwest cinquefoil									X																	
<i>Prunus fasciculata</i>		Desert almond				X																						
<i>Prunus fasciculata</i> var. <i>fasciculata</i>		Desert almond																			X	X						
<i>Purshia tridentata</i>		Bitterbrush		X		X	X	X													X							
<i>Rosa woodsii</i>		Woods' rose									X																	
<i>Rosa woodsii</i> ssp. <i>ultramontana</i>		Interior rose																					X					
RUBIACEAE		MADDER FAMILY																										
<i>Galium andrewsii</i>		Phlox leaved bedstraw																X										
<i>Galium hallii</i>		Nodding bedstraw																X										
<i>Galium porrigens</i>		Climbing bedstraw									X																	
SALICACEAE		WILLOW FAMILY																										
<i>Populus fremontii</i> ssp. <i>fremontii</i>		Fremont cottonwood													X													
<i>Salix</i> sp.		Willow																					X					
<i>Salix exigua</i> var. <i>exigua</i>		Sandbar willow									X			X									X					
<i>Salix gooddingii</i>		Gooding's willow											X															
<i>Salix laevigata</i>		Polished willow	X	X							X			X			X											
<i>Salix lasiolepis</i>		Arroyo willow									X																	
<i>Salix scouleriana</i>		Scouler willow								X																		
SAURURACEAE		LIZARD'S TAIL FAMILY																										
<i>Anemopsis californica</i>		Yerba mansa	X										X	X								X						
SCROPHULARIACEAE		FIGWORT FAMILY																										
<i>Scrophularia californica</i>		California bee plant	X															X										
<i>Scrophularia desertorum</i>		Desert figwort																			X							
SIMAROUBACEAE		SIMAROUBA FAMILY																										
<i>Ailanthus altissima</i>		Tree of heaven												X					X									
SOLANACEAE		POTATO FAMILY																										
<i>Datura wrightii</i>		Jimsonweed					X	X			X	X										X						
<i>Lycium andersonii</i>		Anderson's box thorn													X						X							
<i>Lycium cooperi</i>		Cooper's box thorn										X	X	X					X	X	X							
<i>Solanum</i> sp.		Blue witch								X																		
THEMIDACEAE		BRODIAEA FAMILY																										

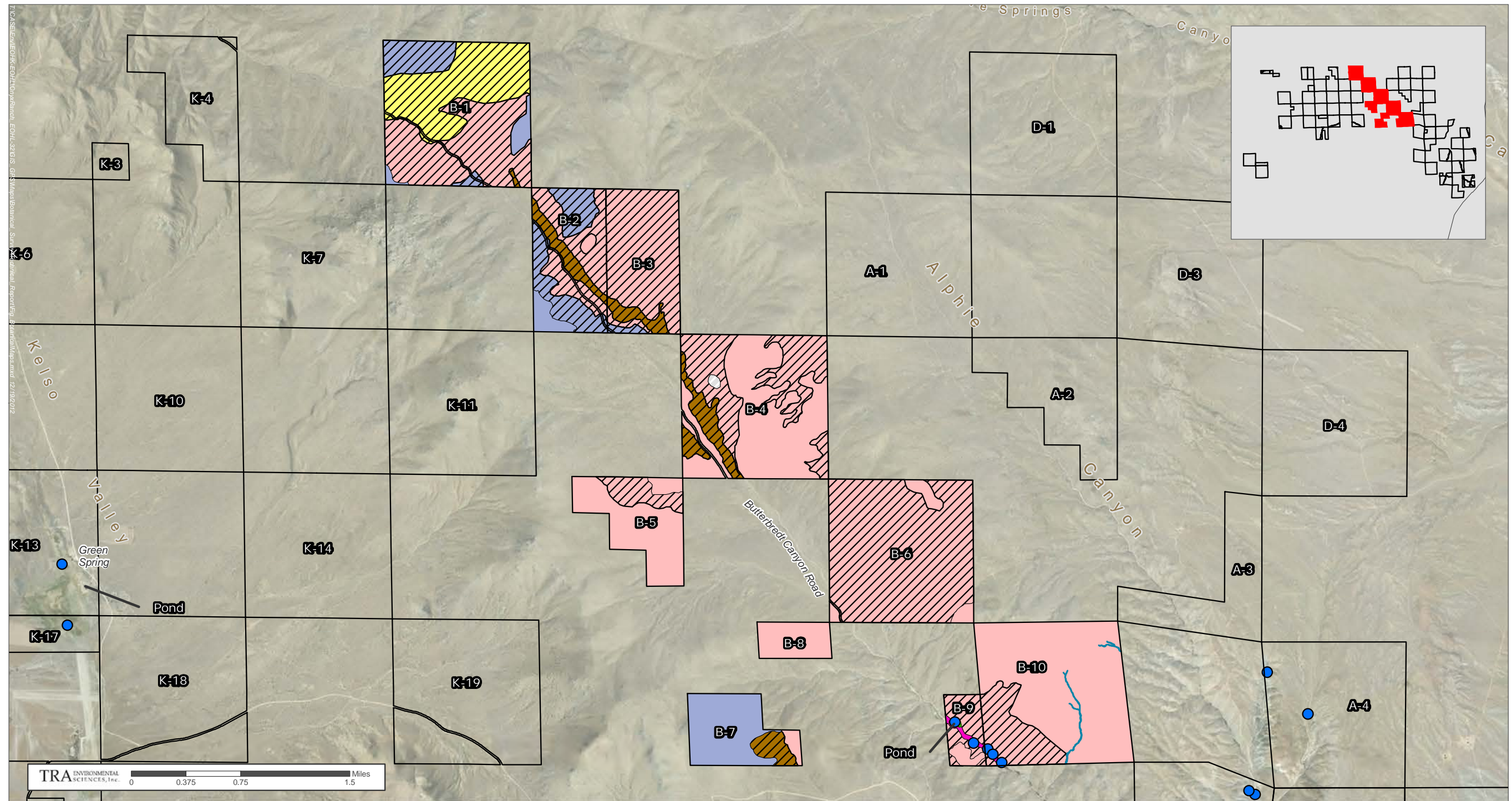
BOLD indicates special-status species		PARCEL CODE	K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11	K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	L-1	L-2	L-3	C-1	C-2	C-4
Taxon	Synonymy	Common name																										
<i>Dichelostemma capitatum</i>		Blue dicks															X											
TYPHACEAE		CATTAIL FAMILY																										
<i>Typha latifolia</i>		Cattail								X				X														
URTICACEAE		NETTLE FAMILY																										
<i>Urtica dioica</i> ssp. <i>holosericea</i>		Stinging nettle	X															X										
VERBENACEAE		VERBENA FAMILY																										
<i>Verbena</i> sp.		Verbena									X																	
VIOLACEAE		VIOLET FAMILY																										
<i>Viola purpurea</i>		Goosefoot violet								X							X											
VISCACEAE		MISTLETOE FAMILY																										
<i>Arceuthobium campylopodum</i>		Pine dwarf mistletoe																X										
<i>Phoradendron bolleanum</i>		Bollean mistletoe																X										
<i>Phoradendron serotinum</i> ssp. <i>tomentosum</i>	<i>Phoradendron villosum</i>	Oak mistletoe																				X						

Appendix D. Vegetation Maps of the Eastern Kern County Acquisition Parcels



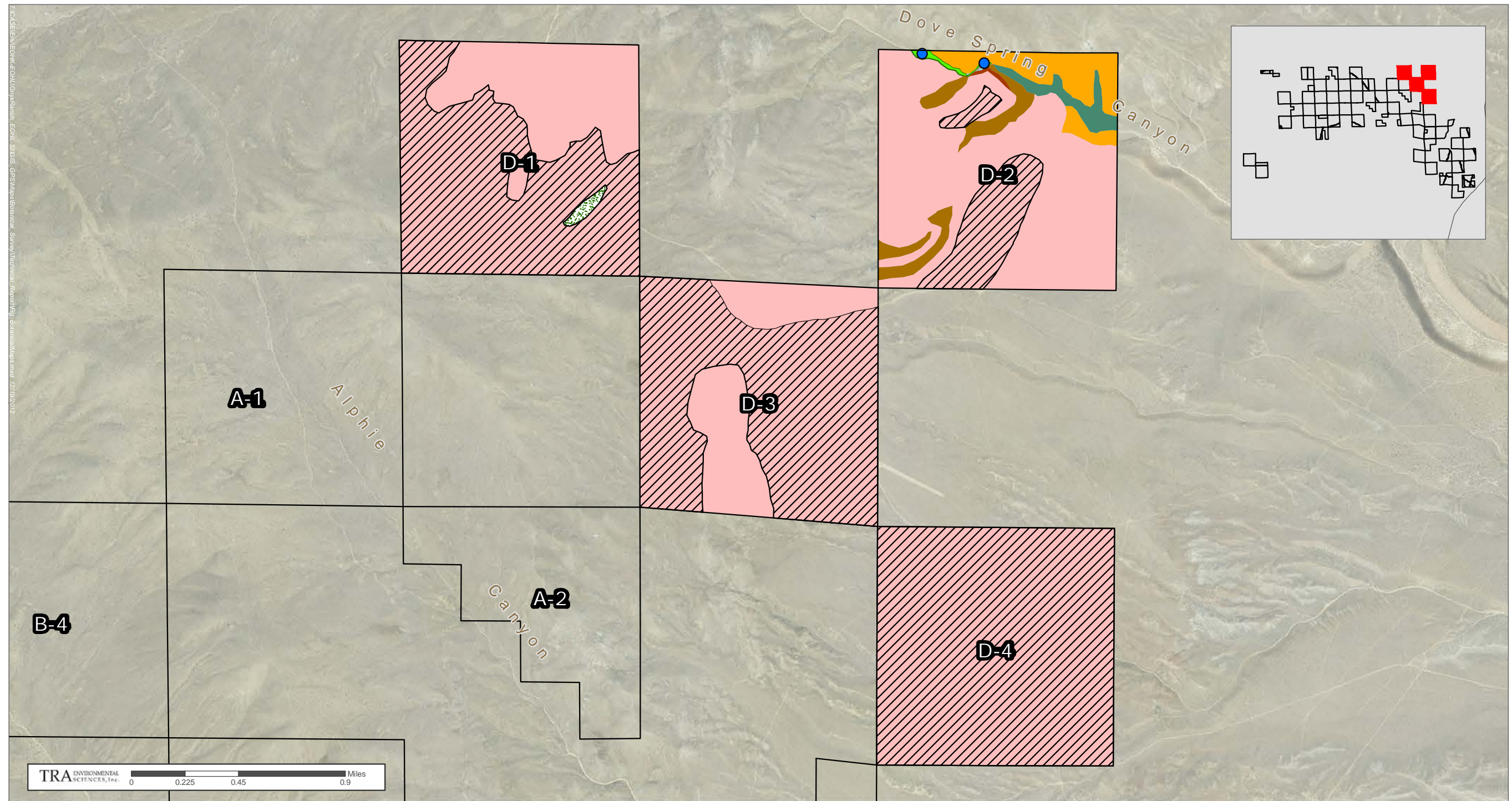
Botanical Survey Alpie Canyon Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
Desert wash and mixed scrub	Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
Pond	Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
Meadow and Seep	Big sagebrush scrub	Desert riparian forest and scrub	California juniper-Joshua tree/blackbrush woodland	Blue oak woodland	Joshua tree/lower Mojave mixed woody scrub
Rock Outcrop	Blackbrush-creosote bush scrub	Lower Mojave mixed woody scrub	California juniper/blackbrush woodland	Interior live oak woodland	Joshua tree/rubber rabbitbrush woodland
Barren	Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
Developed	California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



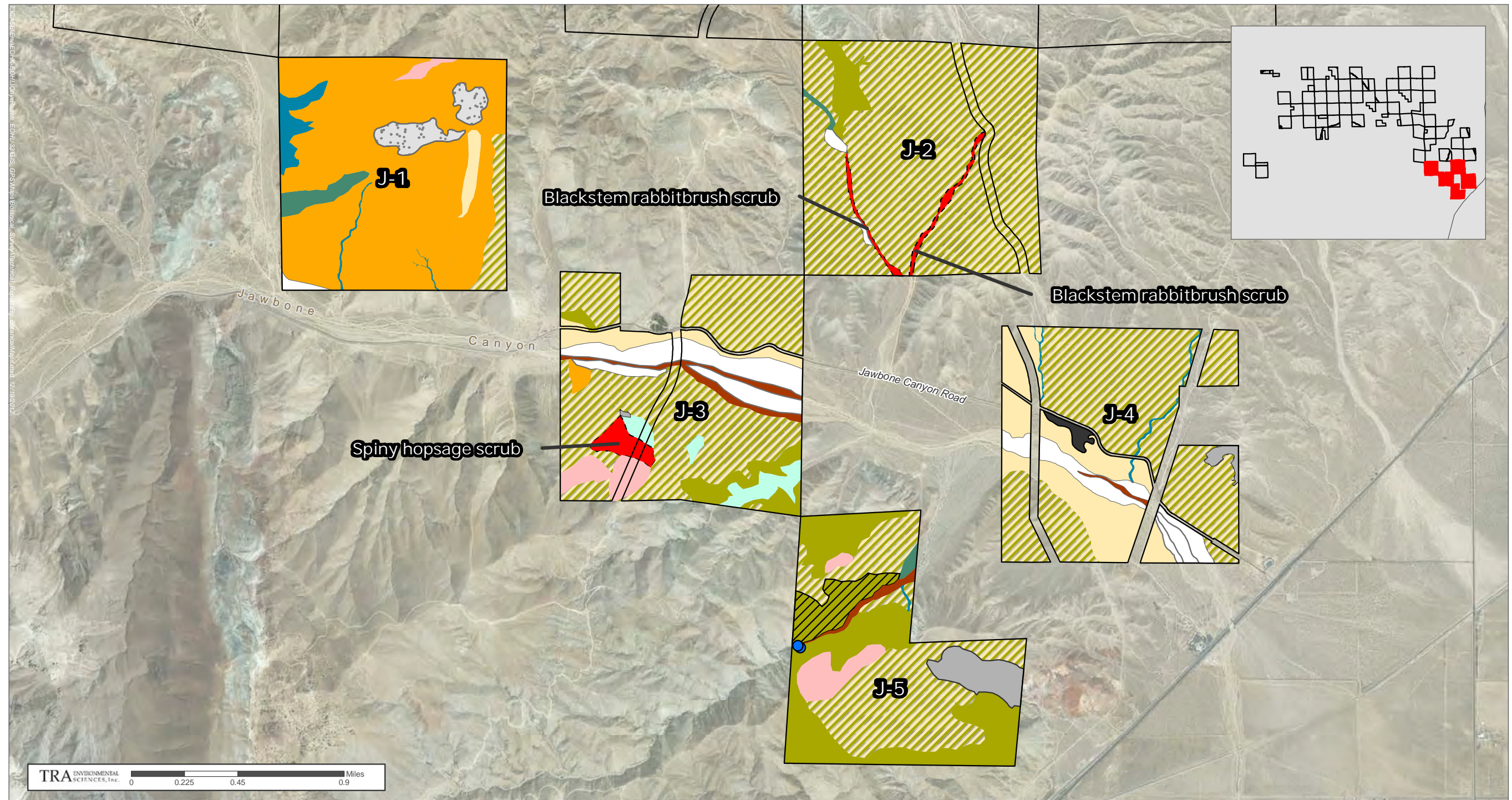
Botanical Survey Butterbredt Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
Desert wash and mixed scrub	Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
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Barren	Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
Developed	California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



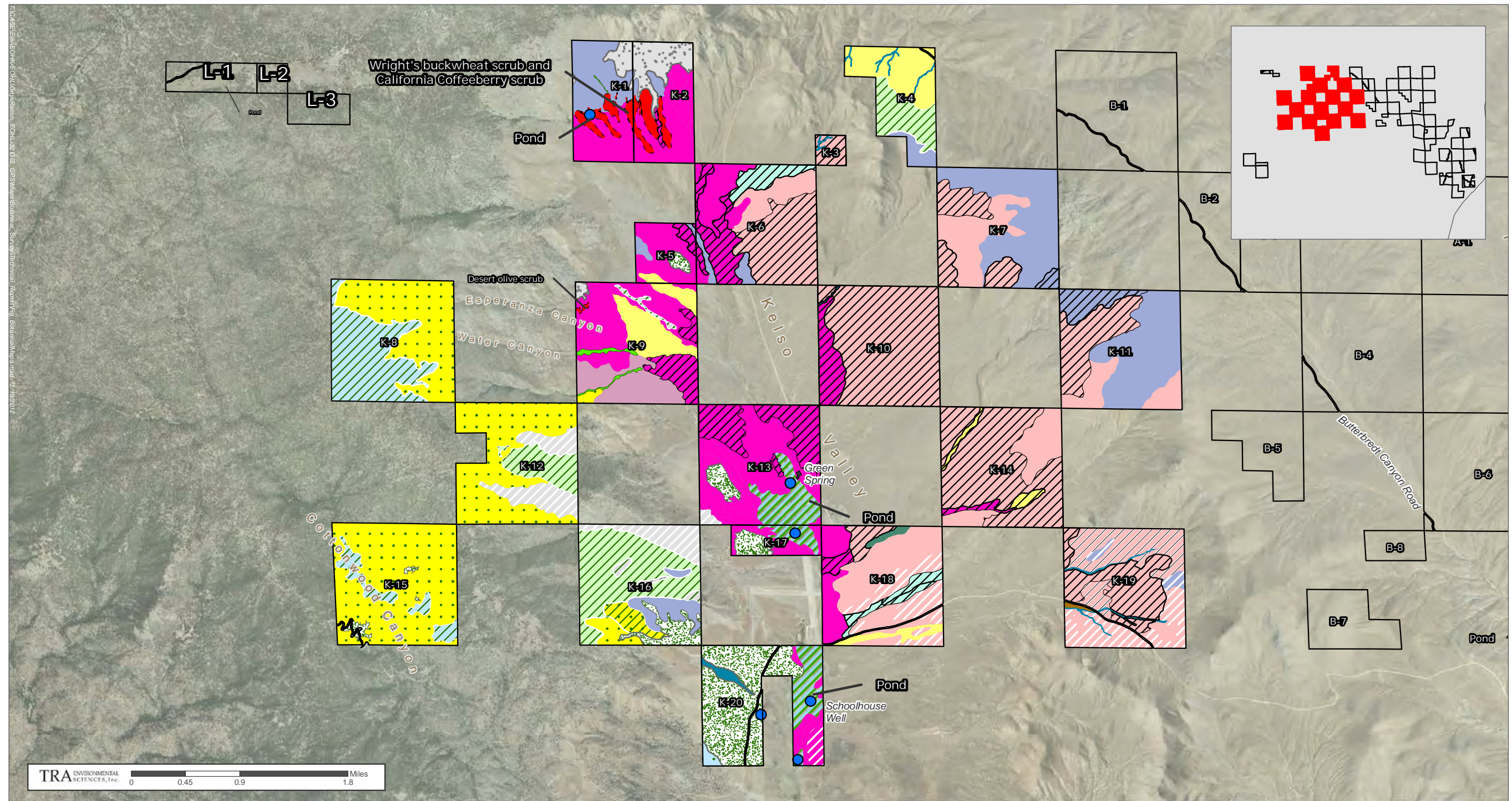
Botanical Survey Dove Spring Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
Desert wash and mixed scrub	Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
Pond	Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
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Barren	Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
Developed	California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



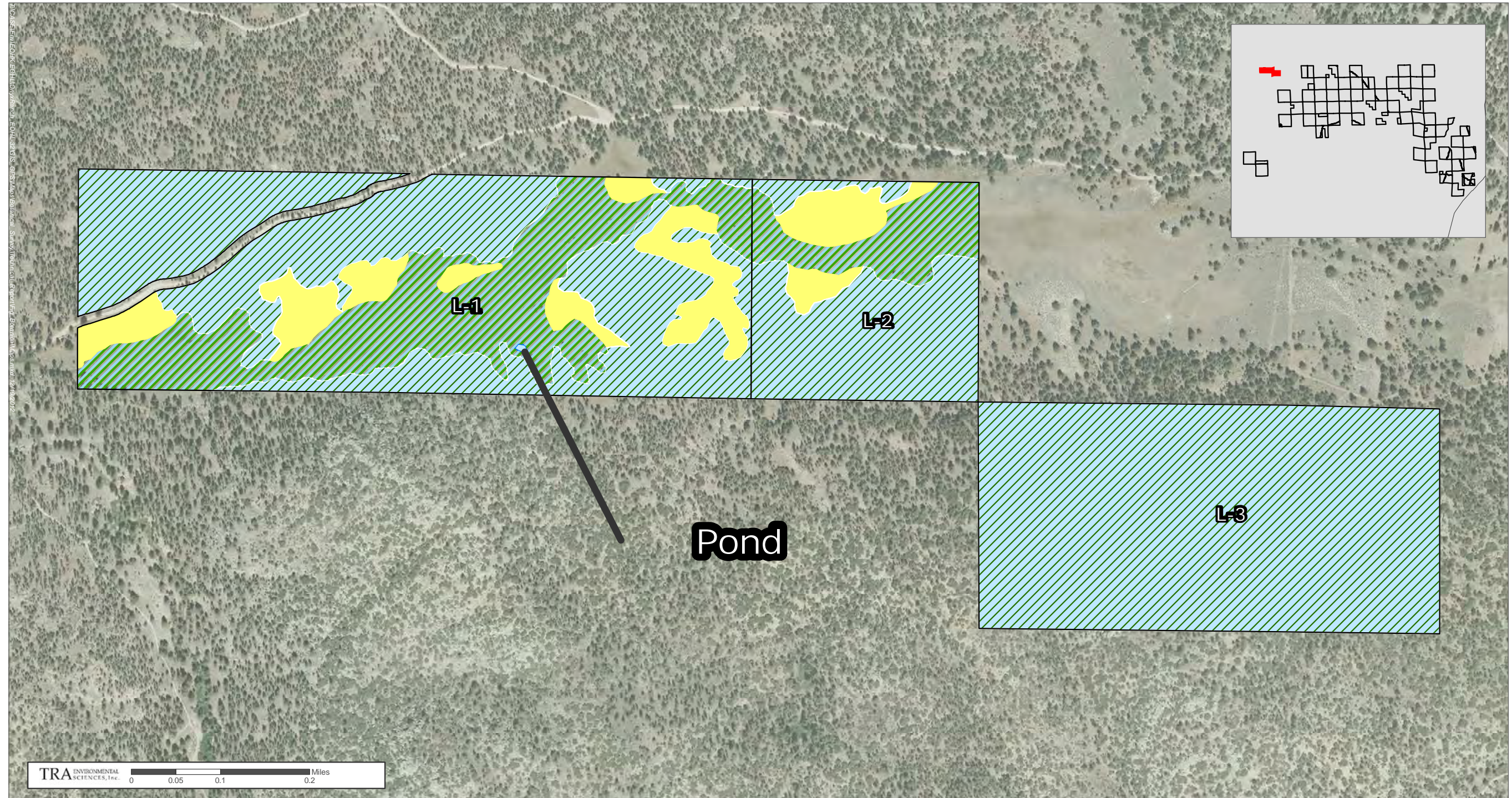
Botanical Survey Jawbone Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	■ Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
■ Desert wash and mixed scrub	□ Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
■ Pond	■ Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
■ Meadow and Seep	■ Big sagebrush scrub	Desert riparian forest and scrub	California juniper-Joshua tree/blackbrush woodland	Blue oak woodland	Joshua tree/lower Mojave mixed woody scrub
■ Rock Outcrop	■ Blackbrush-creosote bush scrub	Lower Mojave mixed woody scrub	California juniper/blackbrush woodland	Interior live oak woodland	Joshua tree/rubber rabbitbrush woodland
■ Barren	■ Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
■ Developed	■ California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



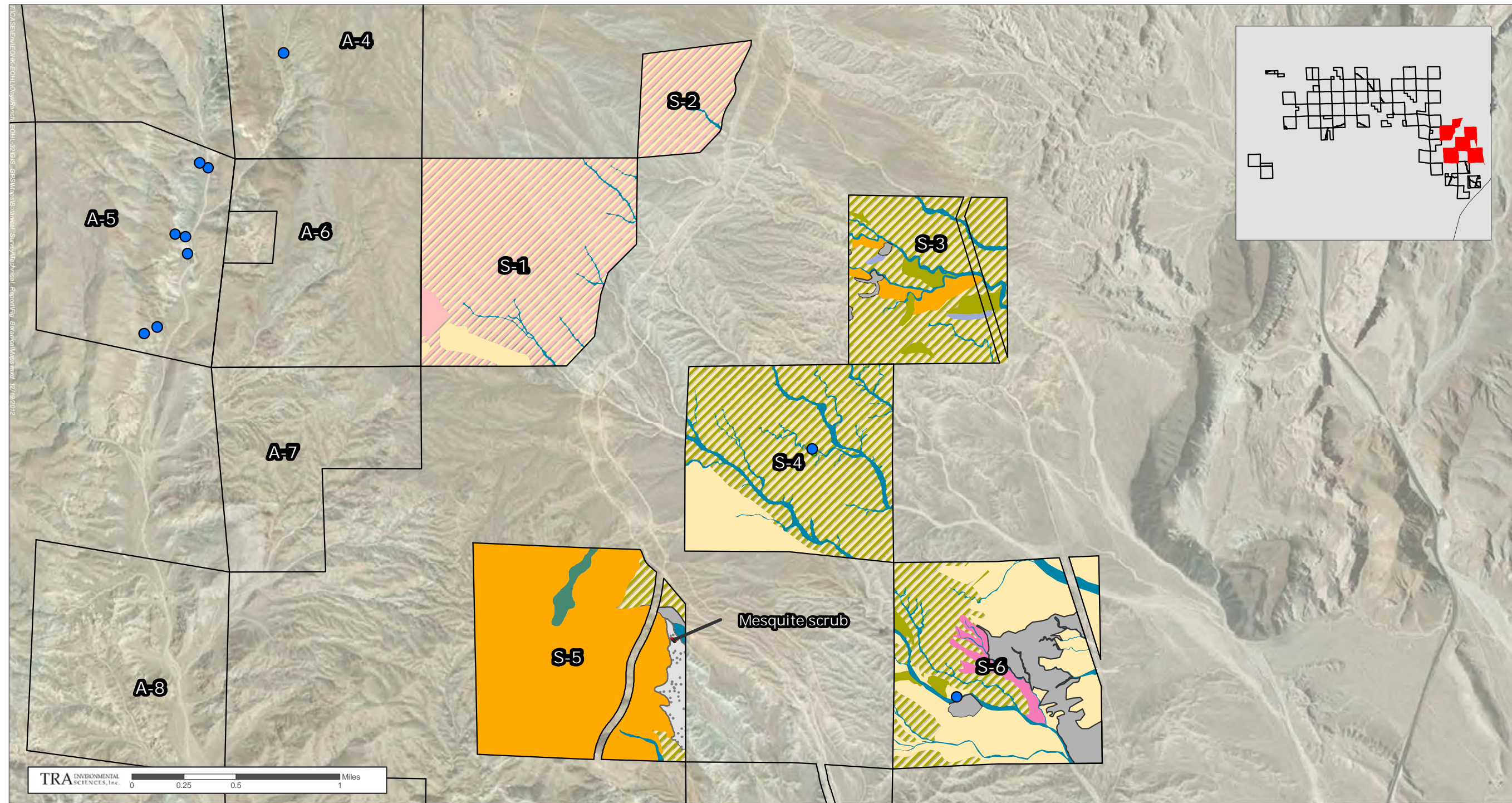
Botanical Survey Kelso Valley Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
Desert wash and mixed scrub	Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
Pond	Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
Meadow and Seep	Big sagebrush scrub	Desert riparian forest and scrub	California juniper-Joshua tree/blackbrush woodland	Blue oak woodland	Joshua tree/lower Mojave mixed woody scrub
Rock Outcrop	Blackbrush-creosote bush scrub	Lower Mojave mixed woody scrub	California juniper/blackbrush woodland	Interior live oak woodland	Joshua tree/rubber rabbitbrush woodland
Barren	Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
Developed	California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



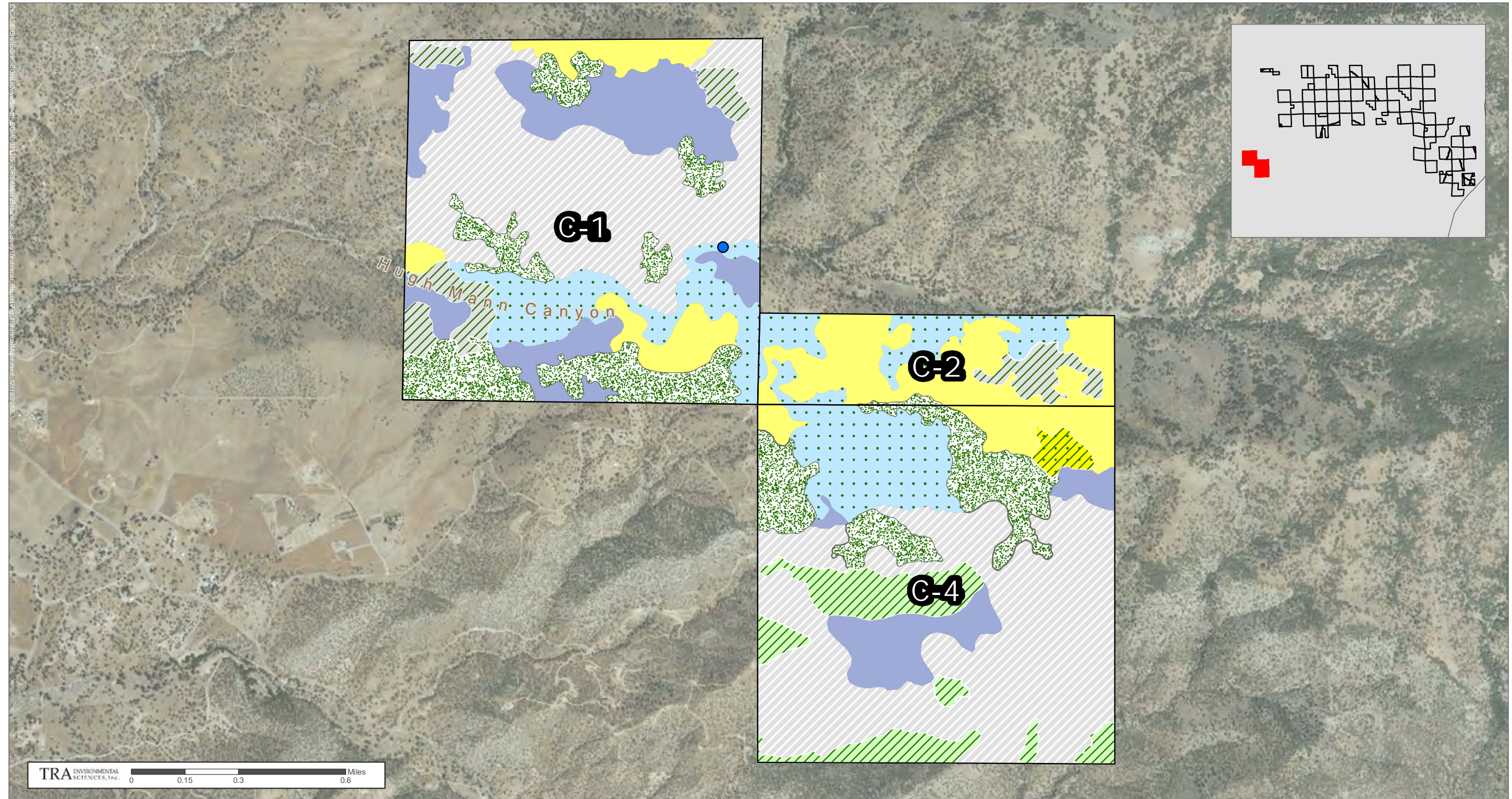
Botanical Survey Landers Meadow Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	■ Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
■ Desert wash and mixed scrub	□ Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
■ Pond	■ Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
■ Meadow and Seep	■ Big sagebrush scrub	Desert riparian forest and scrub	California juniper-Joshua tree/blackbrush woodland	Blue oak woodland	Joshua tree/lower Mojave mixed woody scrub
■ Rock Outcrop	■ Blackbrush-creosote bush scrub	Lower Mojave mixed woody scrub	California juniper/blackbrush woodland	Interior live oak woodland	Joshua tree/rubber rabbitbrush woodland
■ Barren	■ Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
■ Developed	■ California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



Botanical Survey Sugarloaf Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Desert wash and mixed scrub	Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
Pond	Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
Meadow and Seep	Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
Rock Outcrop	Big sagebrush scrub	Desert riparian forest and scrub	California juniper-Joshua tree/blackbrush woodland	Blue oak woodland	Joshua tree/lower Mojave mixed woody scrub
Barren	Blackbrush-creosote bush scrub	Lower Mojave mixed woody scrub	California juniper/blackbrush woodland	Interior live oak woodland	Joshua tree/rubber rabbitbrush woodland
Developed	Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
	California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland



Botanical Survey Caliente Creek Parcel Group

● Seep/Spring	Annual Grassland	Cheesebush scrub	Upper Mojave mixed woody scrub	Gray pine woodland	Joshua tree/big sagebrush woodland
Vegetation Alliances and Associations	■ Sensitive Vegetation Type	Creosote bush scrub	Wedgeleaf ceanothus scrub	Gray pine/interior live oak woodland	Joshua tree/blackbrush woodland
■ Desert wash and mixed scrub	□ Allscale scrub	Creosote bush-desert senna scrub	White bursage scrub	Jeffrey pine forest	Joshua tree/creosote bush woodland
■ Pond	■ Blackbrush scrub	Creosote bush-white bursage scrub	California Juniper	Singleleaf pinyon pine woodland	Joshua tree/goldenbush woodland
■ Meadow and Seep	■ Big sagebrush scrub	Desert riparian forest and scrub	California juniper-Joshua tree/blackbrush woodland	Blue oak woodland	Joshua tree/lower Mojave mixed woody scrub
■ Rock Outcrop	■ Blackbrush-creosote bush scrub	Lower Mojave mixed woody scrub	California juniper/blackbrush woodland	Interior live oak woodland	Joshua tree/rubber rabbitbrush woodland
■ Barren	■ Scalebroom scrub	Nevada ephedra scrub	California juniper/California buckwheat woodland	Joshua tree/California buckwheat woodland	Joshua tree/upper Mojave mixed woody scrub
■ Developed	■ California buckwheat scrub	Rubber rabbitbrush scrub	California juniper/rubber rabbitbrush woodland	Joshua tree/Nevada ephedra woodland	Joshua tree/white bursage woodland

Appendix E. California Natural Diversity Database Field Forms for Eastern Kern County Acquisition Parcels, 2012

Mail to:
 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only	
Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/11/2012

California Native Species Field Survey Form

Reset	Send Form
Scientific Name: <i>Castilleja plagiotoma</i>	
Common Name: Mojave paintbrush	
Species Found? <input type="checkbox"/> Yes <input type="checkbox"/> No If not, why? _____ Total No. Individuals <u>300</u> Subsequent Visit? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Is this an existing NDDDB occurrence? <input checked="" type="checkbox"/> no <input type="checkbox"/> unk. Yes, Occ. # _____ Collection? If yes: _____ Number _____ Museum / Herbarium _____	Reporter: <u>Barbara M. Leitner and Denise LaBerteaux</u> Address: <u>2 Parkway Court</u> <u>Orinda, CA 94563</u> E-mail Address: <u>bleitner@pacbell.net</u> Phone: <u>(925) 253-8300</u>

Plant Information Phenology: _____% vegetative <u>100</u> % flowering _____% fruiting	Animal Information <table border="0"> <tr> <td># adults</td> <td># juveniles</td> <td># larvae</td> <td># egg masses</td> <td># unknown</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>wintering</td> <td>breeding</td> <td>nesting</td> <td>rookery</td> <td>burrow site</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>other</td> </tr> </table>	# adults	# juveniles	# larvae	# egg masses	# unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	wintering	breeding	nesting	rookery	burrow site					other
# adults	# juveniles	# larvae	# egg masses	# unknown																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
wintering	breeding	nesting	rookery	burrow site																	
				other																	

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
 Edge of large meadow, just north of Green Spring, Kelso Valley. Just west of Kelso Valley Road and north of ranch headquarters.

County: Kern Landowner / Mgr.: ReNu Resources
 Quad Name: Pinyon Mountain 7.5' Elevation: 4100 ft
 T 29S R 35E Sec 21, NE ¼ of SE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS
 T 29S R 35E Sec 21, SE ¼ of NE ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet
 Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
 Coordinates: _____

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Castilleja plagiotoma growing under rubber rabbitbrush (*Ericameria nauseosa*) all along the upper edge of Juncus dominated meadow. Juncus extends upslope somewhat into the Castilleja and Ericameria; other associates include Hesperochiron californicum, Sidalcea, Sisyrrhinchium.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
 Immediate AND surrounding land use:
 Visible disturbances: Although cattle graze meadow, they seem unlikely to affect the Castilleja because it is protected by rabbitbrush.
 Threats: Possible threat from OHV usage.
 Comments: There appears to be much more suitable habitat around the edge of Green Spring meadow; systematic survey could reveal the presence of more Castilleja plagiotoma.

Determination: (check one or more, and fill in blanks) <input type="checkbox"/> Keyed (cite reference): _____ <input type="checkbox"/> Compared with specimen housed at: _____ <input type="checkbox"/> Compared with photo / drawing in: _____ <input checked="" type="checkbox"/> By another person (name): <u>Denise LaBerteaux</u> <input type="checkbox"/> Other: _____	Photographs: (check one or more) Slide Print Digital Plant / animal <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Habitat <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Diagnostic feature <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> May we obtain duplicates at our expense? yes <input type="checkbox"/> no <input type="checkbox"/>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

DFG/BDB/1747 Rev. 6/16/09

Mail to:
 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only	
Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/08/2012

California Native Species Field Survey Form

Scientific Name: Chamaesyce vallis-mortae

Common Name: Death Valley sandmat

Species Found? Yes No If not, why?

Total No. Individuals 300-400 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Barbara M. Leitner and Mike Wood

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

Plant Information

Phenology: 50 % vegetative 50 % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
 Northern end of Kelso Valley, base of St. John Ridge, 0.5 to 1 mile west of Kelso Valley Road. On moderately sloping alluvial fans.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Pinyon Mountain 7.5' Elevation: 4500 FT

T_{29S} R_{35E} Sec 5, SE ¼ of SW ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T_{29S} R_{35E} Sec 5, SW ¼ of SE ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0386475 E 3922756 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Plants scattered in openings in gravelly sandy soils formed from decomposed granite. Slopes moderate, south-facing. Associates primarily *Ericameria nauseosa*, *Bromus tectorum*, also *Erodium cicutarium*, *Loeseliastrum mathewsii*, *Oenothera californica*, *Leptosiphon aureus*. More populations likely to be found with systematic survey of Kelso Valley.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Cattle grazing

Visible disturbances: Area subject to frequent wildfire

Threats: Possible threat from OHV usage.

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jenson Desert Manual

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

DFG/BDB/1747 Rev. 6/16/08

AML 2

Mail to:
 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only	
Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/10/2012

California Native Species Field Survey Form

Scientific Name: *Chamaesyce vallis-mortae*

Common Name: Death Valley sandmat

Species Found? Yes No If not, why?

Total No. Individuals 300 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Barbara M. Leitner and Denise LaBertcaux

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

Plant Information

Phenology: 90% vegetative 10% flowering _____% fruiting

Animal Information

# adults <input type="checkbox"/>	# juveniles <input type="checkbox"/>	# larvae <input type="checkbox"/>	# egg masses <input type="checkbox"/>	# unknown <input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
other				

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

North end of Butterbredt Canyon Road, 1 mi S of Mayan Peak. 3 mi W of Gold Peak. Plants found in a N-S trending canyon that empties into Butterbredt Canyon in Section 27 to the north of Section 3.

County: Kern Landowner / Mgr.: RcNu Resources

Quad Name: Pinyon Mountain 7.5' Elevation: 4800 FT

T 29S R 35E Sec 3, NW ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T 28s R 35e Sec 34, NW ¼ of NW ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0390646 E 3923796 N; 0390596 E 3923518 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Plants found in loose sandy soil on the floor and sides of an unvegetated wash surrounded by Artemisia tridentata scrub. Associates include Bromus tectorum, Bromus madritensis rubens, Cryptantha pterocarya, Erodium cicutarium.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Some cattle grazing

Visible disturbances: Some cattle tracks seen.

Threats: Possible threat from OHV usage.

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jepson Desert Manual

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

DFG/8DB/1747 Rev. 6/16/09

Mail to:
 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

bml 3

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/10/2012

California Native Species Field Survey Form

[Reset](#) [Send Form](#)

Scientific Name: *Chamaesyce vallis-mortae*

Common Name: Death Valley sandmat

Species Found? Yes No If not, why?

Total No. Individuals 200 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Barbara M. Leitner and Denise LaBertaux

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

Plant Information

Phenology: 90% vegetative 10% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
other				

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Valley floor. Kelso Valley, on open sandy loam on roadsides in the vicinity of Green Spring.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Pinyon Mountain 7.5' Elevation: 4010 FT

T 29S R 35E Sec 21, _____ ¼ of SE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T 29s R 35e Sec 28, NE ¼ of NE ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0389249 E 3917568 N; 0389081 E 3916854 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Plants found in open, loose sandy soil on the edges of roads. Surrounding vegetation *Ericameria nauseosa* scrub with *Bromus tectorum*, *Erodium cicutarium*

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Some cattle grazing

Visible disturbances:

Threats: Possible threat from OHV usage.

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jepson Desert Manual

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

DFG/BDB/1747 Rev. 8/16/00

Mail to:
 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

Form 4

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/10/2012

California Native Species Field Survey Form

[Reset](#) [Send Form](#)

Scientific Name: *Chamaesyce vallis-mortae*

Common Name: Death Valley sandmat

Species Found? Yes No _____ If not, why? _____

Total No. Individuals: 200 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.
 Yes, Occ. # _____

Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Barbara Leitner, M. Wood, D. LaBerteaux

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

<p>Plant Information</p> <p>Phenology: <u>70</u>% vegetative <u>30</u>% flowering _____% fruiting</p>	<p>Animal Information</p> <table style="width: 100%;"> <tr> <td># adults</td> <td># juveniles</td> <td># larvae</td> <td># egg masses</td> <td># unknown</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>wintering</td> <td>breeding</td> <td>nesting</td> <td>rookery</td> <td>burrow site</td> </tr> <tr> <td>other</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	# adults	# juveniles	# larvae	# egg masses	# unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	wintering	breeding	nesting	rookery	burrow site	other				
# adults	# juveniles	# larvae	# egg masses	# unknown																	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
wintering	breeding	nesting	rookery	burrow site																	
other																					

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

In open unvegetated margin of Butterbredt Canyon Road and in open sandy wash of Butterbredt Canyon for about 0.5 mile downstream from Butterbredt Springs.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Dove Spring 7.5' Elevation: 3800 FT

T. 29S R. 36E Sec. 28, _____ ¼ of SE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T. 29S R. 36E Sec. 27, SW ¼ of SW ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0398493 e 3915865 n; 0398730 E 3915950 N; 0399251 E 3915616 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Plants found in open, loose sandy soil on the edges of roads and open sandy wash. Adjacent vegetation includes *Ericameria nauseosa* scrub.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Some cattle grazing

Visible disturbances: Road and OHV activity on Butterbredt Canyon Road maintains open habitat occupied by CHVAMO

Threats: Most of population within fenced Butterbredt Springs is protected from most OHV usage.

Comments:

<p>Determination: (check one or more, and fill in blanks)</p> <p><input checked="" type="checkbox"/> Keyed (cite reference): <u>Jepson Desert Manual</u></p> <p><input type="checkbox"/> Compared with specimen housed at: _____</p> <p><input type="checkbox"/> Compared with photo / drawing in: _____</p> <p><input type="checkbox"/> By another person (name): _____</p> <p><input type="checkbox"/> Other: _____</p>	<p>Photographs: (check one or more)</p> <table style="width: 100%;"> <tr> <td>Plant / animal</td> <td>Slide</td> <td>Print</td> <td>Digital</td> </tr> <tr> <td>Habitat</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Diagnostic feature</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table> <p>May we obtain duplicates at our expense? yes <input type="checkbox"/> no <input type="checkbox"/></p>	Plant / animal	Slide	Print	Digital	Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	Slide	Print	Digital										
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										

DFG/BDB/1747 Rev. 6/16/09

bml5

Mail to:
 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only	
Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/08/2012

California Native Species Field Survey Form

Scientific Name: *Chamaesyce vallis-mortae*

Common Name: Death Valley sandmat

Species Found? Yes No If not, why?

Total No. Individuals 300 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Barbara Leitner, Mike Wood

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

Plant Information

Phenology: 80 % vegetative 20 % flowering _____ % fruiting

Animal Information

# adults <input type="checkbox"/>	# juveniles <input type="checkbox"/>	# larvae <input type="checkbox"/>	# egg masses <input type="checkbox"/>	# unknown <input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
other				

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Wash about 0.5 mile SE of Alphic Springs. Observed population extended for about 0.5 mile along the wash. Plants mostly on low floodplain terrace rather than in active channel.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Cinco 7.5' Elevation: 3200 FT

T ^{29S} R ^{36E} Sec 28, 1/4 of SE 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T ^{29s} R ^{36e} Sec 27, SW 1/4 of SW 1/4, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 _____ meters/feet

Horizontal Accuracy unk.

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0398493 e 3915865 n; 0398730 E 3915950 N; 0399251 E 3915616 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Plants found in open, loose sandy soil on the edges of roads and open sandy wash. Adjacent vegetation includes *Ericameria nauseosa* scrub.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Some cattle grazing

Visible disturbances: Road and OHV activity on Butterbredt Canyon Road maintains open habitat occupied by CHVAMO

Threats: Most of population within fenced Butterbredt Springs is protected from most OHV usage.

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jepson Desert Manual

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Plant / animal	Slide <input type="checkbox"/>	Print <input type="checkbox"/>	Digital <input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

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Mail to:
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 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

DL1

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/09/2012

California Native Species Field Survey Form

Scientific Name: *Chamaesyce vallis-mortae*

Common Name: Death Valley sandmat

Species Found? Yes No If not, why?
 Total No. Individuals 7 Subsequent Visit? yes no
 Is this an existing NDDDB occurrence? no unk.
 Yes, Occ. # _____
 Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Denise LeBerteaux
 Address: 211 Snow St.
Weldon CA 93283
 E-mail Address: eremico@aol.com
 Phone: (760) 378-3021

Plant Information

Phenology: 50 % vegetative 50 % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other				

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
 Southern end of Kelso Valley, broad wash in SW corner of Section 23. About 1 mile E of Kelso Valley Road and 0.5 mile N of Jawbone Canyon Road

County: Kern Landowner / Mgr.: ReNu Resources
 Quad Name: Pinyon Mountain 7.5' Elevation: 4100 FT
 T 29S R 35E Sec 23, SW ¼ of _____ ¼, Meridian: H M S U
 Source of Coordinates (GPS, topo. map & type): GPS
 T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S U
 GPS Make & Model GARMIN 60CSx
DATUM: NAD27 NAD83 WGS84 _____
 Horizontal Accuracy unk. _____ meters/feet
 Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
 Coordinates: 391125 E 3917385 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Plants scattered in openings broad wash. More populations likely to be found with systematic survey of Kelso Valley.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
 Immediate AND surrounding land use:
 Visible disturbances:
 Threats:
 Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jepson Desert Manual
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: _____

Photographs: (check one or more)

Plant / animal	Slide <input type="checkbox"/>	Print <input type="checkbox"/>	Digital <input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

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 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

NK 1

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Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/09/2012

California Native Species Field Survey Form

[Reset](#) [Send Form](#)

Scientific Name: *Chamaesyce vallis-mortae*

Common Name: Death Valley sandmat

Species Found? Yes No If not, why?

Total No. Individuals 30 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Neal Kramer and Mike Wood

Address: P.O. Box 1582
El Granada CA 94018

E-mail Address: kramerbotanical@yahoo.com

Phone: (650) 563-9943

Plant Information

Phenology: 50 % vegetative 50 % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Southern end of Kelso Valley, sandy soil at intersection of Jawbone Canyon Road and Kelso Valley Road. Plants are both in SW corner of Section 27 and NE corner of Section 33

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Pinyon Mountain 7.5' Elevation: 3950 FT

T ^{29S} R ^{35E} Sec 27, SW ¼ of SW ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): topo

T ^{29S} R ^{35E} Sec 33, NE ¼ of NE ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates:

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Plants scattered in open sandy soil

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use:

Visible disturbances:

Threats:

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jenson Desert Manual

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Plant / animal	Slide <input type="checkbox"/>	Print <input type="checkbox"/>	Digital <input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

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 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/11/2012

California Native Species Field Survey Form

Scientific Name: Calochortus palmeri var. palmeri

Common Name: Palmer's mariposa-lily

Species Found? Yes No If not, why?

Total No. Individuals 3 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
Number Museum / Herbarium

Reporter: Barbara M. Leitner and Denise LaBerteaux

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

Plant Information

Phenology: _____% vegetative 100% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
				other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Floodplain terrace of Esperanza Creek, Kelso Valley. Single plant located less than 0.25 mile SE of CNDDDB Occ. 66. May be an outlier from this population, as the site is fairly dry compared with the larger colony at Occ. 66.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Claraville Elevation: 4460 FT

T_{29S} R_{35E} Sec 17, NW ¼ of NW ¼, Meridian: H M S D Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S D GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0386194/3920126

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Relatively dry floodplain terrace, gravelly, north side of Esperanza Creek.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Very small size of population is reason for low quality/viability.

Visible disturbances: None noted. This is an area apparently subject to frequent wildfire

Threats: Possible threat from OHV usage.

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jenson Manual 2012

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Plant / animal	Slide <input type="checkbox"/>	Print <input type="checkbox"/>	Digital <input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

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 Department of Fish and Game
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 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only	
Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/11/2012

California Native Species Field Survey Form

Scientific Name: Forestiera pubescens Patch

Common Name: Desert Olive Patch

Species Found? Yes No _____ If not, why? _____

Total No. Individuals n/a Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Barbara M. Leitner and Denise LaBerteaux

Address: 2 Parkway Court
Orinda, CA 94563

E-mail Address: bleitner@pacbell.net

Phone: (925) 253-8300

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
 Lower portion of Esperanza Creek on alluvial fan as it empties into Kelso Valley.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Claraville Elevation: 4460 FT

T 29S R 35E Sec 17, NW ¼ of NW ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, ¼ of _____ ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy unk. meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0386194/3920126 (approximate)

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
 Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Esperanza Creek, below forest belt, as creek disappears into alluvial fan. Nearby is a Calochortus palmeri var. palmeri record. Surrounding vegetation is Ericameria nauscosa scrub.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Large and dense stand of desert olive along streambanks.

Visible disturbances: None noted. This is an area apparently subject to frequent wildfire

Threats: Possible threat from OHV usage.

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Plant / animal
 Habitat
 Diagnostic feature

May we obtain duplicates at our expense? yes no

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Department of Fish and Game
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Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

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Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 04/06/2012

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Phacelia nashiana*

Common Name: Charlotte's phacelia

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 6 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Neal Kramer
Address: P.O. Box 1582
El Granada, CA
E-mail Address: kramerbotanical@yahoo.com
Phone: (650) 563-9943

Plant Information

Phenology: 80% vegetative 20% flowering _____% fruiting

Animal Information

adults # juveniles # larvae # egg masses # unknown
wintering breeding nesting rookery burrow site other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Steep slope just to the east of Alphie Springs Road in the NE corner of the section. Population was on the upper portion of the slope perhaps 200 feet above the canyon floor. A large tributary canyon to Alphie Canyon (benchmark 3218 ft at the mouth) is just to the south.

County: Kern Landowner / Mgr.: ReNu Resources
Quad Name: Cinco 7/5' Elevation: 3480 ft
T 29S R 38E Sec 35, NE ¼ of NE ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: 0401892 E 3915050 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Steep west-facing slope, loose decomposed granite gravel, very sparse vegetation where PHNA was observed. Associates include *Leptosyne bigelovii*, *Salvia columbaria*, *Erodium cicutarium*, *Phacelia distans*, *Lupinus excubitus*, *Eriogonum nudum* var. *westonii*, *Eriogonum fasciculatum* var. *polifolium*. Site was revisited in May 2012 and plants were not detectable.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use:

Visible disturbances: None noted

Threats: OHV use in canyon unlikely to impact this rather inaccessible population

Comments: More plants might be detectable in a higher-rainfall year.

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: _____

Photographs: (check one or more) Slide Print Digital
Plant / animal
Habitat
Diagnostic feature

May we obtain duplicates at our expense? yes no

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 California Natural Diversity Database
 Department of Fish and Game
 1807 13th Street, Suite 202
 Sacramento, CA 95811
 Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only	
Source Code _____	Quad Code _____
Elm Code _____	Occ. No. _____
EO Index No. _____	Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/08/2012

California Native Species Field Survey Form

Scientific Name: *Sclerocactus polyancistrus*

Common Name: Mojave fish hook cactus

Species Found? Yes No If not, why?

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.

Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Neal Kramer

Address: P.O. Box 1582
El Granada, CA

E-mail Address: kramerbotanical@yahoo.com

Phone: (650) 563-9943

Plant Information

Phenology: 100% vegetative % flowering % fruiting

Animal Information

# adults <input type="checkbox"/>	# juveniles <input type="checkbox"/>	# larvae <input type="checkbox"/>	# egg masses <input type="checkbox"/>	# unknown <input type="checkbox"/>
wintering	breeding	nesting	rookery	burrow site
other				

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Rocky ridge west of Alphie Springs Road in the western half of the section.

County: Kern Landowner / Mgr.: ReNu Resources

Quad Name: Cinco 7/5' Elevation: 3262 ft

T 29S R 36E Sec 35, NW ¼ of _____ ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model GARMIN 60CSx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 0401672 E 3913901 N

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:
Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
 Rocky ridge top with Larrea tridentata, Ambrosia dumosa, Ericameria cooperi, Coleogyne ramosissima, Xylorhiza tortifolia, Eriogonum inflatum.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use:
 Visible disturbances: None noted

Threats: OHV use in canyon unlikely to impact this rather inaccessible population

Comments:

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): Jepson desert manual

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: _____

Photographs: (check one or more)

Plant / animal	Slide <input type="checkbox"/>	Print <input type="checkbox"/>	Digital <input checked="" type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

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APPENDIX F

**DESERT TORTOISE SURVEY OF [RENU] RESOURCES
PROPERTY ACQUISITION PROJECT, KERN COUNTY, CA
Leatherman Bioconsulting, Inc.**

**DESERT TORTOISE SURVEY OF
RENEWABLE RESOURCES* PROPERTY
ACQUISITION PROJECT,
KERN COUNTY, CA
2012**

LEATHERMAN BIOCONSULTING, INC.

AUGUST 2012

*Note: The landowner of record is ReNu Resources, LLC.

For purposes of this report, Renewable Resources Group = ReNu Resources, LLC.

**DESERT TORTOISE SURVEY OF
RENEWABLE RESOURCES PROPERTY
ACQUISITION PROJECT,
KERN COUNTY, CA
2012**

Prepared for:

TRA ENVIRONMENTAL SCIENCES, INC.
545 Middlefield Road, Suite 200
Menlo Park, California 94025

Prepared by:

LEATHERMAN BIOCONSULTING, INC.
4848 Lakeview Avenue, Suite 100E
Yorba Linda, California 92886
(714) 701-0863

AUGUST 2012

*Onyx Ranch
Desert Tortoise Survey 2012*

EXECUTIVE SUMMARY

The California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division (CDPR), is proposing to acquire 60 privately-owned parcels known as Onyx Ranch from Renewable Resources Group (RRG). TRA Environmental Sciences, Inc. is preparing an Environmental Impact Report for the acquisition project. A survey to evaluate the presence and distribution of the desert tortoise on selected parcels was conducted by Leatherman BioConsulting, Inc. to provide data for the EIR.

The RRG Onyx Ranch property covers approximately 25, 800 acres (44.5 square miles) of land within the western range limits of the desert tortoise. Desert tortoises are known from the general region, but their presence and distribution in the Onyx Ranch area is poorly understood because site specific locality data are lacking. Therefore, a preliminary survey to better define the distribution of the desert tortoise in the region was conducted.

Fifteen parcels totaling approximately 13 square miles were sampled for desert tortoise by walking 149 miles of transects within the parcels, representing approximately 7.1% of the Study Area. The surveys were conducted during the known spring activity period of the desert tortoise between April 30 and May 15, 2012. Presence of the desert tortoise was established on 11 of the 15 parcels surveyed. All size classes (juvenile, young adult, adult) of desert tortoise were observed indicating recent recruitment and long term survivorship, at least in some areas.

One desert tortoise was observed within the Jawbone Canyon OHV Open Area, representing the only recent sign detected within that area (other sign observed did not indicate recent use). Most of the desert tortoise sign was detected in the eastern parcels north of the Jawbone Canyon OHV Open Area where there was good habitat and the rugged topography (badlands) limited OHV access. Areas dominated by blackbush scrub were usually devoid of desert tortoise sign, although tortoises were observed in adjacent canyons where Mojave mixed woody scrub and/or creosote bush was dominant.

Fencing currently limits OHV use on some of the parcels. If the fencing is not maintained then OHV may increase in those parcels. Desert tortoises occurring in these areas would be subjected to impacts associated with OHV use.

Leatherman BioConsulting, Inc.

*Onyx Ranch
Desert Tortoise Survey 2012*

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Appendix A.	Wildlife Observed or Detected during Desert Tortoise Survey of Renewable Resources Group Property
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Appendix C.	Representative Photographs of Desert Tortoise Sign and Habitat during Renewable Resources Group Survey

Leatherman BioConsulting, Inc.

*Onyx Ranch
Desert Tortoise Survey 2012*

1.0 INTRODUCTION

Project Description

This report summarizes the results of surveys for the desert tortoise (*Gopherus agassizii*) at the eastern end of Onyx Ranch in northeastern Kern County, California. The California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division (CDPR), is proposing to acquire the 60 privately-owned parcels (approximately 28,500 acres, or 44.5 square miles) from Renewable Resources Group (RRG). The RRG parcels, which historically were known as Onyx Ranch, are located west of State Route 14 (west of Red Rock State Park) and north of the City of Mojave (Figure 1). The majority of the RRG acreage to be purchased is located within the Jawbone-Butterbrecht Area of Critical Environmental Concern (ACEC). Elevation ranges from approximately 2,170 feet above mean sea level in Jawbone Canyon along the edge of the Mojave Desert at the eastern boundary of the site to approximately 7,700 feet on Sorrell Peak in the Piute Mountains near the western boundary of the site. TRA Environmental Sciences, Inc. is preparing an Environmental Impact Report for the acquisition project.

The RRG parcels are interspersed with lands owned by the U.S. Bureau of Land Management (BLM). The checkerboard pattern of ownership between public and private lands is the result of land grants of alternating sections issued during the railroad era. Off-highway vehicle (OHV) recreation occurs on many of the RRG and BLM parcels, mostly on designated roads and trails. However, some of the RRG parcels are within the Jawbone Canyon OHV Open Area and adjacent to the Dove Springs OHV Open Area where travel is not restricted. The BLM thus faces the challenge of managing lands that are not contiguous yet include the need to provide for public access by working cooperatively with private landowners. Although the main access roads allow passage through many of the RRG parcels, many of the washes, canyons, and smaller dirt roads leading onto the RRG parcels have been fenced off to prevent OHV use in those areas. Land use throughout the area (including BLM and RRG parcels) is designated as open range.

The RRG parcels are located along the western range limits of the desert tortoise, a species listed as threatened under the federal Endangered Species Act (USFWS 1990). Most of the western and northern parcels are either too high in elevation to support desert tortoises or do not support suitable habitat. In addition, many of the parcels consist of extremely steep and rocky terrain where conducting surveys is not practical. Based on these and other considerations identified below, and following discussions with the U.S. Fish and Wildlife Service and California Department of Fish and Game, desert tortoise surveys were modified from the current U.S. Fish and Wildlife Service desert tortoise protocol (USFWS 2010). In essence, 10 miles of transects were conducted on fifteen parcels that were dominated by creosote bush scrub or supported suitable Mojave mixed woody scrub habitats within the elevation limits of the desert tortoise. These fifteen parcels are hereinafter referred to as the Study Area.

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Existing Conditions

Onyx Ranch lands consist largely of undeveloped sections or partial sections with an extensive system of dirt roads and trails throughout. These roads allow public access through the private parcels to surrounding lands managed by the BLM for OHV recreation and camping. Jawbone Canyon Road is a paved road that crosses through the southernmost parcels in an east to west direction. Several dirt roads traverse the parcels including Gold Canyon Road, maintenance roads along the two Los Angeles Aqueduct pipelines, power line roads, private roads, and numerous OHV trails. Trails are so numerous in the Jawbone Canyon OHV Open Area that large areas are completely denuded of vegetation, especially adjacent to camping areas. Several roads on the RRG parcels have been fenced off and closed to OHV use, some of which are undergoing restoration at their intersection.

The topography of RRG parcels in the Study Area varies widely. Most exhibit extremely rugged terrain that includes highly incised badlands with multiple ridges and drainages, steep mountain slopes, and large canyons with extensive wash systems. The northern parcels exhibit more moderately sloped terrain composed of rolling hills and alluvial plains. Soils range from decomposed granite on the slopes, gravel-laden alluvium in flatter areas, and large rock outcrops along the ridges and steeper slopes. Larger wash systems are composed primarily of sands and loams that provide excellent substrates for desert tortoise burrows along the margins. Nearly all the parcels have different topography and noticeably different geological features: uniform habitat and topography over extensive areas is lacking.

The vegetation communities on the RRG parcels transition with the elevation gradient. The eastern parcels occur at lower elevations along the western edge of the Mojave Desert floor. These parcels are dominated by creosote bush scrub and represent the highest quality habitat for the desert tortoise in the Study Area. Mid-elevation parcels to the west support Mojave mixed woody scrub, and parcels to the north are dominated by blackbush scrub with scattered Joshua trees. Higher elevations at the western end of the property give way to pinyon-juniper woodland habitat, which are not included in the Study Area.

The quality of the habitat for the desert tortoise varies based on the dominant vegetation types and human-related disturbances including OHV use, utility corridors, and cattle grazing. Sections within the Jawbone Canyon OHV Open Area were denuded of vegetation because of OHV use and expansive camps, although intact habitat remains in inaccessible canyons and rock outcrops. Other sections were lightly to heavily impacted by cattle grazing where the severity of the impact was usually highest along low gradient washes and flat areas easily traversed by cattle. Impacts associated with cattle grazing that reduce habitat quality for desert tortoise include vegetation loss and trampling, disturbance of soil surfaces, increased erosion potential and soil compaction.

2.0 METHODOLOGY

Literature Review

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A review of pertinent literature was conducted prior to the field work to identify known occurrences of the desert tortoise in the region. The California Department of Fish and Game's Natural Diversity Data Base (CDFG 2012) was searched for desert tortoise occurrence records within the Study Area and surrounding region. Desert tortoise survey reports by Phoenix Ecological Consulting (2010), Keith et. al (2008), and EDAW (2004) were also reviewed. The database records were searched by U.S. Geological Survey 7.5' series topographic maps for the Dove Springs and Cinco quadrangles, which include the RRG parcels, and the Horse Canyon, Pinyon Mountain, Cross Mountain, Emerald Mountain, Cache Peak, and Mojave NE quadrangles that occur to the north, west, and south. Additional references and in-house files were used to compile information on vegetation communities and other relevant biological resources.

Survey Method Rationale

Prior to conducting desert tortoise surveys, TRA Environmental Sciences, Inc. (TRA) contacted the California Department of Fish and Game and the U.S. Fish and Wildlife Service to describe the location, size and complexity of the project and determine the level of effort for conducting desert tortoise surveys. Factors considered in evaluating what level of effort was acceptable included the following. Conducting protocol level surveys on all 60 parcels would not be necessary because the westernmost parcels are clearly beyond the known western range of the desert tortoise and above known elevation limits. The steep, rugged and (in some cases) mountainous terrain on some parcels would severely limit access and present safety hazards for biologists conducting the surveys. Because the project site is not contiguous, includes several habitat types, spans many miles and a wide elevation gradient, and was expected to have very few tortoises (if any in the parcels in the Open Areas), the current 2010 protocol may not be well suited to estimating the number of tortoises. Finally, no changes to the management of the parcels are planned, and no impacts associated with the acquisition to the tortoise are anticipated at this time.

The purpose of the 2010 desert tortoise protocol is to 1) determine presence or absence of the desert tortoise within a project area, 2) to allow an estimate of the number of tortoises, and 3) assess the distribution of the tortoises within the project area. Based on the above considerations, surveys were conducted on fifteen parcels with an emphasis on determining presence, which also provided information on the distribution of the tortoise within the Study Area. The proposed survey methodology does not allow an estimate of the number of desert tortoises using the formula in the protocol; however, a crude measure of the relative abundance of the desert tortoise within the Study Area can be made because the same level of sampling effort was made in each section.

Survey Methods

The parcels of land to be surveyed were tentatively identified based on vegetation maps depicting the distribution of creosote bush scrub in the region (West Mojave Plan 2006), but were adjusted in the field based on topography and habitat. Fifteen parcels of land were

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ultimately included in the survey effort as part of the Study Area. All fifteen parcels were located at the eastern end of the acquisition area below 4,500 feet elevation and supported at least some creosote bush scrub habitat.

Desert tortoise surveys were conducted between April 30 and May 15. Surveys were conducted by Brian Leatherman and James Huelsman, both of whom have extensive experience (30 years combined) conducting desert tortoise surveys, desert tortoise monitoring and handling, and assisting with translocation studies and radio telemetry. Approximately 10 miles of transects were conducted per section of land surveyed. Transects were conducted by the biologists walking parallel belt transects within sight or radio communication of each other at distances that varied depending on terrain. On parcels that were relatively flat or had navigable terrain throughout, transects were evenly spaced throughout the entire parcel. On parcels with mountains and cliffs, or other topographical features that were not (safely) navigable, meandering transects were walked across accessible terrain covering as much of the section as possible. The length of each transect was documented and recorded using the trip odometer and track log features of the GPS unit carried by each biologist.

General notes on vegetation type, substrate, topography, and human-related disturbances were recorded during the surveys. All diagnostic sign of desert tortoise (e. g., live tortoises, carcasses, scat, burrows, tracks, eggshell fragments, pellets, drinking depressions, courtship rings) was recorded in field notes and as waypoints using GSP technology for mapping purposes. A mirror was used to reflect sunlight into potential burrows to determine if tortoises were present or look for signs of recent use. No tortoises were handled or marked. Weather conditions were recorded at the beginning and end of each transect, usually at least four times per day. Air temperatures were taken and recorded to ensure surveys were within the limits for active desert tortoises identified in the survey protocol (USFWS 2010).

The boundaries of all the parcels surveyed were uploaded onto GPS units after converting .kml files (Google Earth software) into GPS-compatible .gpx files. As such, biologists conducting the surveys were able to continuously monitor their location within the section. The parcels were surveyed in a random order.

All vertebrate wildlife species observed or detected during the surveys were recorded in field notes. A complete list is presented in Appendix A. Taxonomy and nomenclature follow Stebbins (2003) for reptiles, AOU (1998) for birds, and Jones et. al (1992) for mammals.

3.0 RESULTS

Literature Search

Six occurrences for desert tortoise were reported in the California Natural Diversity Data Base for the seven quadrangles searched (CDFG 2012). The parcels surveyed for desert tortoise are located on the Dove Springs and the Cinco quadrangles (the Cinco quadrangle is south of the Dove Springs quadrangle), on which no occurrences of individual tortoises are

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reported. However, the Cinco quadrangle is included in a list of quadrangle maps that support the Freemont-Stoddard desert tortoise population that inhabits a 1,700 square mile area of the western Mojave Desert.

No occurrences of desert tortoise were reported on the quadrangles located to the west (Pinyon Mountain, Cross Mountain) or to the north (Horse Canyon) of the Study Area. Four desert tortoise occurrence records were found on the Mojave NE quadrangle (south of the Study Area) including three individual records and the same general record noted above that includes the Freemont-Stoddard population. Two desert tortoise occurrence records were also found on the Cache Peak quadrangle (southwest of the Study Area). Both of these quadrangles include habitat on the Mojave Desert valley floor.

Phoenix Ecological Consulting (2010) conducted presence/absence surveys for the desert tortoise on the North Sky River Wind Resource project site including transects along Jawbone Canyon Road and Gold Canyon Road. Their surveys along Gold Canyon Road partially overlapped the westernmost parcel surveyed for this report (APN 444-070-09), where they documented one tortoise, five burrows, four scat and one carcass. Additional sign was found west of the Study Area, including a tortoise located two miles west of APN 444-090-04 on a slope above Jawbone Canyon.

Keith and Berry (2008) reported no desert tortoise sign on the 31 plots (1 hectare each) they surveyed in their South Dove Springs study area. The South Dove Springs study area is adjacent to and south of parcel APN 153-130-03 surveyed for this report, and encompasses APN 153-150-04, which was not surveyed. Keith and Berry (2008) did document tortoise sign (including one live tortoise) on 10 of 37 plots surveyed in their Red Rock study area, which overlaps and encompasses three of the easternmost sections of land surveyed for this report (APNs 153-240-16, 181-020-13, and 181-080-30). The locations of the Phoenix Ecological Consulting (2010) and Keith et. al (2008) survey areas relative to the Study Area are shown in Figure 2.

EDAW (2004) reported a live tortoise along the paved portion of Jawbone Canyon Road near crossing of the second Los Angeles Aqueduct. This location is within APN 181-080-11 where we documented a relatively recent carcass and a potential burrow.

Desert Tortoise Survey

Fifteen discrete parcels of land ranging in size from a complete section of 640 acres (1 sq. mi.) to a partial section of 127 acres were surveyed for desert tortoise. The combined area surveyed was 8,301 acres, or the equivalent of 13 square miles. A total of 149 miles of transects was walked for an average transect length of 11.5 miles per square mile. As such, approximately 7.1% of the area in the fifteen parcels was surveyed. Thirteen parcels were large enough (close to 1 sq. mi.) that 10 miles of transects were completed within them. Two parcels were much smaller so 10 miles of transects were split between the two.

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Desert tortoises or sign indicating their presence were observed on 11 of the 15 parcels of land surveyed. The locations of desert tortoises and desert tortoise sign found on each parcel are shown in Figure 3. Because of the relatively small sample size (7.1% of the area), negative results do not necessarily indicate absence of the desert tortoise (e.g. sign may have been missed on some sections because of the large area that was not surveyed). A summary of the transect data and desert tortoise sign associated with each of parcels surveyed is presented in Table 1.

Table 1. Parcel, Transect, and Desert Tortoise Sign Data

TRA Section No.	APN No.	APN Acreage	Transect Length	Type of Sign Observed*	No. of Sign Observed
58	153-130-03	640	10.16	-	-
70	153-170-03	640	10.26	B, S	4
77	153-170-04	600	11.13	T, B, S, C	7
78	153-240-14	127	3.81	-	-
79	153-240-12	617	10.66	-	-
80	153-240-16	327	7.10	T, B, S, C	9
81	181-020-02	612	10.69	T, B, S, C	12
82	181-020-11	613	10.13	-	-
83	181-020-13	622	10.98	B, S	12
84	181-080-32	614	11.57	T, S, B, C	3
85	181-080-11	582	10.70	B, C	2
86	181-080-30	550	10.56	T, B	2
157	444-070-05	477	10.20	T, B, S, C	6
164	444-070-09	640	10.23	B, S, C	4
166	444-090-04	640	10.82	B	3
		8301	149.00		

* B = Burrow, C = Carcass, S = Scat, T = Tortoise

A total of 13 tortoises was observed during the surveys, representing 10 individuals. One tortoise was observed on two different transects, once on May 8 (Record No. T-77-1) and once on May 9 in the adjacent parcel (Record No. T-157-01). Another tortoise was observed incidentally on May 7 (Record No. T -81-2) while driving through APN 181-020-02, and then during transects on that same parcel on May 10. A third tortoise was observed in a burrow at the beginning of a transect, and observed out of the burrow at the end of the transect (Record Nos. T/B 81-1 and T-81-1).

All size classes of desert tortoise were observed indicating recent recruitment and long term survivorship (at least for some individuals). Sizes ranged from a juvenile tortoise with an estimated MCL of 60mm that likely hatched the previous fall (Record No. T-80-3), young

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adult tortoises of intermediate size that appeared in excellent health (Record Nos. T-86-1 and T-81-2), and aged tortoises with sunken and well-worn scutes on the carapace (Record No. T-77-1).

One large male tortoise was observed incidentally approximately 0.6 mile north of APN 153-240-16 northwest of the boundary of Red Rock State Park. It was found turned over on its carapace near the edge of a wash (Record No. T-INC-1). The tortoise had voided the contents of its bladder all over its plastron, either in panic or perhaps to maintain body temperature through evaporative cooling. Depressions from the carapace in the sand and claw marks clearly indicated that the tortoise had been upside down for an extended period of time and had expended substantial energy to right itself: our interpretation was that the tortoise was in mortal danger from exposure, so we righted and attempted to rehydrate the tortoise. No evidence was found to indicate that this male had been flipped by another male during a territorial battle. It appears that the tortoise likely fell off the adjacent wash terrace as it attempted to access the wash down the steep decline.

The following desert tortoise sign was observed in addition to the live tortoises that were found. Thirteen scats were observed on seven different sections. Very old scat on some parcels where no recent sign was detected indicated past presence. Other sections had fresh scat indicating it was deposited this year even though no tortoises were observed. Ten carcasses were observed on seven different sections. Some of the carcasses were completely disarticulated bone fragments. Others were intact shells with some or all of the scutes adhering to the bone. In the OHV open area, the carcass of one young tortoise was observed (Record No. C-85-1). The tortoise's demise was relatively recent with the scutes exhibiting normal color and tightly adhering to the bone. Only the back half of carapace remained suggesting the front half was smashed by a vehicle (likely an OHV given its distance from the paved Jawbone Canyon Road); the estimated MCL was 175mm. Thirty-two burrows were observed. Of those, 19 were judged to be definitely tortoise (in varying states of quality) and the remainder were possibly tortoise. Two burrows were occupied by a desert tortoise. A table listing all desert tortoise sign observed during the surveys is included in Appendix B.

In addition to the surveys reported here, focused studies for special status birds and rare plants were conducted by TRA in 2012, and focused surveys for the Mohave ground squirrel (*Xerospermophilus mohavensis*) and other special status vertebrates was conducted by Biosearch Associates (2012). One record of interest was the detection of one desert tortoise scat in the southwest corner of APN 153-150-04, which was not included in the Study Area.

4.0 DISCUSSION

The RRG Onyx Ranch property covers approximately 28,500 acres of land within the western range limits of the desert tortoise. Although desert tortoises are known from the general region, the extent to which desert tortoises occupy the area is poorly understood because site specific locality data are lacking. Therefore, a preliminary survey to better define the distribution of the desert tortoise in the region was conducted. Fifteen parcels

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totaling approximately 13 square miles were sampled for desert tortoise by walking 149 miles of transects within the parcels. Although the survey did not follow the current USFWS survey protocol (USFWS 2010), and represented a relatively small percentage of the Study Area (7.1%), presence of the desert tortoise was established on 11 of the 15 parcels surveyed and the associated data can be used to direct subsequent survey efforts as necessary.

The following patterns emerge from the limited data. Of the 11 parcels where desert tortoise sign was observed, the four parcels within the Jawbone Canyon OHV Open Area had the least amount of sign. Desert tortoise sign was concentrated in canyons and badlands where OHV use was inhibited by fencing or limited because of rugged terrain. Areas dominated by blackbush scrub generally lacked desert tortoise sign.

Five RRG parcels are entirely or partially within the Jawbone Canyon OHV Open Area. Parcel APN 181-190-02, the southernmost parcel, was not surveyed because of the mountainous terrain and lack of access. Desert tortoise sign was documented in each of the other four parcels. APN 181-080-30 is entirely within the Open Area and had two sign, including a healthy young adult (MCL ~ 210mm) at the northern boundary of the parcel. This tortoise (Record No. T-86-1) represents the only sign of recent tortoise use within the Open Area. APN 181-080-11 is also entirely within the Open Area. One desert tortoise carcass and one burrow (possibly but not definitely tortoise) were observed within the wash area of the parcel. Neither of these indicates recent presence of tortoise: even though the carcass was relatively recent, it may have been carried to its current location by a scavenging predator. Three tortoise burrows (one possibly tortoise and two definitely tortoise) were observed within parcel APN 444-090-04. The two that are definitely tortoise were in a deteriorated condition, suggesting they have not been used recently. All three burrows were located in the southeast corner of the parcel in a canyon where OHV use was limited because of rugged terrain. Lastly, a carcass, scat and tortoise in a burrow were observed in parcel APN 181-080-32. All three of these sign locations were well north of the Open Area where travel was restricted to existing dirt roads.

The most sign were observed on APNs 181-020-02 (12 sign), 181-020-13 (12 sign), and 153-240-16 (9 sign). This can be at least partially explained by their location at the eastern end of the Study Area where the parcels are dominated by creosote bush scrub (and represents the best habitat within the Study Area) and are closest to source populations located to the east in Red Rock State Park and the Mojave Desert valley floor. However, the badlands covering the majority of these parcels limit the use of the area by OHV enthusiasts. The next two highest ranking parcels were APN 153-170-04 (with 7 sign) and 444-070-05 (with 6 sign). All of the sign on these two parcels were located in rugged canyons where fencing inhibited access by OHV users.

Habitat dominated by blackbush scrub was usually negative for desert tortoise and their sign. No sign was observed on APN 153-130-03, the northernmost parcel, which was entirely dominated by blackbush scrub. Similarly, no sign was detected in the Dove Springs study area surveyed by Keith and Berry (2008) where blackbush scrub is dominant. Although

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desert tortoise sign was observed on APN 153-170-03 and 153-170-04 in the canyons on the western half of the parcels, the vegetation in those areas consisted of Mojave mixed woody scrub. No desert tortoise sign was detected on the eastern half of those parcels where blackbush scrub dominated (with the exception of one very old scat observed in the transition zone between the vegetation communities). No sign was observed on APN 153-240-14 or 153-240-12 where blackbush scrub with scattered creosote bush occurs throughout the parcels. However, given the proximity of these parcels to parcels APN 181-020-02 and 153-240-16, which had a high number of sign, we expect that sign would be found on those parcels given a larger survey sample. One exception to this general pattern was a single scat observed by Biosearch Associates (2012) in blackbush scrub in the southwest corner of APN 153-150-04.

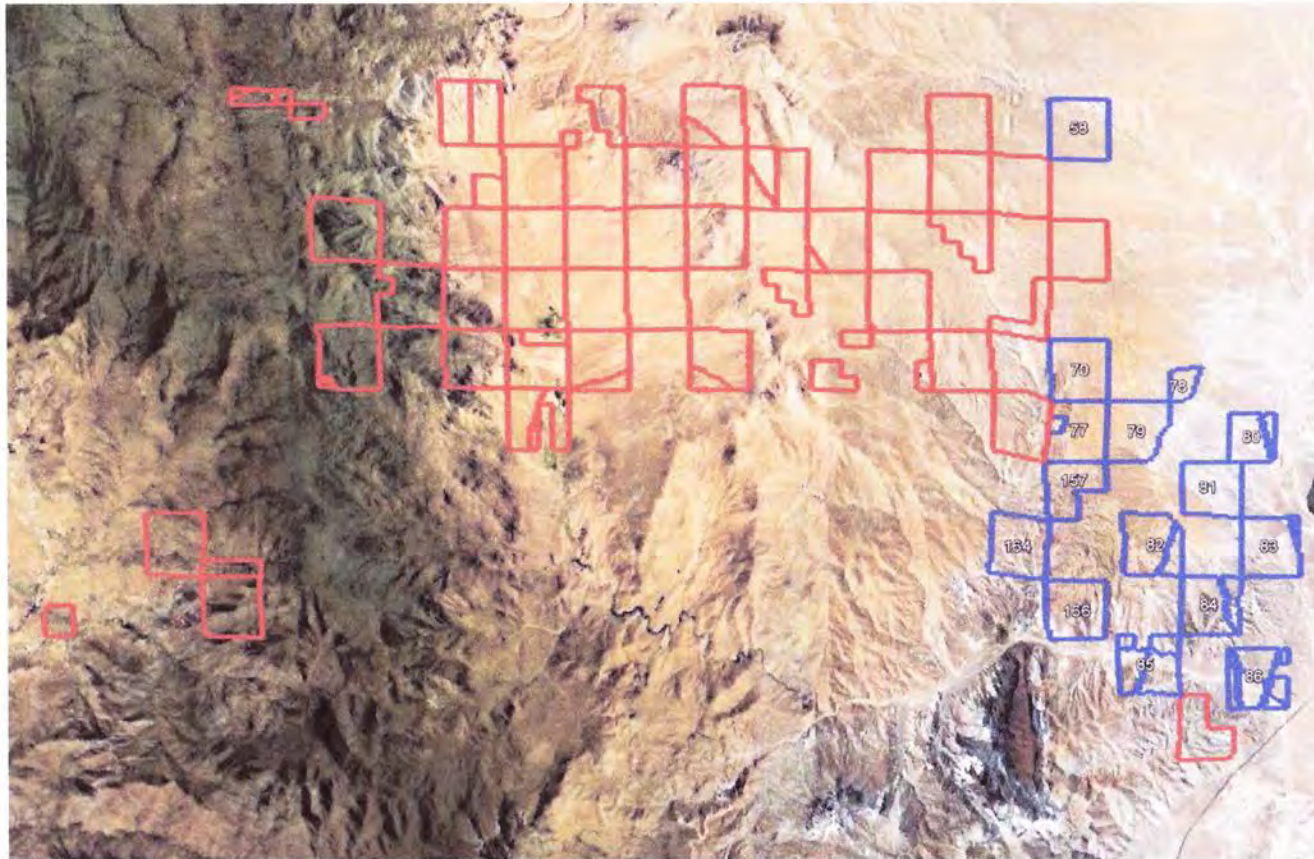
Evaluating impacts associated with a project that involves the transfer of land from one entity to another with no planned changes in land management is limited. Current land use on the northern parcels where fencing along access roads and washes inhibits OHV use appears to benefit individual tortoises and contribute to their persistence in those areas. Southern parcels within the Open Area are exposed to high levels of uninhibited OHV use that results in extensive areas with disturbed vegetation that lowers habitat quality for the desert tortoise or results in direct mortality. These conditions would not change as a result of the project. However, if cattle are no longer raised on the RRG parcels after the acquisition, impacts associated with cattle grazing would not occur resulting in a net benefit to the habitat and desert tortoise. Alternatively, lack of maintenance of the fencing that inhibits access to some parcels would eventually lead to gaps that would allow OHV access to areas that were previously inaccessible. Desert tortoises occurring in these areas would be subjected to detrimental impacts associated with OHV use, including road kill. Obviously, opening of the RRG parcels to widespread OHV use by CDPR in the future would have the same effect.

5.0 REFERENCES

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11

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RRG Onyx Ranch Parcels (only the blue parcels were surveyed for Desert Tortoise)
 (parcel numbers are cross-referenced in Table 1)

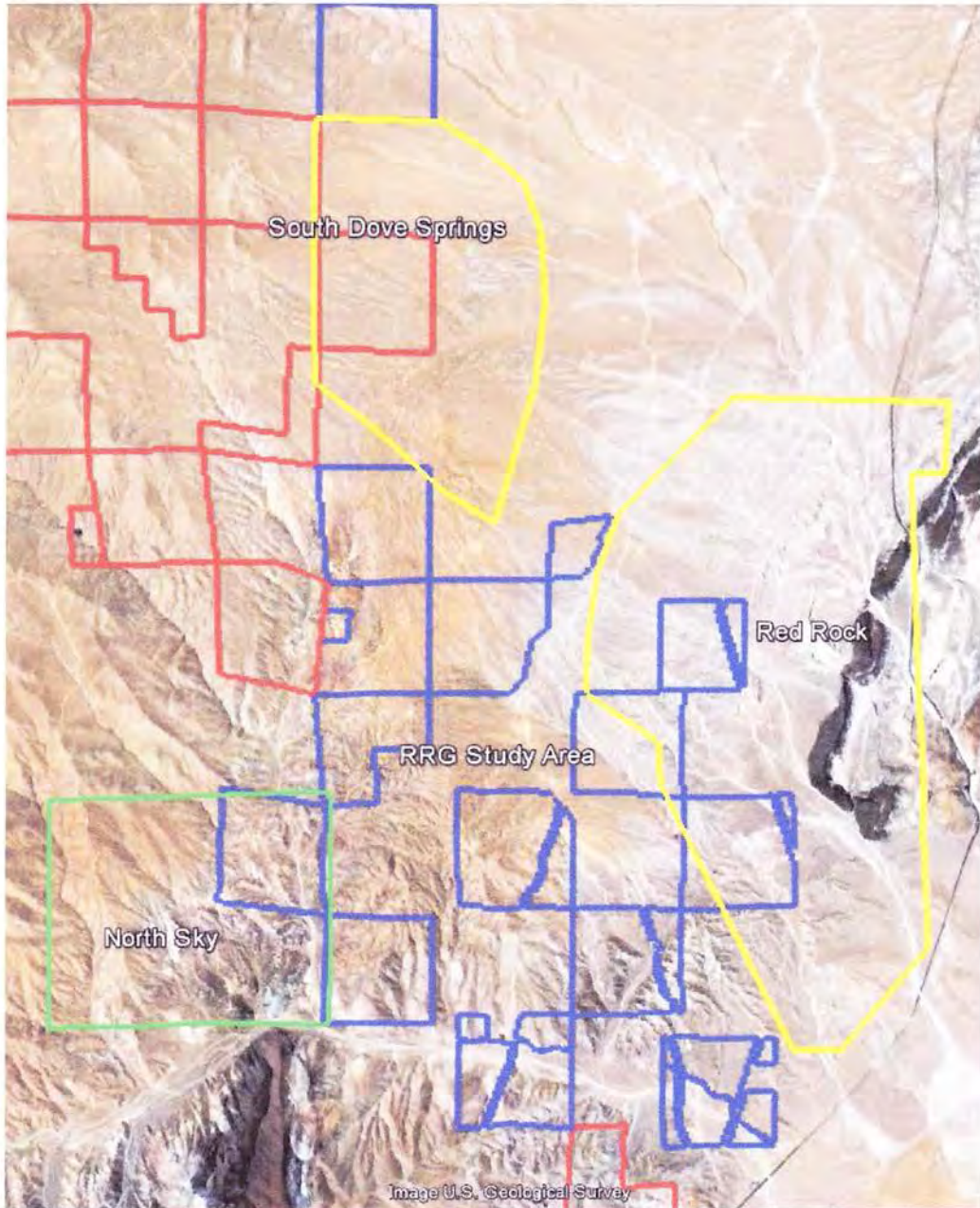
Leatherman BioConsulting, Inc.
 Source Map: Google Earth

Figure 1

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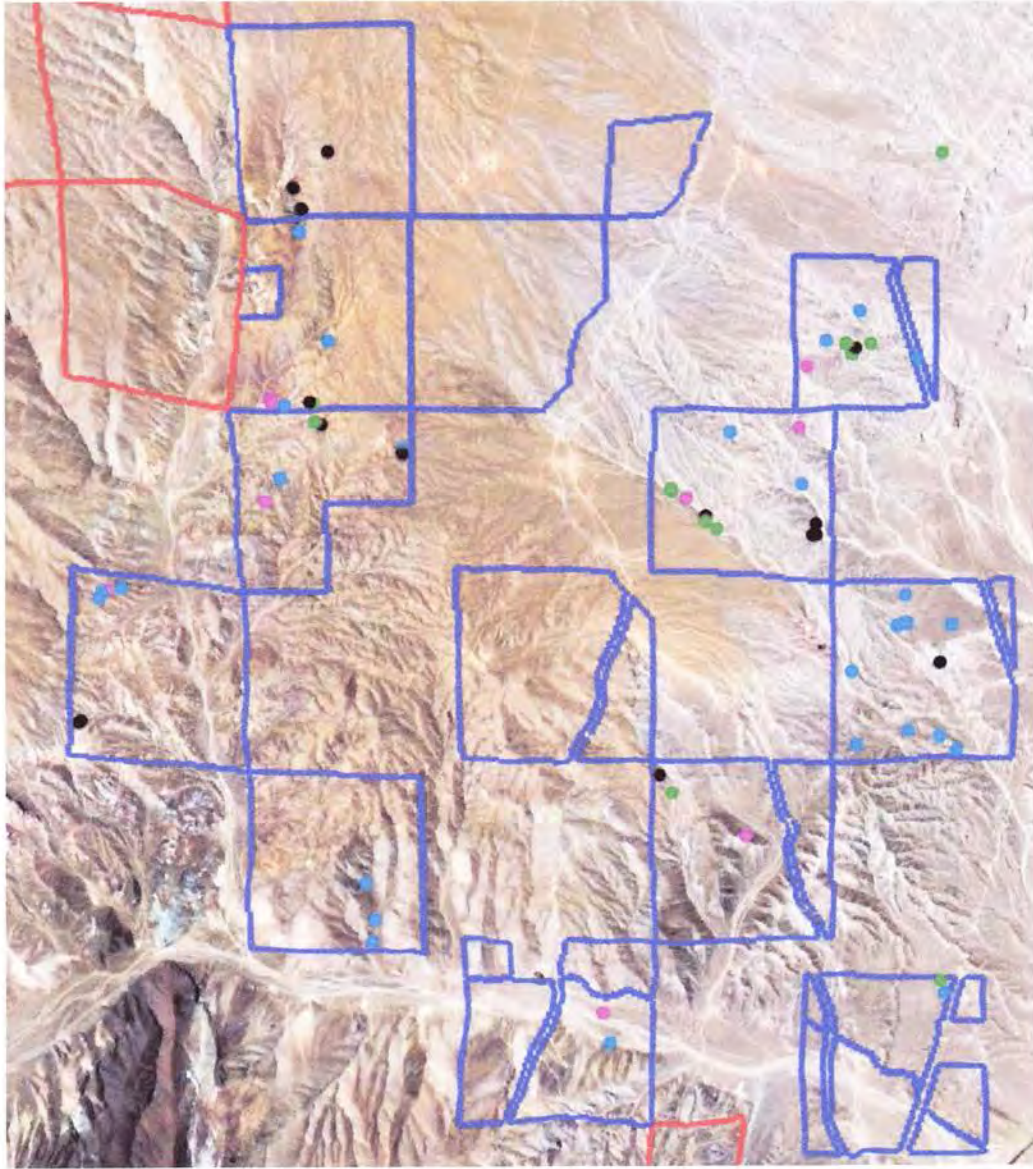
Desert Tortoise Studies in Region
Blue = Onyx Ranch Study Area, Green = Phoenix (2010), Yellow = Keith et. al (2008)

Leatherman BioConsulting, Inc.
Source Map: TOPO!

Figure 2

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Desert Tortoise Sign
Green = Tortoise, Blue = Burrow, Black = Scat, Pink = Carcass

Leatherman BioConsulting, Inc.
Source Map: Google Earth

Figure 3

↑ N

Appendix A. Wildlife Observed or Detected during Desert Tortoise Survey of Renewable Resources Group Property

Non-native species are indicated by an asterisk. Species on CDFG's Special Animals list are indicated by two asterisks. Other species may have been overlooked or inactive/absent because of the season (amphibians are more active during/after rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate etc.), or because of the time of the survey (some species are strictly nocturnal). Taxonomy and nomenclature generally follow Stebbins (2003) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

COMMON NAME	SCIENTIFIC NAME
REPTILES	REPTILIA
Land Tortoises	Testudinidae
** Desert tortoise	<i>Gopherus agassizii</i>
Iguanids	Iguanidae
Desert iguana	<i>Dipsosaurus dorsalis</i>
Spiny Lizards, Horned Lizards, etc.	Phrynosomatidae
Zebra-tailed lizard	<i>Callisaurus draconoides</i>
Desert spiny lizard	<i>Sceloporus magister</i>
Side-blotched lizard	<i>Uta stansburiana</i>
Whiptail Lizards	Teiidae
Western whiptail	<i>Cnemidophorus tigris</i>
Colubrids	Colubridae
Coachwhip	<i>Masticophis flagellum</i>
Gopher snake	<i>Pituophis catenifer</i>
Rattlesnakes	Viperidae
Sidewinder	<i>Crotalus cerastes</i>
Mojave rattlesnake	<i>Crotalus scutulatus</i>
BIRDS	AVES
Vultures	Cathartidae
Turkey vulture	<i>Cathartes aura</i>
Hawks, Eagles and Kites	Accipitridae
** Northern harrier	<i>Circus cyaneus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
** Golden eagle	<i>Aquila chrysaetos</i>
Falcons	Falconidae
American kestrel	<i>Falco sparverius</i>
Grouse	Phasianidae
* Chukar	<i>Alectoris chukar</i>

Appendix A. Wildlife Observed or Detected during Desert Tortoise Survey of Renewable Resources Group Property

Quail California quail	Odontophoridae <i>Callipepla californica</i>
Pidgeons and Doves Mourning dove	Columbidae <i>Zenaida macroura</i>
Cuckoos and Roadrunners Greater roadrunner	Cuculidae <i>Geococcyx californianus</i>
Barn Owls Barn owl	Tytonidae <i>Tyto alba</i>
Owls Burrowing owl	Strigidae <i>Athene cunicularia</i>
Swifts White-throated swift	Apodidae <i>Aeronautes saxatalis</i>
Hummingbirds Costa's hummingbird	Trochilidae <i>Calypte costae</i>
Woodpeckers Northern flicker	Picidae <i>Colaptes auratus</i>
Tyrant Flycatchers Flycatcher Gray flycatcher Say's phoebe Ash-throated flycatcher Cassin's kingbird	Tyrannidae <i>Empidonax</i> sp. <i>Empidonax wrightii</i> <i>Sayornis saya</i> <i>Myiarchus cinerascens</i> <i>Tyrannus vociferans</i>
Shrikes ** Loggerhead shrike	Laniidae <i>Lanius ludovicianus</i>
Jays and Crows Steller's jay Western scrub-jay American crow Common raven	Corvidae <i>Cyanocitta stelleri</i> <i>Aphelocoma californica</i> <i>Corvus brachyrhynchos</i> <i>Corvus corax</i>
Larks ** Horned lark	Alaudidae <i>Eremophila alpestris</i>
Swallows Cliff swallow Barn swallow	Hirundinidae <i>Petrochelidon pyrrhonota</i> <i>Hirundo rustica</i>
Wrens Cactus wren Rock wren	Troglodytidae <i>Campylorhynchus brunneicapillus</i> <i>Salpinctes obsoletus</i>

Appendix A. Wildlife Observed or Detected during Desert Tortoise Survey of Renewable Resources
Group Property

Gnatcatchers

Blue-gray gnatcatcher

Mockingbirds and Thrashers

Northern mockingbird

** Le Conte's thrasher

Silky Flycatchers

Phainopepla

Wood Warblers

Orange-crowned warbler

Nashville Warbler

** Yellow warbler

Yellow-rumped warbler

Townsend's warbler

Wilson's warbler

Tanagers

Western tanager

Towhees and Sparrows

Green-tailed towhee

California towhee

Black-throated sparrow

Sage sparrow

White-crowned sparrow

Golden-crowned sparrow

Dark-eyed junco

Grosbeaks and Buntings

Black-headed grosbeak

Lazuli bunting

Blackbirds and Orioles

Western meadowlark

Finches

House finch

Lesser goldfinch

MAMMALS**Hares and Rabbits**

Desert cottontail

Black-tailed jackrabbit

Squirrels

White-tailed antelope squirrel

Silviidae*Polioptila caerulea***Mimidae***Mimus polyglottis**Toxostoma lecontei***Ptilonotidae***Phainopepla nitens***Parulidae***Vermivora celata**Vermivora ruficapilla**Dendroica petechia**Dendroica coronata**Dendroica townsendi**Wilsonia pusilla***Thraupidae***Piranga ludoviciana***Emberizidae***Pipilo chlorurus**Pipilo crissalis**Amphispiza bilineata**Amphispiza belli**Zonotrichia leucophrys**Zonotrichia atricapilla**Junco hyemalis***Cardinalidae***Phœucticus melanocephalus**Passerina amoena***Icteridae***Sturnella neglecta***Fringillidae***Carpodacus mexicanus**Carduelis psaltria***MAMMALIA****Leporidae***Sylvilagus audubonii**Lepus californicus***Sciuridae***Ammospermophilus leucurus*

Appendix A. Wildlife Observed or Detected during Desert Tortoise Survey of Renewable Resources Group Property

Pocket Gophers

Botta's pocket gopher (burrows)

Pocket Mice and Kangaroo Rats

Kangaroo rat (burrows)

Old World Rats and Mice

Desert woodrat

Dogs, Wolves and Foxes

Coyote (scat, tracks)
Kit fox

Weasels and Allies

** American badger

Deer

Mule deer

Geomyidae

Thomomys bottae

Heteromyidae

Dipodomys sp.

Muridae

Neotoma lepida

Canidae

Canis latrans
Vulpes velox

Mustelidae

Taxidea taxus

Cervidae

Odocoileus hemionus

Appendix B. Desert Tortoise Sign Detected during Renewable Resource Group Survey

Record No.	APN No.	Easting	Northing	Sign Type	Condition*	Comments
B-70-1	153-170-03	0402906	3915290	Burrow	4	Recent use by BUOW; on steep slope
S-70-1	153-170-03	0402920	3915287	Scat	2	Likely this year; in canyon on west half of section
S-70-2	153-170-03	0402843	3915471	Scat	5	Old scat in canyon on west half of section
S-70-3	153-170-03	0403157	3915761	Scat	5	Old scat in blackbush scrub
B-77-1	153-170-04	0402728	3913638	Burrow	4	Located in rock cave possible tortoise scat inside, end visible
B-77-2	153-170-04	0403130	3914181	Burrow	4	Decent turtle shape but back filled and deteriorated, ~0.3m deep, end visible
B-77-3	153-170-04	0402899	3915101	Burrow	2	~ 270 mm wide, < 1m deep, end visible
C-77-1	153-170-04	0402609	3913677	Carcass	1/2	Adult Male; some flesh at hind legs and cloaca area
C-77-2	153-170-04	0402587	3913700	Carcass	3	Adult male; bullet hole (~ .22 cal) in 1st left costal
S-77-1	153-170-04	0402956	3913661	Scat	3	2 more similar scat downslope
T-77-1	153-170-04	0402994	3913645	Tortoise	2	Adult female - MCL ~ 250mm, same individual observed following day (Record No. T-157-1)
B/C-80-2	153-240-16	0407745	3914419	Carcass Burrow	Carcass = 5 Burrow = 2	Female, MCL ~ 220mm; burrow looks like it is from a smaller tortoise
B-80-1	153-240-16	0407448	3914167	Burrow	4	Good tortoise shape at opening but collapsed and backfilled
B-80-3	153-240-16	0408253	3914008	Burrow	3	Good tortoise shape but only 0.3m deep, end visible
S-80-1	153-240-16	0407703	3914099	Scat	2	Near tortoise (T-80-1)
T-80-1	153-240-16	0407674	3914047	Tortoise	1	Adult female, MCL ~ 220cm, active in wash
T-80-2	153-240-16	0407621	3914141	Tortoise	2	Adult male, MCL ~ 260mm; active in wash, left eye slightly damaged
T-80-3	153-240-16	0407628	3914138	Tortoise	1	Juvenile, MCL ~ 60 mm, likely hatched last fall, active in wash
T-80-4	153-240-16	0407841	3914139	Tortoise	1	Young male, MCL ~ 180mm, active in wash
C-80-1	153-340-16	0407277	3913938	Carcass	5	Completely disarticulated, many bones missing, MCL ~ 190mm
B-81-2	181-020-02	0406598	3913382	Burrow	2	In bank of wash, 230mm wide, ~0.4m deep, end visible
B-81-3	181-020-02	0407224	3912924	Burrow	2	In bank of wash, 190 mm wide, end not visible
C-81-1	181-020-02	0407203	3913414	carcass	5	Completely disarticulated; appears to be young adult
C-81-2	181-020-02	0406202	3912808	Carcass	2	Male, MCL ~ 250mm
S-81-1	181-020-02	0407343	3912572	Scat	3	
S-81-2	181-020-02	0407344	3912477	Scat	3	Larger than S-81-1, possibly from different individual
S-81-3	181-020-02	0407314	3912473	Scat	3	
S-81-4	181-020-02	0406368	3912646	Scat	2	Near tortoise (T-81-3)
T/B-81-1	181-020-02	0406071	3912890	Tortoise Burrow	Tortoise = 1 Burrow = 1	Burrow above side of wash, 240mm wide, tortoise completely in burrow, facing outward
T-81-1	181-020-02	0406080	3912866	Tortoise	1	MCL ~ 326cm; active on in wash, same tortoise earlier in burrow (Record No. T/B-81-1)
T-81-2	181-020-02	0406465	3912535	Tortoise	1	MCL ~ 185-190mm; incidental observation of active tortoise
T-81-3	181-020-02	0406369	3912600	Tortoise	1	Same individual as observed incidentally (T-81-2)
B-83-1	181-020-13	0408574	3910561	Burrow	3	Caliche burrow, ~ 0.5m deep, end visible
B-83-10	181-020-13	0408048	3911669	Burrow	2	190mm wide, <1m deep, end visible
B-83-11	181-020-13	0408133	3911939	Burrow	3	230mm wide, end not visible
B-83-2	181-020-13	0407682	3910621	Burrow	3	200mm wide, end visible
B-83-3	181-020-13	0408144	3910736	Burrow	3	180mm wide, ~ 1m deep, end visible, bottom filled with debris

Appendix B. Desert Tortoise Sign Detected during Renewable Resource Group Survey

Record No.	APN No.	Easting	Northing	Sign Type	Condition*	Comments
B-83-4	181-020-13	0408427	3910680	Burrow	3	Caliche burrow, ~ 1.0m deep, end visible
B-83-5	181-020-13	0407648	3911269	Burrow	4	Backfilled, 240 mm wide, end not visible
B-83-6	181-020-13	0408540	3911672	Burrow	4	160mm wide, end visible
B-83-7	181-020-13	0408141	3911689	Burrow	3	180mm wide, backfilled, end not visible
B-83-8	181-020-13	0408137	3911688	Burrow	3	Large accessible burrow under creosote just below ridge, recent BUOW sign
B-83-9	181-020-13	0408125	3911695	Burrow	2	Actually two burrows side by side in wash, one with possible faint tracks
S-83-1	181-020-13	0408433	3911337	Scat	2	
B-85-1	181-080-11	405468	3907979	Burrow	4	Entrance with decent tortoise shape but not maintained, end visible
C-85-1	181-080-11	0405406	3908245	Carcass	2	MCL ~ 175mm; only back half of carapace found, normal color, scutes tight to bone
B-86-1	181-080-30	0408453	3908382	Burrow	4	Edge of drainage; unable to see the back of the burrow
T-86-1	181-080-30	0408421	3903499	Tortoise	1	Active on surface in late afternoon, MCL ~ 210mm
C-84-1	181-080-32	0406699	3909825	Carcass	3/4	Male, MCL ~ 260mm; shell intact completely, but all scutes sloughed.
S-84-1	181-080-32	0405936	3910386	Scat	2	In open on steep slope, this year
T/B-84-1	181-080-32	0406049	3910225	Tortoise Burrow	Tortoise = 1 Burrow = 1	Tortoise MCL ~ 190 to 200mm, completely in burrow facing in. Burrow 210mm wide, on steep slope near base of ravine
B-157-1	444-070-05	0403761	3913247	Burrow	2	300mm wide, 1.5m deep; heavy cattle use in the area
B-157-2	444-070-05	0402679	3913014	Burrow	4	160mm wide, <1m deep, end visible
C-157-1	444-070-05	0402557	3912812	Carcass	2	Front 1/2 of carapace only scutes tightly adhered to bone
S-157-1	444-070-05	0403058	3913466	Scat	5	Very old scat on ridge
S-157-2	444-070-05	0403760	3913207	Scat	3/4	Cluster of scats in this area
T-157-1	444-070-05	0403001	3913494	Tortoise	2	Adult female, MCL ~ 250mm, same individual observed previous day (Record No. T-77-1)
B-164-1	444-070-09	0401062	3912005	Burrow	4	Backfilled but good tortoise shape
B-164-2	444-070-09	0401088	3912054	Burrow	2	250mm wide, end not visible, carcass downslope
B-164-3	444-070-09	0401247	3912090	Burrow	3	180mm wide, <1m deep, end visible
C-164-1	444-070-09	0401128	3912073	Carcass	5	Carcass a male, MCL ~ 210mm
B-166-1	444-090-04	0403381	3908939	Burrow	4	160mm wide, debris at bottom of burrow, end visible
B-166-2	444-090-04	0403417	3909138	Burrow	3	160mm wide, end visible, back of burrow narrows to rodent hole
B-166-3	444-090-04	0403342	3909464	Burrow	3	180mm wide, ~ 0.2m deep, end visible, back of burrow narrows to rodent hole
T-INC-1	Incidental	0408491	3915786	Tortoise	1	Adult male tortoise, turned over with voided contents on plastron, rescued

*Burrows: 1 = currently active, with tortoise or recent sign, 2 = good condition, definitely tortoise but no recent sign, 3 = deteriorated - fair condition, definitely tortoise, 4 = dried, evident bleaching (yellow), loose material, 5 = good condition, possibly tortoise.

Scat: 1 = wet or freshly dried, obvious odor, 2 = dried with glaze and some odor, no bleaching, 3 = dried, no glaze or order, some bleaching, tightly packed, 4 = dried, evident bleaching (yellow), loose material, 5 = dried and bleached, only plant material remains

Carcass: 1 = fresh or putric, 2 = normal color, scutes adhering to bone, 3 = scutes peeling off bone, 4 = shell bones falling apart, 5 = bones disarticulated

Live Tortoise: 1 = healthy, 2 = URTD, 3 = healthy with chewed or damaged marginals, 4 = Ticks

Appendix C. Representative Photographs of Desert Tortoise Sign and Habitat during Renewable Resources Group Survey



Tortoise Record No. T-86-1



Tortoise Record No. T-80-2



Tortoise Record No. T-77-1



Tortoise Record No. T-80-3

Appendix C. Representative Photographs of Desert Tortoise Sign and Habitat during Renewable Resources Group Survey



Tortoise Record No. T-INC-1



Carcass Record No. C-77-2 (note bullet wound in 1st left costal)



Carcass Record No. C-77-1



Carcass Record No. C-85-1 (in Jawbone Cyn OHV Open Area)

Appendix C. Representative Photographs of Desert Tortoise Sign and Habitat during Renewable Resources Group Survey



Habitat along transect in APN 444-070-05



Habitat along transect in APN 181-080-32



Habitat along transect in APN 181-080-30



Habitat along transect in APN 153-150-04

APPENDIX G

**EASTERN KERN COUNTY ACQUISITION BASELINE AVIAN
RESOURCES**

TRA Environmental Sciences, Inc.

**Eastern Kern County Acquisition
Baseline Avian Resources**

January 2013



**State of California
Department of Parks and Recreation
OHMVR Division**

Prepared for:

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**ReNu Resources Property Acquisition
Avian Study Report**

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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

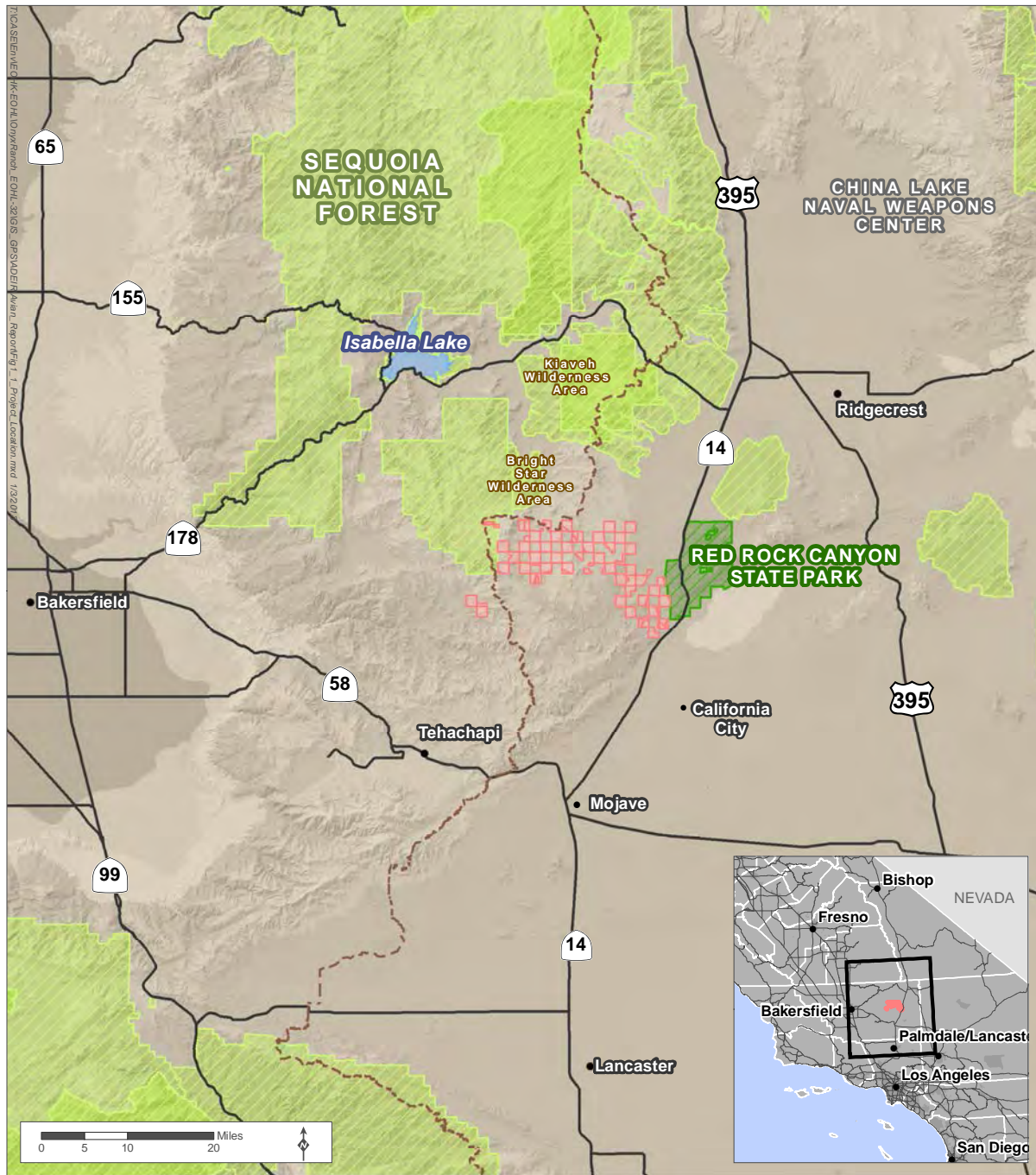
The California Department of Parks and Recreation (CDPR), Off-Highway Motor Vehicle Recreation Division (OHMVR Division) is proposing to acquire 59 privately-owned parcels (approximately 28,300 acres) in Kern County, California, from ReNu Resources, LLC (ReNu); a private company that owns and manages agricultural land in California (Figure 1). The ReNu parcels are largely interspersed with lands owned by the U.S. Bureau of Land Management (BLM), although some parcels are within the Sequoia National Forest or adjacent to private land (Figure 1). Off-highway vehicle (OHV) recreation occurs on many of the ReNu and BLM parcels. From east to west, the lands rise from the high floor of the western Mojave Desert into the southern Sierra Nevada and Piute Mountains. The parcels are within an area frequently referred to as the Onyx or Rudnick Ranch, not to be confused with the areas around the town of Onyx, approximately 20 miles northwest of the project area.

1.2 PROJECT SETTING

Lands designated for acquisition include the following special areas: Butterbredt Springs, an important birding area; lands within the Jawbone Open Area; and lands adjacent to the Dove Springs Open area and Red Rock Canyon State Park (Figure 2). Many parcels support intermittent streams and some are subject to flooding under a 100-year storm event. Nineteen parcels are crossed by existing designated routes for both street legal and non street-legal vehicles.

The majority of these in-holdings are surrounded by BLM lands. Some of these areas are desirable destinations by users of the public lands and have been subject to trespass. Fencing and signage have been installed by the BLM and Friends of Jawbone in these areas to prevent trespass.

The Audubon Society, in cooperation with the private landowner, has established the Butterbredt Springs as a wildlife sanctuary. Acquisition of these parcels would allow public management of Butterbredt Springs for wildlife habitat and compatible uses.



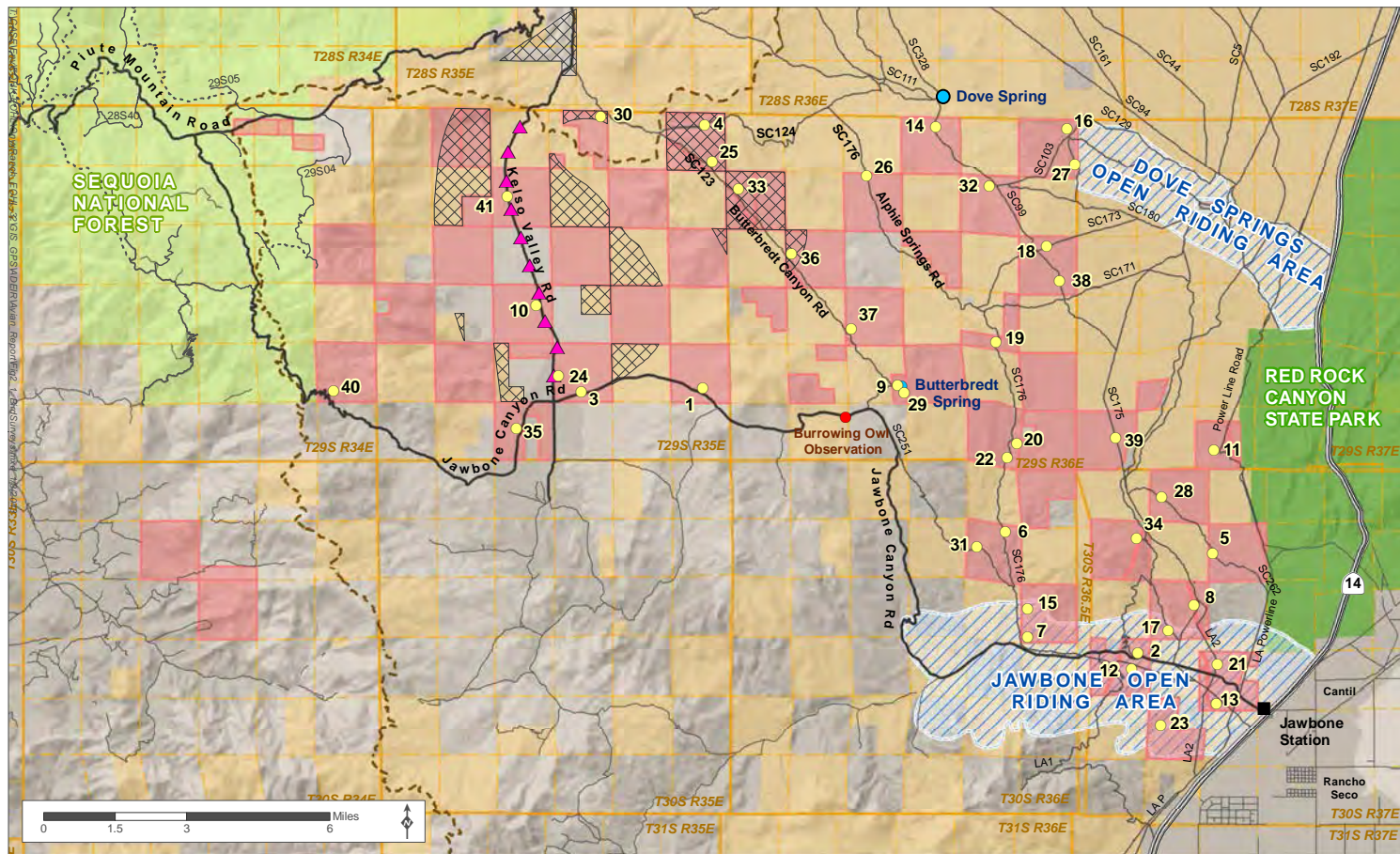
Source: BLM, ESRI, CA State Parks

- Major Roads
- - - Pacific Crest Trail
- Project Parcels
- ▨ US Forest Service
- ▨ California State Parks



Figure 1 Project Location

Eastern Kern County Acquisition - Baseline Avian Resources



Source: Bureau of Land Management, CalTrans, TRA, Kern County, California Department of Recreation

- | | | | |
|----------------------------------------------|------------------------------------|-------------------------------------------|---------------------------------------------------------|
| ● Bird Survey Sample Points | ■ Jawbone Station | — BLM Designated Routes | ■ Project Parcels |
| ▲ Bendire's Thrasher Broadcast Survey Points | == State Route | ⋯ National Forest System Motorized Trails | ■ California State Parks |
| ● Burrowing Owl Observation | — Local Roads | — National Forest System Roads | ■ Bureau of Land Management |
| ▨ Bendire's Thrasher ACEC | — Other Local Roads | | ■ US Forest Service |
| ● Springs | — Pacific Crest Trail (USFS, 2008) | | ■ Other Ownership |
| | | | ■ Public Lands Sections (Labeled by Township and Range) |



Figure 2 Bird Survey Locations

Eastern Kern County Acquisition - Baseline Avian Resources

1.3 PURPOSE OF THIS REPORT

The purpose of this report is to provide baseline information on the bird species present on the ReNu parcels proposed for acquisition to help inform the biological resources impact analysis that will be prepared as part of the California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) for the proposed project. This report provides a summary of the bird species that occur on the ReNu parcels, including relative abundance and distribution of common year-round, winter, and summer resident bird species, as well as migrant species. This report also identifies special-status bird species and nesting raptors that were observed during surveys and that could potentially occur in the study area. This information will be used to inform the preparation of the EIR and could later be used to guide the development of a bird monitoring program and to inform management decisions if the ReNu parcels are acquired by the OHMVR Division.

For this report, special-status species include the following:

- Species listed as threatened or endangered under the Federal Endangered Species Act or the California Endangered Species Act (California Department of Fish and Game, Biogeographic Data Branch 2011) or proposed for such listing;
- Species listed as candidates under the Federal Endangered Species Act or the California Endangered Species Act (California Department of Fish and Game, Biogeographic Data Branch 2011);
- Species listed as sensitive by the BLM (Bureau of Land Management 2010) or the U.S. Forest Service (United States Forest Service 2005);
- Species listed in the Fish and Game Code as a Fully Protected Species (CDFG 2012) or by the California Department of Fish and Game (CDFG) as a California Species of Special Concern (California Department of Fish and Game, Biogeographic Data Branch 2011).

The purpose of this study is to:

- Characterize the distribution and relative abundance of bird species on the ReNu parcels using point count surveys. This was done to document the baseline avian resources present on the acquisition parcels. The survey data were supplemented by extensive recorded observations by ecologists and amateur bird watchers in the area. These surveys were timed to detect overwintering, migrating, and breeding birds.
- Conduct broadcast surveys for Le Conte's thrasher. Le Conte's thrasher occurs in low densities and can therefore be difficult to detect on point count surveys. To increase the likelihood of detection, we conducted broadcast surveys for Le Conte's thrasher at all the point count locations using a recorded playback of a Le Conte's thrasher song to elicit response from nearby Le Conte's thrashers.
- Conduct broadcast surveys for Bendire's thrasher. A small, isolated population of Bendire's thrasher occurs in Kelso Valley (England and Laudenslayer, Jr. 1989) and individuals have infrequently been observed in this area since England and Laudenslayer's surveys in 1986-1987. Because of the importance of this isolated population, the California Desert Conservation Plan has designated a Bendire's thrasher Conservation area in the western portion of the study area (Figure 2). To increase the likelihood of detection, we conducted broadcast surveys for Bendire's thrasher at all the point count locations and along an additional transect through Kelso Valley.

In addition to the above surveys, we conducted reconnaissance-level surveys to document avian uses of the various habitats in the study area. These included searches of

- Focal habitats: cottonwood-willow riparian stands are important stopover oases for migrants crossing the Mojave Desert and habitat for breeding birds. We conducted thorough searches of cottonwood-willow stands, noting all species detected and searching for raptor nests.
- Raptor nests: special status raptor species (e.g., golden eagle, prairie falcon, burrowing owl) nest in low densities throughout the study area. We scanned suitable habitat throughout the day while walking trails and driving along roads, searching for raptors and their nests.

1.4 STUDY BACKGROUND

Butterbredt Spring is a popular destination for birdwatchers, particularly during spring and fall migration, where it is possibly one of the best places to witness spring migration in California (Heindel 2000). Because of its value as an oasis for migrating birds, Butterbredt Spring has been designated as a “Globally Important Bird Area” by the American Bird Conservancy. Over the years, birdwatchers have documented an extensive number of species occurring in the study area, particularly at Butterbredt Springs, along Jawbone Canyon Road, in Kelso Valley, and along other roads in the study area. These observations have been compiled into a bird list for Butterbredt Springs by (Nature Alley 2012) and is included in Appendix A. BUTTERBREDT SPRINGS BIRD SPECIES CHECKLIST Also see A for the scientific names of all bird species discussed in this report.

Other avian studies have taken place in the region in support of proposed wind energy farms located adjacent to the study area, including the North Sky River Wind Energy Project to the west, the Jawbone Wind Energy Project to the south and the Padoma Wind Energy Project to the southwest of the study area (Sapphos Environmental, Inc. 2006, 2010, CH2M Hill 2010). These studied are referenced in Chapter 4.0 Discussion.

2.0 METHODS

2.1 POINT COUNT SURVEYS

We used point counts to characterize the avian community in the study parcels, as this method enabled us to maximize the number of parcels and locations within parcels we were able to survey, given the constraints of time and number of survey technicians. We located survey points in each ReNu parcel with at least one road passing through it (Figure 2). One to two points were placed at least 500 m apart, except for points 9 and 29, which were 341 m apart. Points were also placed at least 150 m from a parcel border, except for five points (which were the following distances from a parcel border: pt 5, 133 m; pt 20, 95 m; pt 26, 95 m, pt 27, 90 m, and pt 29, 113 m). Points were randomly placed in the parcels located in the Jawbone Open Riding Area (within 150 m from a parcel border, except for pt 29). Two survey points were placed in each parcel within the open riding area, as the impacts to birds are expected to be greater in the open riding area. Points were far enough apart to ensure that birds weren't counted twice. Surveyors were careful to monitor raptor movements, as they could occasionally be detected from adjacent points. In such instances, raptors were only counted as occurring at the survey point they were first detected. Parcels that weren't accessible by road were not surveyed for logistical reasons and because 1) it is assumed that there will be no project-related impacts to these parcels from OHV use and 2) that these parcels generally supported bird communities similar to parcels with roads. Thirty of the 59 parcels to be acquired are traversed by at least one road and therefore were surveyed; the remaining 29 parcels were not surveyed. Points were located in all major habitat types, including Joshua tree woodland (9 points), desert wash and terrace (8 points), black brush scrub (7 points), creosote and bur sage scrub (6 points), lower Mojave woody scrub (4 points), wetland and riparian vegetation (4 points), annual grassland (2 points) and upper Mojave woody scrub (1 point).

Forty-one points were placed in the 30 parcels that were surveyed. Nine of the points were located within five of the parcels that are in the Jawbone Canyon Open Area (Figure 2). Points were located within 200 m of roads, to make access to points more efficient, except in the open riding area, which is heavily bisected by roads and trails. Vehicle traffic was very low during the early morning hours when point counts were conducted, so proximity to roads did not impact on our ability to detect birds.

We conducted two rounds of point counts; once between March 4-9, 2012 to detect early season breeding birds and over-wintering birds, and once from May 2 – May 5, 2012 to detect spring migrants and breeding birds. Points 1, 3, 10, 20, 23, 24, 35, 40 and 41 were only surveyed in May due to insufficient time in March. In addition, Points 9 and 29 at Butterbredt Springs were only surveyed in March because our point count methods were not sufficient to count the extremely high number of migrant birds passing through Butterbredt Springs during migration in May. Instead, we conducted informal bird surveys at Butterbredt Springs to document the species present, as the species that occur at Butterbredt Springs is well documented (Nature Alley 2012) (see the Butterbredt Spring bird list, Appendix A). As such, 32 points were surveyed in March, and 39 points were surveyed in May; and 30 of the points were surveyed twice (in March and May) while 11 were surveyed only once (either in March or May only).

Strong winds are common in the study area and conditions were windy throughout the April-May survey period, even in the early morning at sunrise. (There are many wind farms in the Mojave-Tehachapi region immediately surrounding the study area, which is just northeast of the proposed Competitive Renewable Energy Zone 52 - Tehachapi (California Energy Commission 2012)). Strong winds lower the detectability of singing birds due to the noise of the wind,

particularly in areas of dense vegetation. Because of the open nature of the vegetation, however, we were able to reliably detect singing and calling birds, though likely at a lower rate than in calm conditions. To maximize detection rates, we conducted point counts for 10 minutes (rather than for more commonly used, shorter periods) as more birds tend to be detected during longer surveys (Ralph et al. 1995, Savard and Hooper 1995). In addition, we counted birds that were detected before or after the count (e.g., when walking back to the car) if they were not detected during the count.

We report the number of birds and species based on unlimited distance counts and those detected within 100 m of each point (See Appendix B for point count data sheets). Because the density of birds was low in the study area, the unlimited-distance method allowed us to quantify more species, as a primary goal of this study was to characterize the bird community in the study area. We include birds detected as flying over the point in the unlimited distance counts, but do not include “fly-overs” in the summary statistics for birds detected within 100 m of each point. We also report the number of birds and species within 100 m of each point to provide an estimate of relative abundance. We did not calculate density of birds, as reliably estimating density requires reliable estimates of distance to the bird from the point. The windy conditions throughout the April/May survey period limited our ability to accurately estimate distance to birds and may have introduced unknown bias into estimates of distance.

Though most points were > 150 m from a parcel border (five of the 41 points were < 150 m), a small number of the birds detected may have occurred in an adjacent, non-acquisition parcel. We do not distinguish those birds that may have been detected on non-acquisition parcels from those on ReNu parcels because the habitats and conditions were not visibly different between adjacent parcels. A goal of this study was to characterize the bird community of the study area, and bird species detected on non-acquisition parcels are typical of the study area and are expected to occur on adjacent ReNu parcels.

All bird surveys in this report were conducted by TRA Environmental Sciences Biologists Aaron Gabbe and Megan Kalyankar. Point counts were conducted between sunrise and 11:00 a.m. Name of the observer, date, time and weather (temperature, cloud cover and wind speed) were recorded for each point count. The time and species were recorded for each individual bird observed during the point count; although flocks were recorded as one unit and the number of birds was estimated if they were moving too fast to accurately count. Distance to the bird was estimated to where the bird was first detected and all birds that were detected were recorded regardless of distance from the observer. Birds that were detected as flying over the point, rather than on the ground or in the vegetation, were identified as flying-over.

2.2 BROADCAST SURVEYS

Broadcast surveys were conducted for Le Conte’s thrasher at all point count locations in potentially suitable habitat using a protocol modified from Blackman et al. (2011). Broadcast surveys consisted of playing a recorded Le Conte’s thrasher song to elicit response from nearby individuals. Songs were played from an mp3 player broadcast through a RadioShack mini amplifier speaker. All the points were in potentially suitable habitat for Le Conte’s thrasher except for Point 40, which was in a foothill pine forest. The surveys were conducted from March 4-9, to coincide with their breeding season (Sheppard 1996). Le Conte’s thrasher broadcast surveys were conducted immediately after each point count was completed if Le Conte’s thrasher was not detected during the point count. All but three of the broadcast surveys were conducted before noon, and most before 11:00 am. Three were conducted in the afternoon, two of which elicited a response from Le Conte’s thrashers.

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The broadcast survey consisted of 90 seconds broadcast to the north, followed by two minutes of listening and scanning for thrashers, then repeating the same 90 seconds of broadcast to the south followed by two minutes of listening and scanning. If a Le Conte's thrasher was detected at any time during the survey, the broadcasting ceased and distance from observer and number of individuals were recorded.

The same methodology was used for broadcast surveys for Bendire's thrasher, using a Bendire's thrasher song for a playback. Bendire's thrasher surveys were conducted in early May, during their breeding season (England and Laudenslayer, Jr. 1993). In addition to the broadcast surveys conducted at the point count locations, broadcast surveys were conducted for Bendire's thrasher at an additional 10 points, located a half-mile apart along Kelso Valley Road, where it has been found in the past (England and Laudenslayer, Jr. 1989, Sterling 2008) (Figure 2). Six of these points along were located within the ReNu parcels, four on non-acquisition parcels.

2.3 INCIDENTAL SIGHTINGS, SPECIAL-STATUS SPECIES AND NESTING RAPTORS

Each day, after the point counts were completed, the surveyors spent the remainder of the day conducting reconnaissance-level surveys of the study area by slowly driving and walking habitats along the project roads searching for new species, special-status species, and raptor nests. The surveyors scanned for pairs of raptors displaying territorial behavior, nests in trees, cavities and white wash on cliff faces and other signs of raptor nests. The surveyors walked the perimeters of stock ponds and cottonwood-willow riparian areas searching for nests and sensitive species. Any confirmed raptor nests or burrowing owl locations were recorded and GPSed.

Incidental sightings included any new species seen at the points but outside of the point count survey period, new species seen while driving or walking around the study parcels after the morning surveys, and new species by TRA biologists in April while mapping vegetation for this project.

3.0 RESULTS

3.1 POINT COUNT SURVEYS

Forty-one points were surveyed: 32 in March and 39 in May. Seventy-one species were detected during the point count surveys (**Table 1**). Thirty-four species were detected on point count surveys in March (Table 2) and 65 species in May (Table 3). Thirty special-status bird species have the potential to occur in the study area; 15 were detected during the study, either during point counts or incidentally (Table 4).

Based on unlimited-distance point counts, 5.0 species (± 2.4 SD) and 8.9 individuals (± 6.7 SD) were detected per point in March and 7.6 species (± 4.7 SD) and 15.7 individuals (± 14.5 SD) were detected per point in May. As an index of relative abundance, within 100 m of each point, 3.9 species (± 2.7 SD) and 6.9 individuals (± 6.8 SD) were detected per point in March and 5.2 species (± 3.9 SD) and 10.0 individuals (± 10 SD) were detected per point in May.

The greatest number of species and birds detected at a point in March occurred at the two points in Butterbrecht Springs: 9 species and 27 individual birds detected at point 9 and 9 species and 28 individuals at point 29, based on unlimited-distance counts. In May, the greatest number of species and individuals detected occurred at point 40 in oak-pine woodland (22 species, 52 individuals); at points 24 and 10 in Kelso Valley (18 species, 27 individuals at point 24; 14 species, 21 individuals at point 10); at four points in Butterbrecht Canyon northwest of Butterbrecht Springs (point 25: 14 species, 16 individuals; point 36: 13 species, 16 individuals; point 37: 12 species, 17 individuals; and point 33, 12 species, 15 individuals) and in a small canyon just north of Butterbrecht Canyon (point 4: 16 species, 70 individuals); and at a point in Dove Springs Canyon (point 16; 13 species, 34 individuals), based on unlimited-distance counts.

3.2 BROADCAST SURVEYS

Broadcast surveys were conducted at all point count points for Le Conte's thrasher in March (except for point 20, which was surveyed in May. A Le Conte's thrasher was detected during this survey) and Bendire's thrasher in May to increase the probability of detecting these secretive species. Le Conte's thrasher was detected at 12 out of 40 points (30%) where broadcast surveys were conducted. The broadcast surveys substantially increased detection rates of Le Conte's thrasher above passive surveys (e.g., point count surveys and incidental sighting). Only four Le Conte's thrashers were detected through unsolicited observations (i.e., without playbacks): twice during point count surveys, and twice incidentally at survey points outside of the survey period, whereas Le Conte's thrashers were detected at nine points with the broadcast surveys.

Bendire's thrasher was not detected during point count surveys, broadcast surveys, or incidentally.

3.3 INCIDENTAL SIGHTINGS AND RAPTOR NESTS

During the two survey periods in March and May, two biologists spent a combined total of 210 hrs searching for birds in the study area. All roads that travel through a ReNu parcel were driven slowly numerous times, with extensive sections surveyed on foot. In addition to the species detected on point counts, another 48 species were detected incidentally for a total of 119 bird species detected in the project area (Table 1)**Error! Reference source not found..** A pair of adult burrowing owls and a juvenile burrowing owl were seen together on three days between May 1 and May 5 together at a burrow in a road-cut along SC251 (Figure 2) on a BLM parcel close to the border of a ReNu acquisition parcel. No other raptor nests were found, though a great-horned owl was regularly seen at Butterbrecht Springs and is known to nest there.

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Table 1. Species detected in the study area. Species detected on the study area, but not during point counts are identified as being detected incidentally. Point count surveys were conducted in March and May. Species detected in April were detected by project-related biologists conducting botanical surveys. Because their focus was botanical surveys, many species were not detected and/or noted during their time at the study area.

Common name	Latin name	Point count	Incidental only	March	April	May
American White Pelican	<i>Pelecanus erythrorhynchos</i>		X		X	
Great Egret	<i>Ardea alba</i>		X		X	
Green Heron	<i>Butorides virescens</i>		X			X
Cinnamon Teal	<i>Anas cyanoptera</i>		X	X		
Northern Harrier	<i>Circus cyaneus</i>	X		X		
Cooper's Hawk	<i>Accipiter cooperii</i>		X	X		
Swainson's Hawk	<i>Buteo swainsoni</i>		X	X		X
Red-tailed Hawk	<i>Buteo jamaicensis</i>	X		X		X
Rough-legged Hawk	<i>Buteo lagopus</i>		X		X	
Golden Eagle	<i>Aquila chrysaetos</i>		X	X	X	
American Kestrel	<i>Falco sparverius</i>	X		X		X
Prairie Falcon	<i>Falco mexicanus</i>		X		X	
Turkey Vulture	<i>Cathartes aura</i>		X		X	X
Osprey	<i>Pandion haliaetus</i>		X		X	X
Chukar	<i>Alectoris chuakar</i>	X		X	X	X
California Quail	<i>Callipepla californica</i>	X		X	X	X
American Coot	<i>Fulica americana</i>		X	X		
Killdeer	<i>Charadrius vociferus</i>		X	X		X
Spotted Sandpiper	<i>Actitis macularia</i>		X			X
Wilson's Snipe	<i>Gallinago gallinago</i>		X	X		
Band-tailed Pigeon	<i>Patagioenas fasciata</i>		X			X
Mourning Dove	<i>Zenaida macroura</i>	X				X
Greater Roadrunner	<i>Geococcyx californianus</i>	X		X	X	X
Barn Owl	<i>Tyto alba</i>		X	X		
Great-horned Owl	<i>Bubo virginianus</i>	X		X		
Burrowing Owl	<i>Athene cunicularia</i>		X			X
Vaux's Swift	<i>Chaetura vauxi</i>	X				X
White-throated Swift	<i>Aeronautes saxatalis</i>	X				X
Anna's Hummingbird	<i>Calypte anna</i>	X		X	X	X
Costa's Hummingbird	<i>Calypte costae</i>	X				X
Rufous Hummingbird	<i>Selasphorus rufus</i>		X	X		
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	X				X
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	X		X		X
Nuttall's Woodpecker	<i>Picoides nuttalli</i>	X				X
Northern Flicker	<i>Colaptes auratus</i>	X		X		X

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Common name	Latin name	Point count	Incidental only	March	April	May
Olive-sided Flycatcher	<i>Contopus cooperi</i>		X			X
Western wood-pewee	<i>Contopus sordidulus</i>	X				X
Gray Flycatcher	<i>Empidonax wrightii</i>	X				X
Dusky Flycatcher	<i>Empidonax oberholseri</i>	X				X
Western Flycatcher	<i>Empidonax difficilis</i> or <i>E. occidentalis</i>		X		X	X
Black Phoebe	<i>Sayornis nigricans</i>		X		X	X
Say's Phoebe	<i>Sayornis saya</i>	X		X	X	X
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	X				X
Cassin's Kingbird	<i>Tyrannus vociferans</i>		X			X
Western Kingbird	<i>Tyrannus verticalis</i>	X				X
Loggerhead Shrike	<i>Lanius ludovicianus</i>	X		X	X	X
Plumbeous Vireo	<i>Vireo plumbeus</i>		X			X
Cassin's Vireo	<i>Vireo cassinii</i>	X				X
Warbling vireo	<i>Vireo gilvus</i>	X				X
Stellar's Jay	<i>Cyanocitta stellar</i>	X				X
Western Scrub Jay	<i>Aphelocoma californica</i>	X				X
Common Raven	<i>Corvus corax</i>	X		X	X	X
Horned Lark	<i>Eremophila alpestris</i>	X		X	X	X
Tree swallow	<i>Tachycineta bicolor</i>	X				X
Violet-green Swallow	<i>Tachycineta thalassina</i>		X	X		
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		X			X
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>		X	X	X	X
Barn Swallow	<i>Hirundo rustica</i>	X				X
Mountain Chickadee	<i>Poecile gambeli</i>		X			X
Oak Titmouse	<i>Baeolophus inornatus</i>	X				X
Bushtit	<i>Psaltriparus minimus</i>		X	X		
Red-breasted Nuthatch	<i>Sitta canadensis</i>		X			X
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>	X		X	X	X
Rock Wren	<i>Salpinctes obsoletus</i>	X		X	X	X
Bewick's wren	<i>Thryomanes bewickii</i>	X		X	X	X
House Wren	<i>Troglodytes aedon</i>		X			X
Ruby-crowned Kinglet	<i>Regulus calendula</i>	X		X		X
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	X				X
Western Bluebird	<i>Sialia Mexicana</i>		X	X		
Mountain Bluebird	<i>Sialia currucoides</i>	X		X		
Swainson's Thrush	<i>Catharus ustulatus</i>		X			X
Hermit Thrush	<i>Catharus guttatus</i>	X		X		
American Robin	<i>Turdus migratorius</i>		X	X	X	X

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Common name	Latin name	Point count	Incidental only	March	April	May
Wrentit	<i>Chamaea fasciata</i>	X				X
Northern mockingbird	<i>Mimus polyglottos</i>	X				X
Sage Thrasher	<i>Oreoscoptes montanus</i>	X		X		
California Thrasher	<i>Toxostoma redivivum</i>	X				X
Le Conte's Thrasher	<i>Toxostoma lecontei</i>	X		X	X	X
European Starling	<i>Sturnus vulgaris</i>		X	X		X
American Pipit	<i>Anthus rubescens</i>		X			X
Orange-crowned Warbler	<i>Oreothlypis celata</i>	X		X		X
Nashville Warbler	<i>Oreothlypis ruficapilla</i>		X			X
Yellow Warbler	<i>Setophaga petechia</i>		X			X
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>		X		X	
Yellow-rumped Warbler	<i>Setophaga coronata</i>	X		X	X	X
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>		X			X
Townsend's Warbler	<i>Setophaga townsendi</i>	X				X
Hermit Warbler	<i>Setophaga occidentalis</i>	X				X
Hooded Warbler	<i>Setophaga citrine</i>		X			X
Common Yellowthroat	<i>Geothlypis trichas</i>		X			X
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	X				X
Wilson's Warbler	<i>Cardellina pusilla</i>	X				X
Yellow-breasted Chat	<i>Icteria virens</i>		X			X
Green-tailed Towhee	<i>Pipilo chlorurus</i>		X			X
Spotted Towhee	<i>Pipilo maculatus</i>	X		X		X
California Towhee	<i>Melospiza crissalis</i>	X		X		X
Chipping sparrow	<i>Spizella passerina</i>	X				X
Brewer's Sparrow	<i>Spizella breweri</i>	X				X
Lark Sparrow	<i>Chondestes grammacus</i>	X				X
Black-throated Sparrow	<i>Amphispiza bilineata</i>	X				X
Sage Sparrow	<i>Amphispiza belli</i>	X		X	X	X
Fox Sparrow	<i>Passerella iliaca</i>	X		X		
Song Sparrow	<i>Melospiza melodia</i>		X	X		
Lincoln's Sparrow	<i>Melospiza lincolni</i>		X	X		X
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	X		X	X	X
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	X				X
Dark-eyed Junco (Oregon)	<i>Junco hyemalis</i>	X		X		X
Western Tanager	<i>Piranga ludoviciana</i>	X				X
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	X				X
Lazuli Bunting	<i>Passerina amoena</i>	X				X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	X		X		X
Western Meadowlark	<i>Sturnella neglecta</i>	X		X	X	X

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Common name	Latin name	Point count	Incidental only	March	April	May
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>		X	X		
Brown-headed Cowbird	<i>Molothrus ater</i>		X	X		X
Bullock's Oriole	<i>Icterus bullockii</i>	X				X
Scott's Oriole	<i>Icterus parisorum</i>	X				X
Purple Finch	<i>Carpodacus purpureus</i>	X				X
House Finch	<i>Carpodacus mexicanus</i>	X		X	X	X
Lesser Goldfinch	<i>Spinus psaltria</i>	X		X		X

Table 2. Bird species, number of points each species was observed in the March point count surveys and number of individuals detected.

Species	Number of points detected ^a	Number of individuals	Number of points detected (< 100 m)	Number of individuals (< 100 m)
Sage sparrow	23	38	23	38
House finch	15	34	12	29
White-crowned sparrow	14	37	14	36
Le Conte's Thrasher	13 ^b	16 ^b	1	1
Common raven	13	15	7	8
Cactus wren	12	24	6	8
Bewick's wren	9	12	8	11
Loggerhead shrike	8	10	6	8
Western meadowlark	7	9	5	5
Greater roadrunner	7	7	4	4
Sage thrasher	6	6	5	5
California horned lark	5	5	1	1
California quail	4	8	3	7
Ladder-backed woodpecker	3	4	3	4
Yellow-rumped warbler	3	4	2	3
Rock wren	3	4	1	1
Anna's hummingbird	3	3	3	3
Northern flicker	3	3	2	2
Chukar	2	24	2	24
Oregon junco	2	6	2	6
California towhee	2	4	2	4
Spotted towhee	2	2	2	2
Say's phoebe	2	2	1	1
Red-tailed hawk	1	3	0	0
Orange-crowned warbler	1	2	1	2
Black-throated sparrow	1	1	1	1
American kestrel	1	1	1	1
Ruby-crowned kinglet	1	1	1	1
Fox sparrow	1	1	1	1

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Species	Number of points detected ^a	Number of individuals	Number of points detected (< 100 m)	Number of individuals (< 100 m)
Great-horned owl	1	1	1	1
Hermit thrush	1	1	1	1
Mountain bluebird	1	1	1	1
Northern harrier	1	1	0	0
Lesser goldfinch	1	1	0	0
Total		291		220

^a Thirty-two points were surveyed in March.

^b Includes detection from playback survey.

Table 3. Bird species, number of points each species was observed in the March point count surveys and number of individuals detected.

Species	Number of points detected ^a	Number of individuals	Number of points detected (< 100 m)	Number of individuals (< 100 m)
Sage sparrow	31	69	30	62
House finch	21	48	18	23
Common raven	19	31	8	15
Wilson's warbler	16	26	13	18
Cactus wren	13	15	5	6
California horned lark	10	59	3	48
Ash-throated Flycatcher	10	11	6	7
Western meadowlark	9	20	8	15
MacGillivray's warbler	9	9	8	8
Dusky flycatcher	9	9	7	7
Black-headed grosbeak	8	19	5	16
White-crowned sparrow	7	8	7	8
California quail	7	21	7	20
Western tanager	7	21	3	9
Loggerhead shrike	7	7	5	5
Mourning dove	6	7	4	4
Bewick's wren	6	6	6	6
Black-throated sparrow	6	6	6	6
Chukar	5	41	5	41
Rock wren	5	7	3	4
Empid sp.	5	5	2	2
Chipping sparrow	3	13	2	11
Yellow-rumped warbler	3	5	2	3
Townsend's warbler	3	5	1	1
Greater roadrunner	3	3	3	3
Ladder-backed woodpecker	3	3	2	2
Bullock's oriole	3	3	2	2
Le Conte's thrasher	3 ^b	3 ^b	1	1
Northern flicker	3	3	1	1

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Species	Number of points detected ^a	Number of individuals	Number of points detected (< 100 m)	Number of individuals (< 100 m)
Orange-crowned warbler	3	3	1	1
American kestrel	3	3	1	1
Scott's oriole	3	3	1	1
Western kingbird	3	3	1	1
Barn swallow	2	5	0	0
Lark sparrow	2	4	2	3
Brewer's sparrow	2	4	1	3
Red-tailed hawk	2	3	1	2
White-throated swift	2	3	0	0
Spotted towhee	2	2	2	2
California thrasher	2	2	2	2
Scrub jay	2	2	2	2
Costa's hummingbird	2	2	1	1
Hermit warbler	2	2	1	1
Lazuli bunting	2	2	0	0
Northern mockingbird	2	2	0	0
Vaux's swift	1	9	0	0
Acorn woodpecker	1	2	1	1
Tree swallow	1	2	0	0
Oregon junco	1	1	1	1
Say's phoebe	1	1	1	1
Ruby-crowned kinglet	1	1	1	1
Blue-gray gnatcatcher	1	1	1	1
Cassin's vireo	1	1	1	1
Golden-crowned sparrow	1	1	1	1
Gray flycatcher	1	1	1	1
Nuttall's woodpecker	1	1	1	1
Oak titmouse	1	1	1	1
Purple finch	1	1	1	1
Stellar's jay	1	1	1	1
Warbling vireo	1	1	1	1
Anna's hummingbird	1	1	0	0
California towhee	1	1	0	0
Lesser goldfinch	1	1	0	0
Red-winged blackbird	1	1	0	0
Western wood-pewee	1	1	0	0
Wrentit	1	1	0	0
Total		560		388

^a Thirty-nine points were surveyed in May.

^b Includes detection from playback survey.

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Table 4. Special-status bird species known to occur or likely to occur in the study area.

Common Name	Latin name	Listing status	Breeding in study area	Detected during this study
American White Pelican	<i>Pelecanus erythrorhynchos</i>	CSSC	No	Yes
Northern Harrier	<i>Circus cyaneus</i>	CSSC	No	Yes
Cooper's Hawk	<i>Accipiter cooperii</i>	WL	Yes	Yes
Swainson's Hawk	<i>Buteo swainsoni</i>	ST, USFS S	No	Yes
Ferruginous Hawk	<i>Buteo regalis</i>	USFS S, WL	No	No
Golden Eagle	<i>Aquila chrysaetos</i>	CFP	Yes	Yes
Bald Eagle	<i>Haliaeetus leucocephalus</i>	CFP	No	No
Merlin	<i>Falco columbarius</i>	WL	No	No
Prairie Falcon	<i>Falco mexicanus</i>	WL	Yes	Yes
Peregrine Falcon	<i>Falco peregrines</i>	USFS S, CFP	No	No
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	SE, USFS S	No	No
Long-eared Owl	<i>Asio otus</i>	CSSC	Yes	No
Burrowing Owl	<i>Athene cunicularia</i>	BLM S, CSSC	Yes	Yes
Vaux's Swift	<i>Chaetura vauxi</i>	CSSC	No	Yes
Black Swift	<i>Cypseloides niger</i>	CSSC	No	No
Olive-sided Flycatcher	<i>Contopus cooperi</i>	CSSC	No	Yes
Willow Flycatcher	<i>Empidonax traillii</i>	USFS S	No	No
Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	CSSC	No	No
Loggerhead Shrike	<i>Lanius ludovicianus</i>	CSSC	Yes	Yes
Horned Lark	<i>Eremophila alpestris actia</i>	WL	Yes	Yes
Purple Martin	<i>Progne subis</i>	CSSC	No	No
Bendire's Thrasher	<i>Toxostoma bendirei</i>	BLM S, CSSC	Yes	No
Yellow Warbler	<i>Dedroica petechia</i>	CSSC	No	Yes
Yellow-breasted Chat	<i>Icteria virens</i>	CSSC	No	Yes
Summer Tanager	<i>Piranga rubra</i>	CSSC	No	No
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	CSSC	No	No
Tricolored Blackbird	<i>Agelaius tricolor</i>	BLM S, USFS S, CSSC	No	No

BLM S= Listed as Sensitive Species by Bureau of Land Management

USFS S= Listed as Sensitive Species by US Forest Service

SE= Listed as endangered under the California Endangered Species Act.

ST= Listed as threatened under the California Endangered Species Act.

CSSC= Species of Special Concern designated by California Department of Fish and Game

CFP= Fully Protected Species under the Fish and Game Code of California

WL= On the California Department of Fish and Game Watch List.

4.0 DISCUSSION

4.1 POINT COUNT SURVEYS

More species and individual birds were seen per point during surveys in May than in March. Although seven more points were surveyed in May than in March, the variations in number of species, species composition, and relative abundance between the March and May surveys were largely due to the presence of migrants in May, the departure of over-winter residents prior to the May surveys, and the arrival of spring-summer residents.

The number of points surveyed and differences in the locations of those surveyed only in March and May contributed to the variation in the species detected. Seven more points were surveyed in May than in March, though it is unlikely that this difference attributed to the greater number of species and individuals detected per point. The two points at Butterbredt Springs were surveyed in March only and had the highest number of species and individual birds detected of any point in March. It is likely that species were missed from point count surveys by not surveying the two points at Butterbredt Springs in May. We spent an extensive amount of time informally surveying for birds at Butterbredt Springs in May, however, and any observations of species not detected on point counts are denoted as incidental observations in Table 1. Alternatively, points in Kelso Valley (3, 10, 24, 35, 41) and in the adjacent mountains (point 40) were only surveyed in May. A different suite of habitats occur within Kelso Valley than at the points to the east in the study area (and generally at lower elevations), including montane meadow, a stock pond, juniper woodland, and stands of cottonwood and willow. This diversity of habitats attributed to the relatively high diversity of species found in Kelso Valley. Point 40 was located in oak-pine woodland. The species detected at this point were typical of oak-pine woodland, many of which were only detected at this location in the study area, including purple finch, Stellar's jay, wrenit, and acorn woodpecker.

The study area appears to be an important migratory corridor for songbirds, as hundreds to thousands of birds were seen passing though Butterbredt Spring during the spring migration in early May, passing west-northwestward up through the canyons such as Dove Spring Canyon and Jawbone Canyon, and throughout the desert away from the typical migratory hotspots and corridors such as the cottonwood-willow riparian habitats and canyons, respectively. Notable observations of migration include a large flock of approximately 500 horned lark seen in the montane meadows of Kelso Valley near point 35 on May 5; hundreds of tree swallows flying northwestward up Dove Springs Canyon near point 16 (and throughout the study area) on March 6; and thousands (estimate of 1000-2000+) of migrant passerines passing through Butterbredt Springs on the morning of May 1.

The number of bird species detected during point counts and during informal surveys conducted after the point counts is just a fraction of the bird species known to occur in the study area (Heindel 2000, Nature Alley 2012), as the surveys were conducted during a small period of time in the spring by two people. The Butterbredt Springs – Jawbone Canyon area is a popular destination for birdwatchers and an extensive list of species detected in the area has been compiled based on the observations of ornithologists and birdwatchers (Appendix B) (Nature Alley 2012).

4.2 BROADCAST SURVEYS

Le Conte's thrasher is widespread at low density throughout the study area (except in Kelso Valley and the oak-pine woodland in the western portion of the study area) including in the Jawbone Canyon Open Area (detected at 4 of 8 of the points in the open riding area). This

indicates that it is somewhat tolerant to OHV-related disturbance, perhaps because it breeds in late winter-early spring (Sheppard 1996), before the peak OHV season at the study area.

Although Bendire's thrasher was not detected during the point count or broadcast surveys, it has been observed periodically in small numbers at Butterbred Springs and in the Kelso Valley. In 1986 and 1987, England and Laudenslayer extensively surveyed for Bendire's thrasher throughout California's Mojave and Colorado Deserts (England and Laudenslayer, Jr. 1989). England and Laudenslayer also conducted a literature review that revealed three records of Bendire's thrasher in the western Mojave Desert – two individuals seen in early April that were likely migrants, and one singing male in mid-June in the Kelso Valley. During their surveys, they detected one individual in the upper Butterbred Canyon, one ridge east of Kelso Valley. Rick Saval independently located a Bendire's thrasher nest in the Kelso Valley in 1987 (England and Laudenslayer, Jr. 1989). Since the 1986-1987 study, follow-up surveys and incidental observations have periodically detected Bendire's thrasher in the Kelso Valley and Butterbred Springs.

4.3 SPECIAL-STATUS SPECIES AND NESTING RAPTORS

Of the special-species with the potential to occur in the study area (Table 4), 15 were detected, either during point counts or incidentally during our time at the study area. Of these the special-status species, Cooper's hawk, golden eagle, prairie falcon, long-eared owl, Costa's hummingbird, loggerhead shrike, horned lark, Bendire's thrasher, and Le Conte's thrasher are known to breed in the study area (Nature Alley 2012). A pair of burrowing owls and at least one juvenile burrowing owl was observed near Jawbone Canyon Road between Butterbred Springs and the Jawbone Canyon Open Area, indicating that burrowing owl also breeds in the study area. Other raptors (not special-status) known to breed in the study area that were observed during this study include red-tailed hawk, American kestrel, and great-horned owl. A pair of red-tailed hawks was observed at point 20 behaving territorially and was likely nesting in the study area. Avian studies conducted for nearby wind energy projects found Cooper's hawk, red-tailed hawk, golden eagle, American kestrel, and prairie falcon nests on or near the ReNu parcels (Sapphos Environmental, Inc. 2006, 2010, CH2M Hill 2010). Many of the special-status bird species detected at the study area were passing through the area on migration, including American white pelican, Vaux's swift, olive-sided flycatcher, yellow warbler, and yellow-breasted chat.

4.4 PROJECT IMPACTS

Direct Mortality

The most direct impact of OHV use to birds is death or injury from vehicle collisions. OHV use may also cause direct mortality by impacting shrubs supporting nests or crushing burrows (e.g, those used by burrowing owls) (Ouren et al. 2007). These impacts are likely greater in the spring and early summer during the nesting season and when OHV use is the highest and the spring migration is occurring. Impacts to burrowing owls through the crushing of burrows can happen year-round, however, as use of burrows by burrowing owls is not limited to the nesting season.

Another possible cause of direct mortality is birds getting trapped in open top vertical pipes on restrooms or other facilities. Any open top vertical pipe can be a death trap to birds and other wildlife, and the remains of birds and other wildlife have been found in open top pipes in other areas. As an example, in 2009 a fallen irrigation sand pipe 6 inches in diameter and 10 feet tall located adjacent to the Kern River Preserve on California Department of Fish and Game Land contained the remains of over 200 birds. In all, forty-five species of birds (and several species of lizards and small mammals) have been found trapped in open-topped pipes in California (Audubon California and Southern Sierra Research Station 2012).

Noise and other Disturbances

OHV traffic is a source of noise and other stimuli that creates disturbance for birds. Traffic noise can lead to significant reductions in breeding bird densities (Reijnen et al. 1995, 1997) and nesting in close proximity to OHV trails can cause an increase in nest abandonment and desertion rates in songbirds and lower abundance of some species adjacent to trails used by OHV (Barton and Holmes 2007). Traffic noise may play a role in altering bird communities by interfering with bird communication during the incubation and fledgling phases (Forman and Deblinger 2000).

Shooting fire arms or discharging fireworks is another source of noise and disturbance for birds. According to Ouren et al. (2007), studies have shown that birds and other wildlife experience accelerated heart rates and metabolic function during disturbance events, which may include OHV use, gunshots and fireworks. During the avian surveys, numerous shells from fire arms were observed and two campers was observed discharging fireworks.

Use of the ReNu parcels by recreationists could provide a food source (e.g., trash) to opportunistic predators such as ravens and coyotes, potentially increasing populations of these species, which could in-turn increase predation rates of the contents of nests (i.e., eggs, nestlings, incubating/brooding adults) and predation of birds off the nest. For example, ravens increased in the Mojave Desert by 1,500 percent between 1968 and 1988 as a result of human activities (Boarman and Berry 1995). Ravens proliferate near garbage dumps, sewage ponds, agricultural areas, and along roads, all of which provide unnaturally abundant food, water, perches, and nest sites (UC Davis Wildlife Health Center 2007).

Habitat Damage

An important characteristic of habitat for birds is the composition and physical structure of vegetation (e.g., height and density of vegetative cover). OHV and other visitor-uses that are restricted to roads and existing trails have limited direct impacts to vegetation; however, OHV in open riding area impacts vegetation cover and illegal use of closed trails and going off designated routes also impacts vegetation. For example, several studies found that OHV use resulted in reduced vegetative cover, that non-native annual grasses were more common in areas with OHV use, and that native annual plants were less common or absent from OHV use areas (Adams et al. 1982, Prose et al. 1987, Bolling and Walker 2000). Also, use of the trail/road system provides access to otherwise remote sensitive habitats such as cottonwood-willow riparian areas, which may see increased use by recreationists. Some of these sensitive areas are fenced off, which prevents access by OHV, but not necessarily foot-traffic, while others are not.

Fragmentation can isolate habitat patches from each other and create edge effects. Negative effects of fragmentation and edge effects include the creation of barriers to dispersal, increases in native and non-native predators, and potential increases in nest parasitism by brown-headed cowbird (CalPIF (California Partners in Flight) 2009). At the study area, existing roads fragment habitat, though birds are unlikely to be isolated in the fragments as they are separated by relatively narrow roads (e.g., rather than extensive tracts of urbanization) and birds regularly fly across roads. However, bird species may still be subject to increased predation or nest parasitism, and may be vulnerable to collisions with vehicles, as discussed previously. Edge effects on bird communities are generally most intense at the interface between development and agriculture and natural habitat. Because the project does not alter (or convert) a substantial amount of habitat to human uses, new edge effects caused by the project are expected to be minimal.

The spread of many exotic plant species is facilitated by access provided by roads (Brooks and Lair 2005) and through provision of livestock feed (Esque and Schwalbe 2002). OHV use can

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disturb desert soils, damaging their microbiotic crusts, making them more susceptible to invasion by exotic species (Wilson et al. 2002). Invasive plant species can increase wildfire frequency and intensity in desert habitats (Esque and Schwalbe 2002). Wildfire destroys nesting habitat for birds and rare habitats such as cottonwood-willow riparian can be destroyed by wildfire, thereby substantially impacting important habitat for birds and other wildlife.

Livestock grazing has been documented to degrade other shrubland habitat (i.e. coastal scrub) by preventing the growth of young shrubs, opening up the shrub canopy to invasion by exotic annuals, and reducing the ability of native forbs and grasses to compete with exotics (CalPIF (California Partners in Flight) 2009). Such effects can alter vegetation structure and composition, which may impact bird populations.

In addition, OHV users and other recreationists may increase the risk of wildfire through campfires, fireworks or engine idling over dry vegetation. Non-native annual grasses may also build up fuel loads and increase the risk of wildfire (CalPIF (California Partners in Flight) 2009). Wildfire alters habitat for birds. For example, one study showed that most native desert shrubs are poorly adapted to wildfire and failed to regenerate after fire; creosote bush (*Larrea tridentata*), burro-bush (*Ambrosia dumosa*) and pricklypear (*Opuntia* spp.) shrubs were replaced by open stands of brittle bush (*Encelia farinosa*), native ephemerals and non-native annual grasses (Brown and Minnich 1986).

Nesting Special-status Birds. Burrowing owls are particularly vulnerable to off-highway vehicle use as burrows may be crushed by vehicles. Other ground nesting birds in the area, such as California horned lark, are also more vulnerable as nests could be run over.

Species that nest in shrubs, such as loggerhead shrike, Bendire's thrasher and Le Conte's thrasher, may be more vulnerable to the direct impacts of OHV use (e.g., collisions of OHV into nests) than species that nest at greater heights in trees (i.e., Cooper's hawk, Nuttall's woodpecker). Individuals of these species could potentially be impacted by noise and other disturbance created by OHV-use should any of these species nest close roads.

Migrating and Over-wintering Special-status Birds. Migrating and over-wintering special-status birds are less impacted by OHV use and other impacts because they are in the area for a short time (migratory species), do not nest in the area and/or are in the area during the time of year when there is less OHV use and other recreational activity (wintering species). While these species may still be subjected to some of the impacts of OHV use, such as vehicle collision or habitat damage, such impacts are generally considered less than significant for the reasons discussed above.

4.5 RECOMMENDATIONS

Although acquisition of the ReNu parcels by OHMVR Division is unlikely to result in any new impacts to bird species on the parcels, the following recommendations will help to protect the resident bird community, special-status bird species, and nesting raptors:

1. To prevent habitat damage and avian mortality from illegal OHV trail use:
 - Work with Friends of Jawbone to identify illegal trails that should be closed;
 - Close illegal trails with fencing;
 - Post signs to keep OHV users off of illegal trails; and

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- Educate OHV users and other recreationists about the presence of special-status and nesting birds via interpretive signs and/or brochures, particularly burrowing owls and other ground nesting species.
2. To prevent damage to sensitive habitats that support nesting and migrating birds from recreational users and grazing livestock:
 - Fence off sensitive habitat areas such as cottonwood riparian or springs;
 - Place signs to indicate environmentally sensitive areas.
 3. To minimize avian mortality from collisions with vehicles:
 - Post speed limits on roads open to street legal vehicles only.
 4. To prevent attracting opportunistic predators such as ravens and coyotes:
 - Provide lidded trash bins in camping areas;
 - Post signs reminding recreationists throw trash in the bins or pack it out with them.
 5. To prevent avian mortality from open top vertical pipes:
 - Remove any pipes that can be removed;
 - Cap pipes with a concrete plug or fill them with sand, gravel or concrete if they can't be removed; and
 - Cover rooftop plumbing and heating vents with ½" galvanized hardware cloth held in place by stainless steel pipe clamps or commercially available vented caps.
 6. To prevent habitat damage due to grazing:
 - Manage grazing leases to ensure that the area is not over-grazed; and
 - Use fencing to keep cattle out of environmentally sensitive areas.
 7. Monitor the condition of cottonwood-willow riparian habitats to assess the effectiveness of protective measures (e.g., fencing).
 8. Develop a monitoring program to assess the status of Bendire's thrasher in Kelso Valley.

5.0 REPORT PREPARATION AND REFERENCES

5.1 REPORT PREPARATION

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5.2 REFERENCES

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APPENDIX A. BUTTERBREDT SPRINGS BIRD SPECIES CHECKLIST

Checklist downloaded from: <http://www.natureali.org/checklists/butterbredtbirdchecklist.htm>

Species	Spring	Summer	Fall	Winter	Nesting
Wood Duck	•				
Mallard	•				
Blue-winged Teal	•				
Cinnamon Teal	•	•			
Bufflehead					
Mountain Quail	•	•			x
California Quail	•	•	•	•	x
Chukar	•	•	•		x
Eared Grebe					
Double-crested Cormorant					
American White Pelican					
American Bittern		•			
Great Blue Heron	•				
Great Egret	•				
Snowy Egret	•				
Cattle Egret	•				
Green Heron	•	•			
Black-crowned Night-Heron	•				
White-faced Ibis	•				
Turkey Vulture	•	•			
Osprey	•				
Bald Eagle			•		
Northern Harrier	•			•	
Sharp-shinned Hawk	•		•		
Cooper's Hawk	•		•		x
Zone-tailed Hawk	•				
Red-tailed Hawk	•	•	•	•	x
Red-shouldered Hawk					
Swainson's Hawk					
Broad-winged Hawk					
Rough-legged Hawk	•				
Golden Eagle	•	•	•	•	x
American Kestrel	•	•			x
Merlin	•		•		
Peregrine Falcon	•	•			
Prairie Falcon	•				x
Virginia Rail	•	•			

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Appendix A. Butterbred Springs Bird Species Checklist

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Species	Spring	Summer	Fall	Winter	Nesting
Sora	•				
American Coot				•	
Killdeer	•				
Spotted Sandpiper	•				
Solitary Sandpiper	•				
Greater Yellowlegs	•				
Lesser Yellowlegs					
Western Sandpiper	•				
Least Sandpiper	•				
Long-billed Dowitcher	•				
Wilson's Snipe	•				
Wilson's Phalarope	•				
Red-necked Phalarope					
California Gull	•				
Ring-billed Gull				•	
Rock Pigeon	•				
Band-tailed Pigeon	•	•			
Eurasian Collared-Dove	•	•			
Spotted Dove		•			
White-winged Dove	•				
Mourning Dove	•	•	•		x
Common Ground-Dove	•				
Yellow-billed Cuckoo		•			
Greater Roadrunner	•	•	•		x
Barn Owl	•	•	•		
Flammulated Owl	•				
Great Horned Owl	•	•	•	•	x
Northern Pygmy-Owl		•	•		
Long-eared Owl	•	•			x
Northern Saw-whet Owl	•				
Burrowing Owl	•				
Common Poorwill	•	•			x
Lesser Nighthawk					
Common Nighthawk					
Black Swift	•				
Vaux's Swift	•				
White-throated Swift	•	•	•		x
Black-chinned Hummingbird	•	•	•		
Anna's Hummingbird	•	•	•		x
Costa's Hummingbird	•	•			x
Rufous Hummingbird	•		•		

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Appendix A. Butterbredt Springs Bird Species Checklist

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Species	Spring	Summer	Fall	Winter	Nesting
Calliope Hummingbird	•				
Belted Kingfisher	•				
Acorn Woodpecker	•	•	•		
Williamson's Sapsucker			•		
Yellow-bellied Sapsucker			•		
Red-naped Sapsucker	•		•		
Red-breasted Sapsucker	•				
Ladder-backed Woodpecker	•	•	•	•	x
Nuttall's Woodpecker	•	•	•		x
Downy Woodpecker	•	•	•		
Hairy Woodpecker	•				
Northern Flicker	•	•	•		x
White-headed Woodpecker					
Olive-sided Flycatcher	•	•			
Western Wood-Pewee	•	•	•		
Alder Flycatcher	•				
Willow Flycatcher	•	•	•		
Hammond's Flycatcher	•	•	•		
Gray Flycatcher	•	•			
Dusky Flycatcher	•	•			
Pacific-slope Flycatcher	•	•	•		
Black Phoebe	•	•	•		x
Say's Phoebe	•	•			x
Vermilion Flycatcher	•				
Ash-throated Flycatcher	•	•	•		x
Brown-crested Flycatcher	•				?
Cassin's Kingbird	•				
Western Kingbird	•	•	•		x
Scissor-tailed Flycatcher	•				
Loggerhead Shrike	•	•	•		x
White-eyed Vireo	•				
Bell's Vireo	•				?
Yellow-throated Vireo	•	•			
Plumbeous Vireo	•				
Cassin's Vireo	•	•	•		
Blue-headed Vireo	•				
Hutton's Vireo	•				
Warbling Vireo	•	•	•		
Red-eyed Vireo	•	•			
Philadelphia Vireo					
Pinyon Jay	•	•	•	•	

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Appendix A. Butterbred Springs Bird Species Checklist

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Species	Spring	Summer	Fall	Winter	Nesting
Western Scrub-Jay	•		•		
American Crow	•		•		
Common Raven	•	•	•		x
Stellar's Jay					
Clark's Nutcracker	•		•		
Horned Lark	•	•			
Purple Martin					
Northern Rough-winged Swallow	•				
Tree Swallow	•				
Violet-green Swallow	•				
Bank Swallow	•				
Barn Swallow	•	•	•		
Cliff Swallow	•	•			
Mountain Chickadee	•				
Oak Titmouse			•		x
Verdin	•		•		
Bushtit	•	•			x
Red-breasted Nuthatch	•	•	•		
White-breasted Nuthatch					
Brown Creeper					
Cactus Wren	•	•	•	•	x
Rock Wren	•	•	•	•	x
Canyon Wren			•		
Bewick's Wren	•	•	•	•	x
House Wren	•	•	•		x
Pacific Wren		•			
Marsh Wren	•		•		
Blue-gray Gnatcatcher	•	•	•		x
Black-tailed Gnatcatcher	•				
Golden-crowned Kinglet					
Ruby-crowned Kinglet	•	•	•	•	
Mountain Bluebird	•				
Western Bluebird	•				
Townsend's Solitaire	•		•		
Swainson's Thrush	•	•			
Hermit Thrush	•	•	•		
American Robin	•	•	•		
Varied Thrush	•	•		•	
Gray Catbird	•	•			
Northern Mockingbird	•	•	•		x

ReNu Property Acquisition - Avian Study Report

TRA Environmental Sciences

Appendix A. Butterbredt Springs Bird Species Checklist

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Species	Spring	Summer	Fall	Winter	Nesting
Sage Thrasher	•				
Bendire's Thrasher	•	•			x
California Thrasher	•	•	•		x
Le Conte's Thrasher	•	•	•		x
European Starling	•	•			x
American Pipit			•		
Cedar Waxwing	•	•			
Phainopepla	•	•	•		x
Ovenbird	•	•	•		
Worm-eating Warbler	•	•			
Northern Waterthrush	•	•			
Golden-winged Warbler	•				
Blue-winged Warbler	•	•			
Black-and-white Warbler	•	•			
Prothonotary Warbler					
Tennessee Warbler	•	•			
Orange-crowned Warbler	•	•	•		
Nashville Warbler	•	•	•		
Connecticut Warbler		•			
MacGillivray's Warbler	•	•	•		
Mourning Warbler	•				
Kentucky Warbler	•	•			
Common Yellowthroat	•	•	•		x
Hooded Warbler	•	•			
American Redstart	•	•	•		
Northern Parula	•	•			
Magnolia Warbler	•	•			
Bay-breasted Warbler	•				
Blackburnian Warbler	•	•			
Yellow Warbler	•	•	•		
Chestnut-sided Warbler	•	•			
Blackpoll Warbler	•				
Black-throated Blue Warbler	•	•			
Palm Warbler	•				
Yellow-rumped Warbler	•	•	•	•	
Yellow-throated Warbler	•	•			
Prairie Warbler	•				
Black-throated Gray Warbler	•	•	•		
Townsend's Warbler	•	•	•		
Hermit Warbler	•	•	•		
Black-throated Green Warbler	•				

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Appendix A. Butterbred Springs Bird Species Checklist

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Species	Spring	Summer	Fall	Winter	Nesting
Canada Warbler	•				
Wilson's Warbler	•	•	•		
Painted Redstart	•	•			
Yellow-breasted Chat	•	•			
Green-tailed Towhee	•	•			
Spotted Towhee	•	•	•		
Rufous-crowned Sparrow			•		
California Towhee	•	•	•	•	x
Chipping Sparrow	•	•	•		
Clay-colored Sparrow	•				
Brewer's Sparrow	•	•	•		x
Black-chinned Sparrow	•	•			x
Vesper Sparrow	•				
Lark Sparrow	•	•	•		x
Black-throated Sparrow	•	•	•		x
Sage Sparrow	•	•	•		x
Savannah Sparrow	•				
Fox Sparrow	•	•	•		
Song Sparrow	•	•			
Lincoln's Sparrow	•	•	•		
Swamp Sparrow					
White-throated Sparrow	•				
Harris's Sparrow	•				
White-crowned Sparrow	•	•	•		
Golden-crowned Sparrow	•	•	•		
Dark-eyed Junco	•		•		
Summer Tanager	•	•			
Western Tanager	•	•	•		
Rose-breasted Grosbeak	•	•			
Black-headed Grosbeak	•	•	•		
Blue Grosbeak	•	•			
Lazuli Bunting	•	•	•		
Indigo Bunting	•	•			
Red-winged Blackbird	•	•	•	•	x
Tricolored Blackbird	•	•			
Western Meadowlark	•	•	•	•	x
Yellow-headed Blackbird	•				
Brewer's Blackbird	•	•			x
Great-tailed Grackle	•	•			
Common Grackle					
Brown-headed Cowbird	•	•	•		

ReNu Property Acquisition - Avian Study Report

TRA Environmental Sciences

Appendix A. Butterbredt Springs Bird Species Checklist

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Species	Spring	Summer	Fall	Winter	Nesting
Orchard Oriole	•				
Hooded Oriole	•	•	•		x
Bullock's Oriole	•	•	•		x
Baltimore Oriole	•				
Scott's Oriole	•	•	•		x
Purple Finch	•		•		
Cassin's Finch	•				
House Finch	•	•	•		x
Red Crossbill	•				
Pine Siskin	•	•			
Lesser Goldfinch	•	•	•		x
Lawrence's Goldfinch	•	•			x
American Goldfinch	•				
Evening Grosbeak	•				
House Sparrow	•	•			

Observations from: Butterbredt Christmas Bird Counts, eBird records, and records of the Kern County Field Ornithologists. Andrew Howe, Alison Sheehey, Bob Barnes, David Blue, Dave Goodward, John Wilson, Jim Danzenbaker, Keith Axelson, Kelli Levinson, Michael McQuerrey, Matt Heindel, John Schmitt, Susan Steele, Steve Summers, Steve Terrill, Tom Wurster, and Vernon Howe.

APPENDIX H

**SPECIAL-STATUS WILDLIFE SURVEYS FOR [RENU]
RESOURCES PROPERTY ACQUISITION PROJECT, KERN
COUNTY, CA**

Biosearch Associates

**SPECIAL-STATUS WILDLIFE SURVEYS FOR
RENEWABLE RESOURCES*PROPERTY ACQUISITION PROJECT,
KERN COUNTY, CA**



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4 October 2012

*Note: The landowner of record is ReNu Resources, LLC.
For purposes of this report, Renewable Resources Group = ReNu Resources, LLC.

**SPECIAL-STATUS WILDLIFE SURVEYS FOR
RENEWABLE RESOURCES PROPERTY ACQUISITION PROJECT,
KERN COUNTY, CA**

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Cover photo by Mark Allaback: Adult Mohave ground squirrel, APN 153-130-05, 24 April 2012.

**SPECIAL-STATUS WILDLIFE SURVEYS FOR
RENEWABLE RESOURCES PROPERTY ACQUISITION PROJECT,
KERN COUNTY, CA**

EXECUTIVE SUMMARY

The California Department of Parks and Recreation Off-Highway Motor Vehicle Recreation (OHMVR) Division proposes to acquire a ~28,500-acre property in northeastern Kern County historically known as Onyx Ranch. The Renewable Resources Group purchased the property in 2008. TRA Environmental Sciences, Inc. (TRA) is preparing an Environmental Impact Report (EIR) for the acquisition project. Onyx Ranch, which is undeveloped and used primarily to graze cattle, consists of flat to mountainous terrain supporting several habitat types that transition from desert scrub at lower elevations in the east to pinyon-juniper woodland at higher elevations in the west. The property consists of 60 parcels arranged in a "checkerboard" pattern of ownership. Most of the interspersed parcels are owned by the U.S. Bureau of Land Management (BLM) and used for off-highway vehicle (OHV) use. The majority of the Renewable Resources property is located within the Jawbone-Butterbredt Area of Critical Environmental Concern.

Biosearch Associates was contracted by TRA to conduct live-trapping surveys for the Mohave ground squirrel (*Xerospermophilus mohavensis*) to provide data for the EIR. The Mojave ground squirrel, which is listed as Threatened under the California Endangered Species Act, is restricted to portions of Kern, Inyo, San Bernardino and Los Angeles counties. Live-trapping was also conducted in 2012 for four special-status small mammals that are known from the region: Tehachapi pocket mouse (*Perognathus alticola inexpectatus*), yellow-eared pocket mouse (*P. parvus xanthonotus*), San Joaquin pocket mouse (*P. inornatus inornatus*) and Tulare grasshopper mouse (*Onychomys torridus tularensis*). Motion-activated game cameras and Visual Encounter Surveys (VES) for sign were conducted to detect American badger (*Taxidea taxus*) and desert kit fox (*Vulpes macrotis arsipus*). All of these species are afforded special status by either the California Department of Fish and Game (CDFG) or the BLM.

In 2012, diurnal live-trapping was conducted at 18 sites to sample appropriate Mohave ground squirrel habitat in the northeastern portion of Onyx Ranch. Each site was sampled with a 100-trap (24.5-acre) grid for five consecutive days. Mohave ground squirrels were captured at 10 of 18 locations. Twenty-five individuals (17 female, 8 male) were captured. The number of individuals captured per grid ranged from 1 to 8.

Results from the present study indicate that the Mohave ground squirrel is widespread in the northeastern part of Onyx Ranch as far west as Butterbredt Canyon. The species was trapped in Creosote Scrub, Mohave Mixed Woody Scrub, Blackbush Scrub and Joshua Tree Woodland. The 2012 survey effort did not sample areas of steep terrain or rocky soils. Although Mohave ground squirrels are not generally considered to occur in these habitats, juveniles may traverse such areas during dispersal. Although Kelso Valley is generally considered to be outside the range of the Mohave ground squirrel, suitable

habitat is present, and the species is present in adjacent Butterbrecht Canyon. Additional live-trapping studies are therefore recommended to confirm presence on the Renewable Resources parcels in Kelso Valley that provide potential habitat.

Dietary overlap between Mohave ground squirrels and cattle has been demonstrated, and the degree of overlap increases during dry years. Cattle have been shown to preferentially feed on winterfat, a species that also makes up a large part of the diet of the Mohave ground squirrel in some areas.

Although Mohave ground squirrels are known to persist in other areas that receive OHV use, the activity reduces the diversity of annuals and forbs that provide forage for the species. More research is needed to determine the level of OHV activity that the species can tolerate and still sustain reproducing populations. Restricting OHV use to existing open areas and established roads is recommended, in order to maintain appropriate plant diversity to sustain Mohave ground squirrel populations.

Nocturnal live-trapping for special-status small mammals was also conducted in 2012. No special-status small mammals were captured although potential habitat is present for the Tehachapi pocket mouse and yellow-eared pocket mouse in the western part of the site. The San Joaquin pocket mouse is expected only on those parcels in the Caliente Creek watershed in the southwestern corner of the study area. The southern grasshopper mouse was captured at 17 of the 18 sites sampled. However, the subspecies *tularensis* (a CDFG Species of Special Concern) and *pulcher* (a common, widespread subspecies) have both been reported from the project area. Genetic analysis is needed to clarify taxonomic affiliations of the southern grasshopper mice onsite.

American badger was detected on six parcels and desert kit fox on two parcels in the extreme east portion of the study area. Neither species was detected by game cameras. However, the camera-stations were likely not in operation for long enough to collect sufficient data on wide-ranging carnivores such as badger or desert kit fox.

Several other special-status species were observed or detected by sign incidentally to focused surveys. Evidence of Agassiz's desert tortoise (*Gopherus agassizii*), listed as threatened under both state and federal Endangered Species Acts, was found at five locations. The following special-status avian species were observed: loggerhead shrike (*Lanius ludovicianus*) (15 sites), LeConte's thrasher (*Toxostoma lecontei*) (five sites), golden eagle (*Aquila chrysaetos*) (four sites) and prairie falcon (*Falco mexicanus*) (two sites). Special-status migrants included northern harrier (*Circus cyaneus*) (two sites), Swainson's hawk (*Buteo swainsoni*) (one site), osprey (*Pandion haliaetus*) (one site), black swift (*Cypseloides ngra*) (two sites) and Vaux's swift (*Chaetura vauxi*) (two sites).

Disturbances observed at the 18 study locations included OHV trails and roads, many of which had been closed and some that were undergoing restoration. Evidence of use by cattle was widespread. Other disturbed or barren areas were mostly localized as a result of camping, shooting or concentrating cattle. Most of the study area appeared relatively undisturbed and supported a diverse wildlife assemblage.

**SPECIAL-STATUS WILDLIFE SURVEYS FOR
RENEWABLE RESOURCES PROPERTY ACQUISITION PROJECT,
KERN COUNTY, CA**

INTRODUCTION

This document provides the results of field surveys for the Mohave ground squirrel (*Xerospermophilus mohavensis*) and other special-status vertebrates as part of the Renewable Resources Acquisition Project located on Onyx Ranch in northeastern Kern County, California. Onyx Ranch is currently owned by the Renewable Resources Group based in Los Angeles, CA, but is expected to be purchased by the Off-Highway Motor Vehicle Recreation (OHMVR) Division of California State Parks (State Parks). The property consists of all or portions of 60 U.S. Geological Survey (USGS) sections, covering approximately 28,500 acres, which generally do not share common borders and are spread across a large region in a "checkerboard" pattern interspersed with Bureau of Land Management (BLM) lands. Since the land transfer will require an Environmental Impact Report (EIR), TRA Environmental Sciences (TRA; Menlo Park, CA) was hired by the OHMVR Division of State Parks to author an EIR in support of the Renewable Resources Property Acquisition Project. Biosearch Associates was contracted by TRA to conduct field studies that targeted the Mohave ground squirrel, since it is listed as Threatened under the California Endangered Species Act, as well as other special-status vertebrates including the Tehachapi pocket mouse, yellow-eared pocket mouse, San Joaquin pocket mouse, desert kit fox and American badger.

Onyx Ranch lands are mostly undeveloped although there is an extensive dirt road system that passes through or near most of the parcels. In addition, there is fencing and limited water development to facilitate cattle grazing. In many areas the public may pass through the private parcels using designated dirt roads to reach surrounding lands managed by the BLM and the Friends of Jawbone Canyon, a nonprofit corporation based in Cantil, CA, that receives private donations primarily from OHV enthusiasts. In addition to cattle grazing, portions of the project site are influenced by regular OHV use and nearby camping, particularly in proximity to the Dove Springs area in the north and Jawbone Canyon in the south. Visitation rates increase significantly on the weekends, especially during cooler months.

A preliminary special-status wildlife habitat assessment noted that ~30 of the 60 parcels provided potential habitat for the Mohave ground squirrel, extending from Dove Springs on the north to Jawbone Canyon on the south and from Kelso Valley on the west to near Highway 14 just outside the east edge of the study area (Biosearch Associates 2011). Field work in 2012 sampled 18 of these sites, all in the northeastern part of the study area.

Suitable habitat for numerous other special-status vertebrates was identified on Renewable Resources lands (Biosearch Associates 2011). For purposes of this document, special-status wildlife species include the following: those listed by the U.S.

Special-status Wildlife Study
Onyx Ranch, Kern County

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Biosearch Associates
4 October 2012

Fish and Wildlife Service (USFWS) as Threatened or Endangered; species for which the USFWS has sufficient information to list as Endangered or Threatened, but for which listing is precluded (Candidate Species); those species for which a proposed rule to list as Endangered or Threatened has been published by USFWS (Proposed species); species listed by the USFWS as Birds of Conservation Concern (in Regions 32 or 33); species designated by the Bureau of Land Management as Sensitive; species designated by the U.S. Forest Service as Sensitive; species listed by the California Fish and Game Commission as Threatened or Endangered and those species that are Candidates for listing as Threatened or Endangered; species designated by the California Department of Fish and Game (CDFG) as Species of Special Concern; species listed as "fully protected" in the California Fish and Game Code, and species designated as protected furbearers under the California Code of Regulations.

Field surveys in 2012 were designed to detect a subset of these species including the Tehachapi pocket mouse (*Perognathus alticola inexpectatus*), yellow-eared pocket mouse (*P. parvus xanthonotus*), San Joaquin pocket mouse (*P. inornatus inornatus*), Tulare grasshopper mouse (*Onychomys torridus tularensis*), desert kit fox (*Vulpes macrotis arsipus*) and American badger (*Taxidea taxus*). Surveys for these species were conducted concurrently with Mohave ground squirrel studies.

Incidental observations of additional special-status species were also recorded including Agassiz's desert tortoise (*Gopherus agassizii*) and several special-status birds. Focused surveys for Agassiz's desert tortoise were performed by Leatherman BioConsulting, Inc. (Yorba Linda, CA) and reported separately. Focused studies for special-status birds and rare plants were conducted by TRA in 2012.

STUDY AREA

The Renewable Resources acquisition project site is situated northwest of California City in eastern Kern County along the west edge of the Mojave Desert. The general project site is bounded by Jawbone Canyon on the south, Highway 14 and Red Rock Canyon State Park on the east, Dove Springs Canyon on the north and the Piute Mountains on the west. The majority of Onyx Ranch is located within the Jawbone-Butterbrecht Area of Critical Environmental Concern (ACEC). Elevations range from 2,170 feet above sea level at the mouth of Jawbone Canyon along the northwest edge of the Mojave Desert to 7,700 feet on Sorrell Peak in the Piute Mountains in the western part of the site. The site is located at the transition between the Mojave Desert and the eastern slope of the Sierra Nevada, and the vegetation communities are also influenced by proximity to the Great Basin.

The property consists of all or portions of 60 U.S. Geological Survey (USGS) parcels, covering approximately 28,500 acres, which generally do not share common borders and are spread across a large region in a "checkerboard" pattern interspersed with BLM lands.

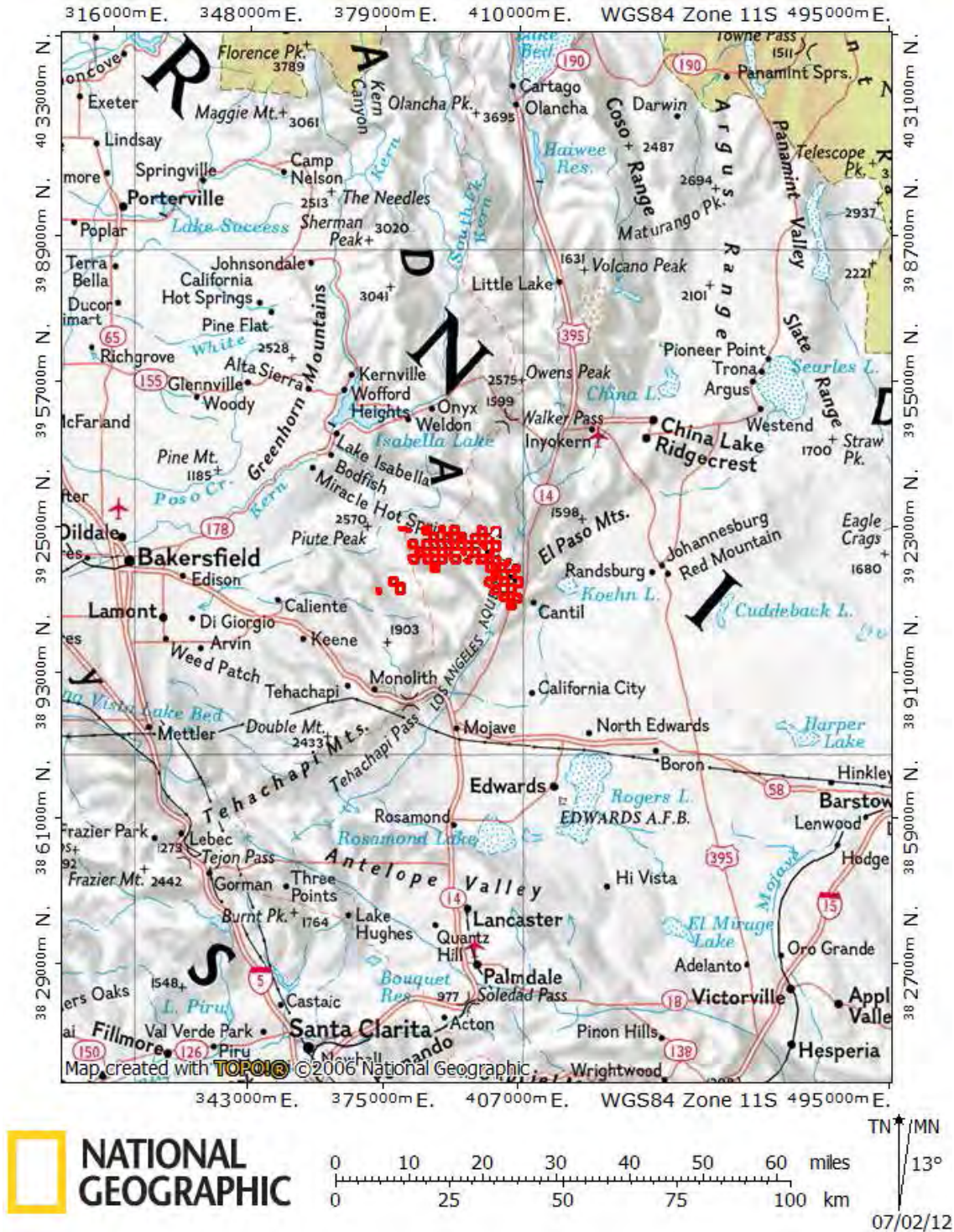


Figure 1. Regional Location of Onyx Ranch Acquisition Project.

Special-status Wildlife Study
Onyx Ranch, Kern County

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4 October 2012

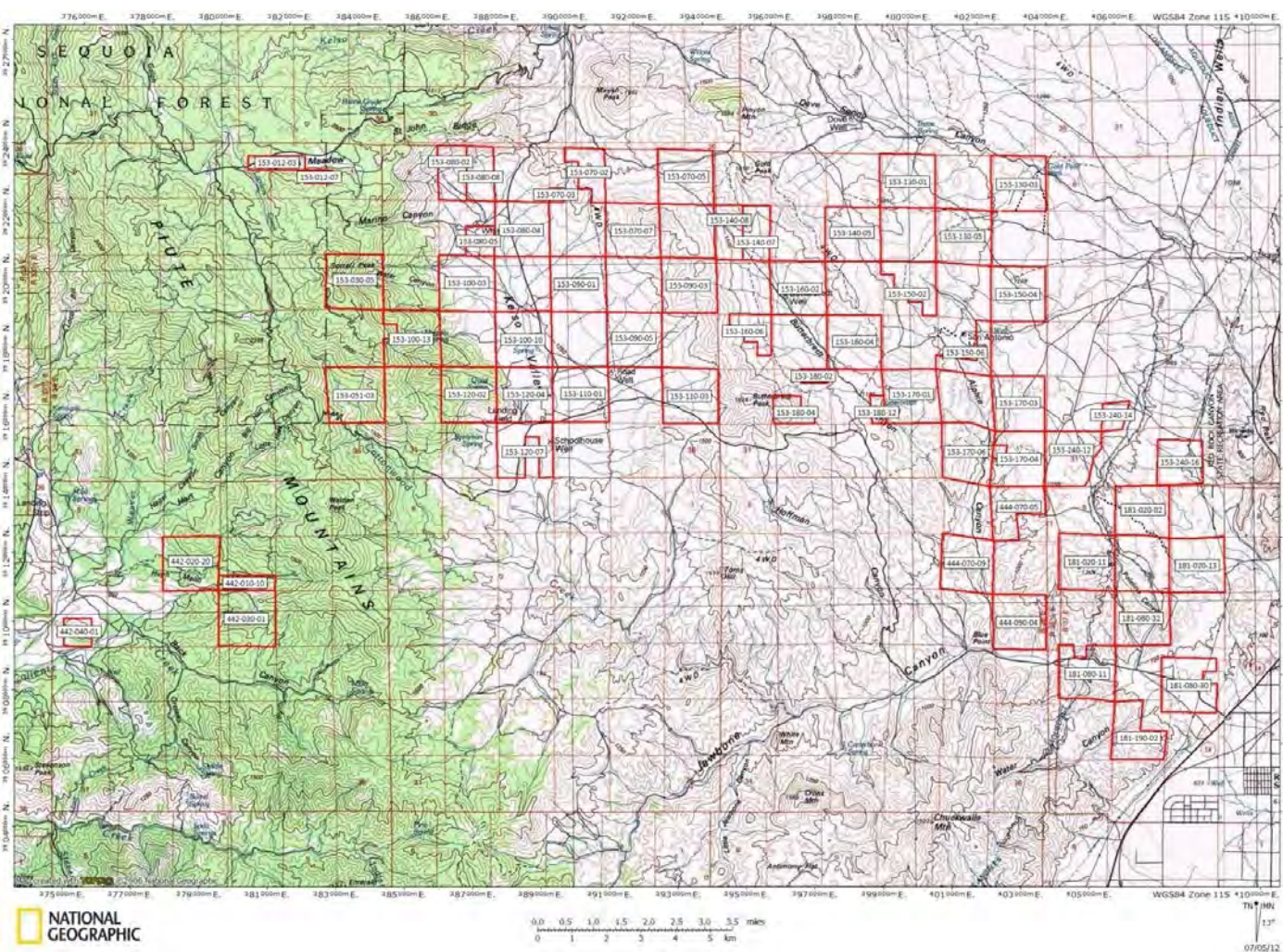


Figure 2. Onyx Ranch Acquisition Project Parcel Numbers.

SPECIES ACCOUNTS

Mohave Ground Squirrel (*Xerospermophilus mohavensis*)

The Mohave ground squirrel occupies portions of Inyo, Kern, Los Angeles and San Bernardino counties in the western Mojave Desert. The species ranges from near Palmdale on the southwest to Lucerne Valley on the southeast, Olancho on the northwest and the Avawatz Mountains on the northeast (Gustafson 1993; Leitner 2008b). Although the species likely occupied the Antelope Valley historically, widespread conversion of native habitats has apparently resulted in its extirpation west of Palmdale and Lancaster.

The Mohave ground squirrel is a medium-sized ground squirrel that measures 8.3"- 9.1" in total length (Hall 1981). There is little difference in size between the sexes. Dorsal coloration is uniformly light gray or brown, often with a wash of cinnamon or pink, while ventral coloration is creamy. The ears are small and eyelids are white. *X. mohavensis* can be distinguished from *X. tereticaudus* by a shorter, flatter tail with a white ventral surface and brown rather than white cheeks. It is significantly larger than *X. tereticaudus* in most cranial measurements (Best 1995).

Mohave ground squirrels feed on a variety of foods, but primarily on the leaves and seeds of forbs and shrubs. The diet varies greatly over the course of a season. Leaves of perennial shrubs make up a large part of the diet and are consumed with greater frequency when annual plants are not available. If herbaceous annuals are present, Mohave ground squirrels forage on their leaves, flowers, seeds and/or pollen. Invertebrates are consumed regularly but make up a relatively small proportion of the diet. Shrub species that were consumed most often at a study area in Coso area were winterfat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*) and saltbush (*Atriplex* sp.) (Leitner and Leitner 1998). However, it is not known if these results can be extrapolated to the more southerly portions of the species' range.

The Mohave ground squirrel exhibits a strongly seasonal cycle of activity and torpor. It typically emerges from hibernation in early- to mid-March (Leitner and Leitner 1998). Males typically emerge up to two weeks prior to females (Best 1995). Once a sufficient amount of fat has been accumulated in late spring or early summer, individuals enter a period of aestivation and hibernation (Bartholomew and Hudson 1961). Aestivation generally begins anytime between July and September, but during drought conditions, may begin as early as April or May (Leitner, et al. 1995).

Adults are generally solitary except during breeding, which occurs soon after emergence from hibernation. Gestation lasts 29-30 days and litter size is between four and nine (Best 1995). Juveniles emerge from natal burrows within four to six weeks. Females will breed at one year of age if environmental conditions are appropriate, while males do not normally mate until two years of age (Leitner and Leitner 1998). The reproductive success of the Mohave ground squirrel is dependent on the amount of fall and winter rains. A positive correlation between fall and winter precipitation and recruitment of juveniles the following year has been demonstrated (Leitner and Leitner 1998).

Following low rainfall, annual herbaceous plants are not readily available, and the species may forego breeding entirely (Leitner and Leitner 1998).

Mohave ground squirrels may maintain several home burrows that are used at night, as well as accessory burrows that are used for temperature control and predator avoidance. The aestivation burrow is dug specifically for use during the summer and winter period of dormancy (Best 1995). Burrows are often constructed beneath large shrubs (Leitner, et al. 1995). Home ranges of adults vary between years and throughout a season, presumably as a result of variation in quantity and quality of food resources. Juveniles are gregarious and initially stay close to the natal burrow. Typically in June, juveniles begin making exploratory movements away from the natal burrow and some individuals eventually disperse (Brylski, et al. 1998). Radio-telemetry data suggest that females are more likely than males to remain in the vicinity of their natal burrows. For eleven tagged juveniles, the average distance moved from the natal burrow was 1.1 miles, and the maximum distance moved was 3.9 miles (Harris and Leitner 2005). Long-distance movement by juveniles may be critical for re-colonizing sites after local extirpations (Harris and Leitner 2005).

The Mohave ground squirrel occupies habitats described by Holland (1986) as Mojave Creosote Scrub, Desert Saltbush Scrub, Desert Sink Scrub, Desert Greasewood Scrub, Shadscale Scrub, Mojave Mixed Woody Scrub and Joshua tree woodland (Gutafson 1993). The Mohave ground squirrel inhabits flat to moderate terrain and is not generally found in steep contours. However, juveniles can apparently traverse steep terrain during dispersal (Harris and Leitner 2005). The species has been found most frequently in sandy, alluvial soils but is also found in gravelly and occasionally rocky soils but is not known to occupy areas of desert pavement (Wessman 1977; Zembal and Gall 1980; Aardahl and Rousch 1985; Best 1995).

The project site is at the western edge of known Mohave ground squirrel range (Leitner 2008). The Natural Diversity Data Base (CNDDDB) maintained by CDFG has records from Jawbone Canyon, Dove Spring Canyon, Butterbrecht Canyon and Red Rock Canyon State Park, although all of these observations are from the 1970s. More recent records are known from Little Dixie Wash (Leitner 2008), Red Rock Canyon (Leitner 2008a, 2009, 2010) and from Dove Springs Canyon (BLM, pers. comm.).

Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*)

The Tehachapi pocket mouse is one of two subspecies of the white-eared pocket mouse (*P. alticola*) currently recognized (Hall 1981; Williams, et al. 1993; Best 1994). *P. a. inexpectatus* occupies the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, as far west as Cuddy Valley near Mount Pinos, and east along the lower slopes of the San Gabriel Mountains to Elizabeth Lake (Williams, et al. 1993). The other subspecies, *P. a. alticola*, is known only from the San Bernardino Mountains and has not been observed for more than fifty years (Williams 1986). The specific epithet *alticolus* was constructed incorrectly by Rhoads (1894), and continues to be used by some authors. The correct Latin form is *alticola*, as used by Osgood (1900) and explained by Williams,

et al. (1993), and is the form followed herein. The Tehachapi pocket mouse is designated as a Species of Special Concern by CDFG. The nearest known record of the Tehachapi pocket mouse is from near Tehachapi, ~15 miles SSW of Onyx Ranch.

The Tehachapi pocket mouse is medium-sized for the genus, averaging 5.9” and 6.5” total length for females and males, respectively (Best 1993b). Males are significantly larger than females for most external and cranial measurements (Best 1994). Coloration is yellowish-brown heavily overlaid with black dorsally and whitish ventrally. The inside of the ears are whitish, the patch at the base of the ear is white, and the ear pinna possesses a lobed antitragus. The tail is bicolored, measures slightly more than the head-body length, and is crested along the distal one-third.

The Tehachapi pocket mouse occupies native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland and oak savannah (Williams, et al. 1993). It has been captured in open pine forests at higher elevations (Huey 1926), in chaparral and coastal sage communities at lower elevations, and in rangeland and fallow grain fields (Best 1994). Elevations of known occurrences range between 3,500 and 6,000 feet.

There is little information regarding the ecology of the Tehachapi pocket mouse. It constructs burrows in loose, sandy soils (Zeiner et al. 1990). Most other members of the genus exhibit seasonal hibernation (Verts and Kirkland 1988), and it is expected that *P. a. inexpectatus* does as well. *P. a. inexpectatus* exists in disjunct subpopulations. Given these factors, the subspecies can be difficult to detect.

San Joaquin Pocket Mouse (*Perognathus inornatus inornatus*)

The San Joaquin pocket mouse is endemic to California and occurs in the Sacramento and San Joaquin Valleys, the interior Coast Ranges, the foothills of the Sierra Nevada and Tehachapi Mountains, and the western Mojave Desert (Best 1993a; Williams, et al. 1993). The species is currently comprised of 3 subspecies (*inornatus*, *neglectus*, and *psammophilus*). The taxonomy of the group is unresolved and there is compelling evidence to suggest that the 2 forms found in the San Joaquin Valley (*inornatus* and *neglectus*) represent distinct species, based in part on differing chromosome complements (Best 1993a; Williams, et al. 1993). *P. inornatus* from the western Mojave Desert have been assigned to the subspecies *neglectus* based on similar structure (Williams, et al. 1993). The subspecies *inornatus* occurs along the eastern edge of the San Joaquin and Sacramento Valleys and south into the Tehachapi Mountains. The subspecies *inornatus* has lost much of its historic range in the San Joaquin Valley as the result of agricultural and urban development and is listed as a Sensitive Species by the Bureau of Land Management. The nearest known record of the San Joaquin pocket mouse is from near Twin Oaks, approximately 2.5 miles SW of the southwestern part of Onyx Ranch.

The pelage of *P. inornatus* is soft and without bristles. The dorsal coloration is ochraceous buff to pinkish overlaid with black. The ventral coloration is whitish. A fulvous lateral line is generally distinct. The subauricular spots are distinct and buffy to

white. A faint to obvious black crescent is present on the nose. The feet are white and the soles covered with sparse hairs. Juvenile dorsum pelage is gray and whitish ventrally. The tail is white or slightly bicolored and without a crest. The tail averages 102 to 107% of the head/body length.

The San Joaquin pocket mouse inhabits annual grassland, saltbush scrub and oak savanna habitats, generally on friable soils (Williams 1986). Like other member of the species complex, it is typically found in low frequencies relative to other co-occurring rodents. It feeds primarily on the seeds of annuals, shrubs and forbs, but will also consume insects when seeds are less available (Best 1993). It forages almost exclusively at night and spends the day in a simple burrow. The species enters torpor during periods of low temperatures and/or low food availability and is not active above ground during much of the winter (Best 1993a).

Yellow-eared Pocket Mouse (*Perognathus parvus xanthonotus*)

The yellow-eared pocket mouse inhabits the eastern slopes of the Piute Mountains and Sierra Nevada at elevations between 4,000-5,300 feet. The subspecies has been recorded between Kelso Valley on the south and Sand Canyon on the north (Hall 1981; Laabs, et al. 1990; Williams, et al. 1993). The yellow-eared pocket mouse was collected from the head of Kelso Valley in 1911 (CNDDDB 2012; MVZ 2012). Its presence in this area was re-confirmed in 1983 (Brylski, et al. 1998). The yellow-eared pocket mouse is designated as Sensitive by the Bureau of Land Management.

The yellow-eared pocket mouse was first described as a full species, *Parvus xanthonotus* (Grinnell 1912), and has been treated as such by many subsequent authors (Ingles 1965; Hall 1981; Verts & Kirkland 1988; Nowak 1991; Zeiner, et al. 1990). However, based on morphological and karyological similarities, *P. xanthonotus* is not sufficiently differentiated from *P. parvus* and the most recent review of the taxonomy of the species includes it as a subspecies of *P. parvus* (Williams, et al. 1993).

The yellow-eared pocket mouse is a large-sized member of the genus, averaging approximately 6.5 inches in total length. The pelage is ochraceous buff, slightly overlaid with black dorsally. The feet and under-parts are white. The inside of the ear is whitish, and a conspicuous spot at the base of the ear is white. The ear possesses a lobed antitragus. The ochraceous lateral line and dark facial markings are faint. The tail is faintly bicolored, ending in a small tuft, and slightly longer than the length of the head and body.

The subspecies has been found in Joshua tree woodland, desert scrub, pinyon-juniper, mixed and montane chaparral, sagebrush and bunchgrass habitats (Grinnell 1912; Williams, et al. 1993). It occurs primarily in sandy soils with sparse to moderate shrub cover (Zeiner, et al. 1990). Elevations of known localities range between 1030-1615 m (3380-5300 feet; Hall 1981; Zeiner, et al. 1990; CNDDDB 2012).

There is little specific information regarding the ecology of the yellow-eared pocket mouse. *P. parvus* generally reproduces between March and September, normally producing a single litter each year. Reproduction may be curtailed in dry years. *P. parvus* generally forages on seeds and fruit of a variety of grasses, annuals, forbs and shrubs. Seeds are cached during the spring and summer to provide food during the winter months. Insects may also be part of the diet, at least seasonally (Ingles 1965; Verts and Kirkland 1988). It presumably hibernates like other members of the species group hibernate during the winter (Zeiner, et al. 1990). The species is difficult to detect due to its seasonal surface activity and patchy distribution.

Tulare Grasshopper Mouse (*Onychomys torridus tularensis*)

The Tulare grasshopper mouse is one of 10 subspecies of the southern grasshopper mouse, *Onychomys torridus*, currently recognized (McCarty 1975; USFWS 1997). The subspecies *tularensis* was historically distributed in the southern San Joaquin Valley from eastern San Benito County east to Madera County and south to the Tehachapi Mountains (USFWS 1997). It is designated as a Species of Special Concern by CDFG.

Grasshopper mice are short-tailed and stocky with a dorsal pelage that varies widely from pale brown to grayish or pinkish cinnamon. The pelage is distinctly bicolored, and the underparts are white.

There is little specific information regarding natural history attributes of the Tulare grasshopper mouse. The diet of other subspecies of the southern grasshopper mouse is made up largely of arthropods and small mammals (McCarty 1975). The species is typically found in low densities.

The Tulare grasshopper mouse occurs primarily in the southern San Joaquin Valley. However, there are also scattered records to the east, including a record from Kelso Valley (MVZ 15190), Red Rock Canyon (LACM 87830) and Freeman Junction (LACM 63674). The subspecies *pulcher* is widespread in the western Mojave Desert, including several records from Kelso Valley, Red Rock Canyon and Dove Springs. *O. t. tularensis* can be distinguished from adjacent subspecies by its slightly darker dorsal coloration and smaller size (Brylski, et al. 1998). However, within species variation in pelage color may result from adaptations to local conditions (McCarty 1975).

American Badger (*Taxidea taxus*)

The American badger occurs throughout much of western North America (Long 1973). Badgers inhabit a variety of open habitats including annual grassland, scrub and savanna habitats (Zeiner, et al. 1991). It was once a widespread resident throughout much of California but within the last century populations have declined as the result of predator and rodent control programs, road-kills and habitat conversion (Williams 1986). The American badger is listed as a Species of Special Concern list by CDFG. The species has been observed at Red Rock Canyon State Park, immediately east of Onyx Ranch.

Badgers feed primarily on fossorial rodents such as gophers and ground squirrels, although they will eat a variety of available live prey (Williams 1986). They are powerful diggers and excavate burrows for den sites as well as during foraging activities. Burrows are often re-used, although some individuals may dig new burrows each night (Long 1973).

Desert Kit Fox (*Vulpes macrotis arsipus*)

The desert kit fox is one of two subspecies of *Vulpes macrotis* currently recognized (Mercure et al. 1993). The subspecies *arsipus* occurs in desert and semi-arid regions of southwestern United States and central Mexico. The desert kit fox is designated as a Protected Furbearer under the California Fish and Game Code and the California Code of Regulations.

The desert kit fox is closely associated with steppe and desert habitats. It typically occupies open shrub habitats including habitats dominated by Creosote, saltbush, greasewood and sage brush. Shrub density is typically low. Desert kit fox are almost exclusively carnivorous and will prey on kangaroo rats, rabbits, ground squirrels and other small mammals, birds, reptiles and insects, depending on their availability (McGrew 1979). They are primarily nocturnal and remain in dens during the day. Coyotes are a primary predator of the closely related San Joaquin kit fox (USFWS 2010).

METHODS

Mohave Ground Squirrel Trapping

A preliminary special-status wildlife habitat assessment identified ~30 parcels that supported potential Mohave ground squirrel habitat (Biosearch 2011). Live-trapping was conducted at 18 of these parcels in 2012, primarily in the northeastern portion of the project area (Figure 3). Although initially the survey points were selected randomly, several locations were adjusted to ensure grids were placed entirely on the parcel or to avoid roads regularly used by the public. Locations were generally within 100-300 meters of a road, which was necessary to facilitate set-up and maintenance. Finally, some grids were adjusted within a parcel to sample microhabitats that appeared more suitable for the target species based on vegetation and topography.

Live-trapping for Mohave ground squirrels was conducted by wildlife biologists Mark Allaback, David Laabs, Caleb Murphy and Chad Steiner under authority of a Memorandum of Understanding with CDFG and appropriate Scientific Collecting Permit authorizations. Trapping procedures followed current CDFG survey protocols, with the exception that only one 5-day trapping session was conducted at each site rather than the three, 5-day trapping sessions required to report a negative finding (CDFG 2003).

Each parcel was sampled with a 100-trap grid, arranged in a 10 x 10 pattern. Sherman™ XLK traps (12" x 3" x 3.75") were used. Each trap was covered with a cardboard shelter (18" x 24") arranged in an "A-frame" to provide shade. Traps and shelters were orientated north-south and numbered. Trap spacing was 35 meters, so each grid covered 9.9 hectares (~24.5 acres). Each grid was monitored for five consecutive days. Traps were baited with "sweet feed" (oats, corn, molasses and other grains). Traps were monitored throughout the day, checked at least once every four hours to minimize heat stress to captured animals, and left open to sample nocturnal rodents.

Trapping was conducted during the weeks of 26 March, 9 April, 23 April, 7 May and 21 May 2012 (Table 1). Based on the below-average precipitation received in the region during the preceding winter, Mohave ground squirrels were not expected to be reproductive, so late-season (June and early July) trapping for juveniles was not scheduled. Trapping was conducted as early in the spring as the weather would allow in order to target adults while they were still active above ground. Given the wide range of elevations included within the study area, the grids at the lowest elevations were trapped in late March, with progressively higher-elevation grids sampled through April and May.

Each ground squirrel captured was identified to species, marked with non-toxic ink and the time, trap number, age (adult or juvenile), sex, reproductive condition, and any notes regarding unusual or abnormal circumstances were recorded. For each Mohave ground squirrel, weight (in grams) and standard measurements (length of head and body, tail, ear and hind-foot in millimeters) were also recorded. Each Mohave ground squirrel was individually numbered using non-toxic ink and the capture location was recorded.

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Table 1. Survey locations and dates for Mohave ground squirrel trapping at Onyx Ranch, 2012. Habitats: BBS=Blackbush Scrub; CRSC=Creosote Scrub; JTW=Joshua Tree Woodland; MMWS=Mixed Mohave Woody Scrub.

APN	TRA Site #	BA Site #	Habitat	Elev (ft)	Investigator	Start Date	End Date
153-070-05	38	11	BBS; JTW	5320	C. Murphy	5/7/2012	5/11/2012
153-130-01	177	14	BBS; JTW	4540	C. Murphy	4/23/2012	4/27/2012
153-130-03	58	9	BBS; JTW	3970	M. Allaback	4/23/2012	4/27/2012
153-130-05	62	4	MMWS; BBS	4110	C. Steiner	4/23/2012	4/27/2012
153-140-05	59	17	BBS; JTW	4840	M. Allaback	5/21/2012	5/25/2012
153-140-07	60	10	BBS; JTW	4670	C. Steiner	5/7/2012	5/11/2012
153-150-02	63	16	BBS; JTW	4500	C. Murphy	5/21/2012	5/25/2012
153-150-04	64	3	BBS	3960	D. Laabs	4/23/2012	4/27/2012
153-150-06	68	8	MMWS; BBS	3870	C. Steiner	4/9/2012	4/12/2012
153-160-02	65	12	BBS; JTW	4480	M. Allaback	5/7/2012	5/11/2012
153-160-04	67	13	BBS; JTW	4250	D. Laabs	5/7/2012	5/11/2012
153-170-03	70	6	BBS	3760	M. Allaback	4/9/2012	4/12/2012
153-240-12	79	7	CRSC	3530	D. Laabs	4/9/2012	4/12/2012
153-240-14	78	15	CRSC	3410	C. Murphy	4/9/2012	4/12/2012
153-240-16	80	0	CRSC	3090	M. Allaback	3/26/2012	3/30/2012
181-020-02	81	5	CRSC; MMWS	3130	C. Steiner	3/26/2012	3/30/2012
181-020-13	83	2	CRSC	2640	D. Laabs	3/26/2012	3/30/2012
181-080-32	84	1	CRSC	2740	C. Murphy	3/26/2012	3/30/2012

Nocturnal Trapping for Special-status Small Mammals

Four consecutive nights of live-trapping were conducted at each of the 18 parcels, using the same grids established for the Mohave ground squirrel. Traps were closed if rain or temperatures below 40°F were forecast. Traps were supplemented with a mixture of oats, bird seed and peanut butter. All vertebrates captured were identified to species, marked with nontoxic ink, and sex, age and reproductive condition were recorded. Standard measurements (length of head and body, tail, ear and hind-foot in mm) and weight (g) were only recorded as necessary for diagnostic purposes.

Transect Surveys

Visual Encounter Surveys (VES) were conducted in the vicinity of each of the 18 trapping grids. If possible, transects started at edge of the trapping grid. Eight 500-meter transects were walked in association with each site. All special-status species observed or detected by sign (dens, scat, tracks or other evidence) were recorded. Human-related disturbances were also tallied including OHV tracks, trails, roads, fence-lines, litter, dumping, shooting and evidence of livestock.

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Camera Surveys

Two motion-activated game cameras (Reconyx HC500 Hyperfire and/or Moultrie Model M100) were operated for four consecutive nights at each of the 18 grids (Figure 4). Cameras were baited with cat food and with “sweet feed” to attract ground squirrels. The cameras were placed between 100 and 500 meters from each of the grids. Cameras were oriented north to reduce direct disturbance from sunlight and checked no more than once daily. Micro-habitats were selected that favor predators such as paths, washes, rocky outcrops and Joshua tree woodland. Predator scat or tracks were often nearby. The location of each camera-station was recorded. Photos were reviewed for presence of vertebrates, which were tallied for each station. Relative abundance was expressed as the number of detections per camera-night.

Incidental Observations

During the course of implementing the focused surveys detailed above, all detections of special-status vertebrates were recorded and a vertebrate species list was maintained associated with each USGS Section or partial section selected as a sample site. Data collected from each study area was used to provide a list of all animals observed or detected by sign during the field study.

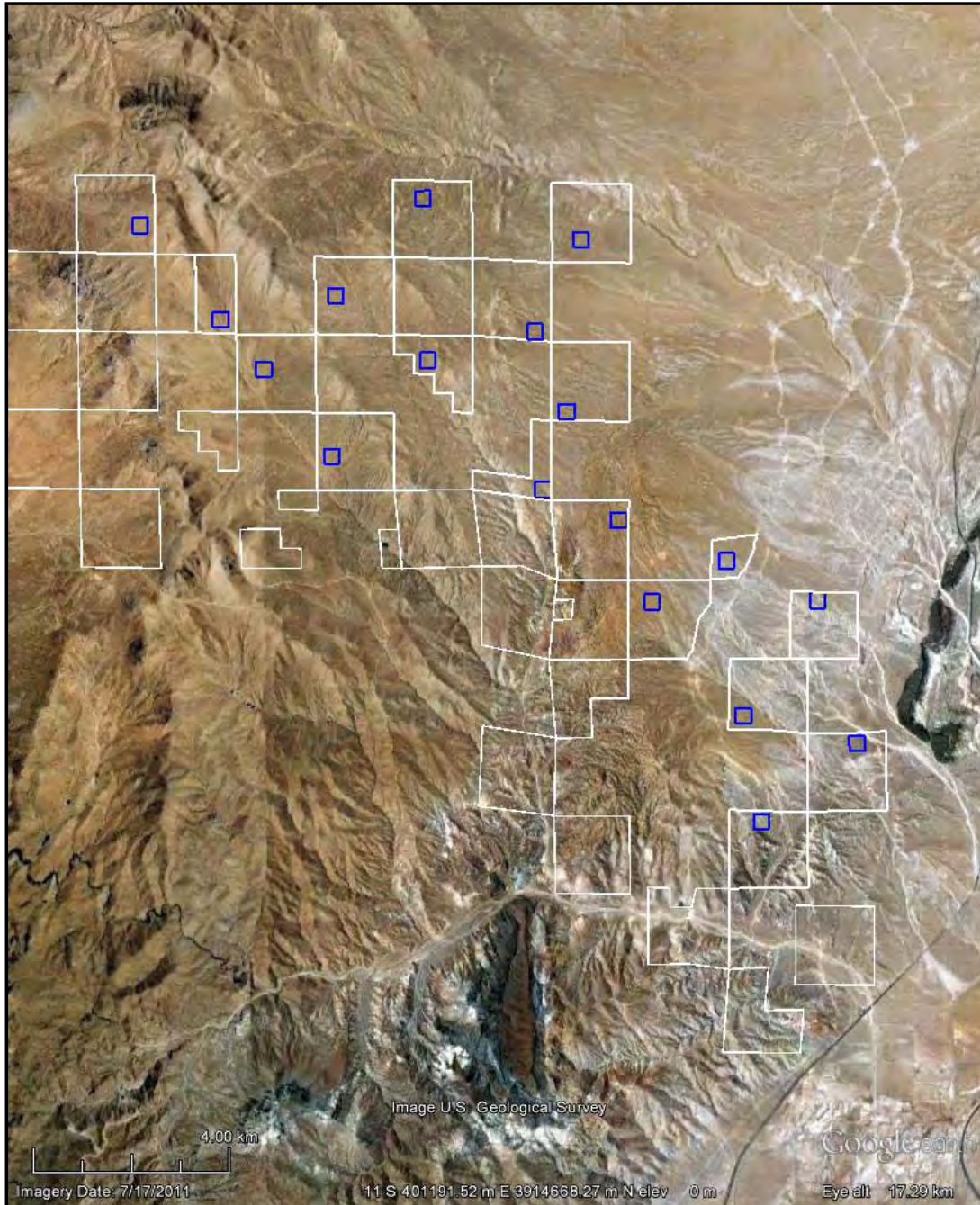


Figure 3. Aerial image of eastern portion of Renewable Resources Property showing trapping grids sampled in 2012 (blue squares).

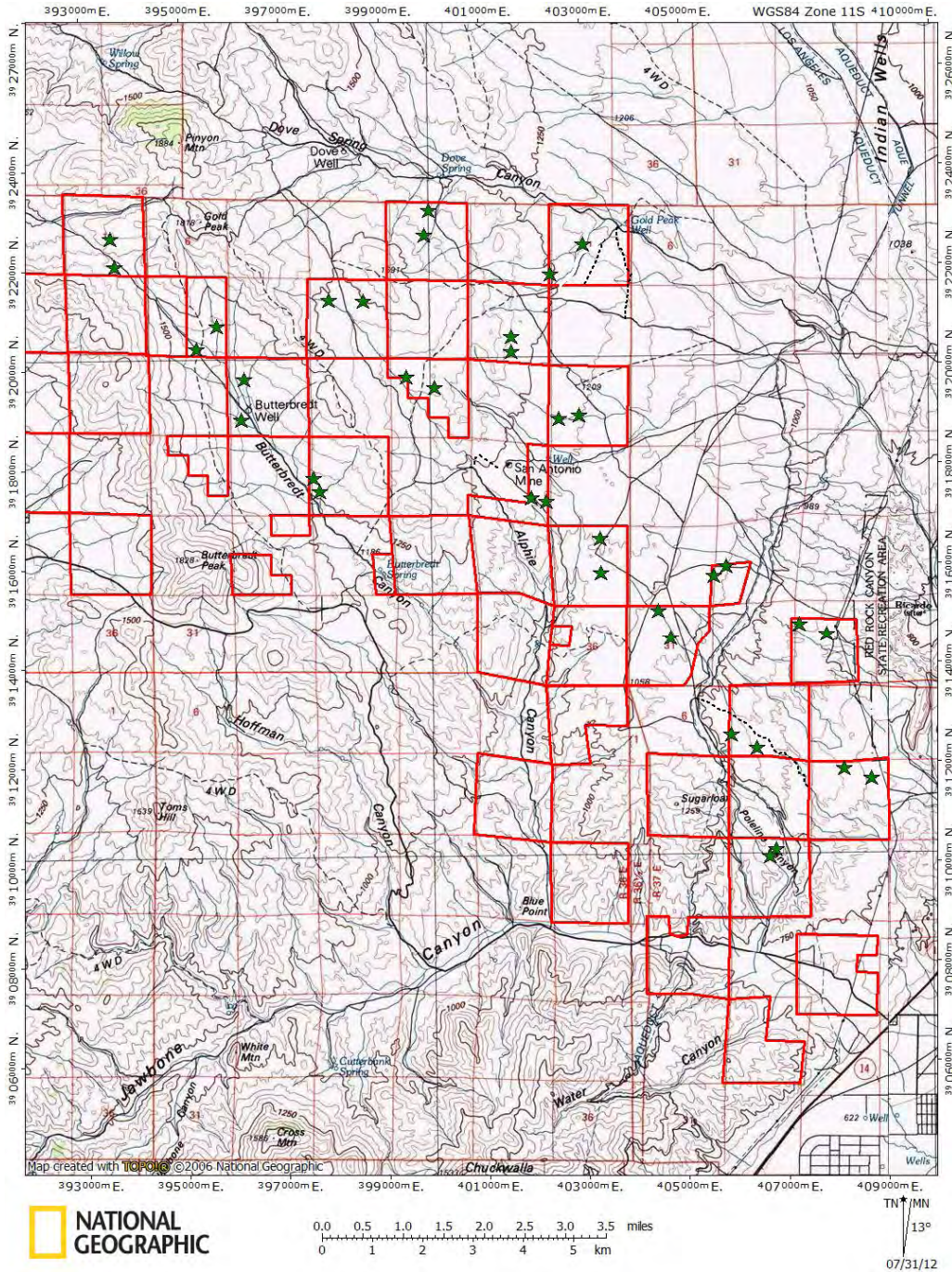


Figure 4. Locations of photo stations for Renewable Resources Property Acquisition Project in 2012.

RESULTS

Mohave Ground Squirrel Trapping

Traps were opened for five consecutive days at 14 of the sites and four consecutive days at four sites (due to rain) for a total of 8,600 trap-days. Mohave ground squirrels were captured at 10 of the 18 sites sampled (Table 2). Twenty-five individuals (17 female, 8 male) were captured. The number of individuals per grid ranged from 1 to 8. Of the 25 individuals, 8 were captured only once, while seven were recaptured once, three were recaptured twice, four were recaptured on three occasions, two were recaptured four times, and one five times.

All Mohave ground squirrel captured were adults and none showed signs of reproductive activity. All individuals appeared healthy. Males were significantly heavier ($\bar{X} = 164.0$ g) than females ($\bar{X} = 137.1$ g), although the sample size for males was much smaller than for females. Average weights of females increased over the course of the study ($R^2=0.37$) (Figure 4).

Table 2. Number of Mohave ground squirrels captured (500 trap-days on 24.5-acre grid) at Onyx Ranch in 2012. * = Sites trapped for 400 trap-days due to weather.

Site #	Adult Females	Adult Males	Total Adults	# Recaptures
153-070-05	0	0	0	-
153-130-01	0	2	2	1
153-130-03	5	3	8	21
153-130-05	3	1	4	6
153-140-05	1	0	1	3
153-140-07	1	0	1	0
153-150-02	0	0	0	-
153-150-04	1	1	2	1
153-150-06*	1	0	1	0
153-160-02	0	0	0	-
153-160-04	0	0	0	-
153-170-03*	0	0	0	-
153-240-12*	2	1	3	2
153-240-14*	2	0	2	4
153-240-16	0	0	0	-
181-020-02	1	0	1	0
181-020-13	0	0	0	-
181-080-32	0	0	0	-
Total	17	8	25	38

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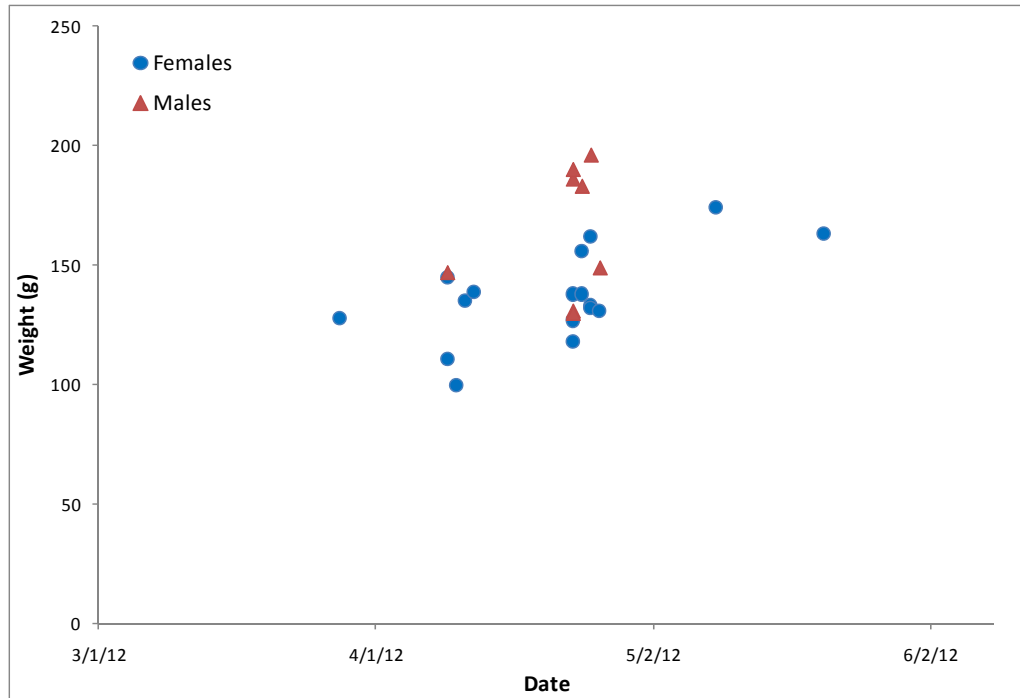


Figure 5. Mass (in grams) of Mohave ground squirrels by date captured at Onyx Ranch, 2012.

White-tailed antelope ground squirrels (*Ammospermophilus leucurus*) were captured on all 18 study sites (Appendix B). The number of individuals ranged from 22 to 51 per grid. Juvenile antelope ground squirrels were captured on only five grids in mid- to late-May. Other species captured incidentally in live traps were desert spiny lizard (*Sceloporus magister*), coachwhip (*Masticophis flagellum*), desert cottontail (*Sylvilagus audubonii*), white-crowned sparrow (*Zonotrichia leucophrys*) and black-headed grosbeak (*Pheucticus melanocephalus*).

Nocturnal Trapping for Other Special-status Vertebrates

Trapping for nocturnal rodents was conducted for four nights at 10 sites and for three nights (due to rain) at 8 sites for a total of 6,400 trap-nights. Ten species of nocturnal rodents were captured: Panamint kangaroo rat (*Dipodomys panamintinus*), Merriam's kangaroo rat (*Dipodomys merriami*), great basin kangaroo rat (*Dipodomys microps*), long-tailed pocket mouse (*Chaetodipus formosus*), little pocket mouse (*Perognathus longimembris*), desert woodrat (*Neotoma lepida*), grasshopper mouse (*Onychomys torridus*), canyon mouse (*Peromyscus crinitus*), deer mouse (*Peromyscus maniculatus*) and pinyon mouse (*Peromyscus truei*) (Table 3).

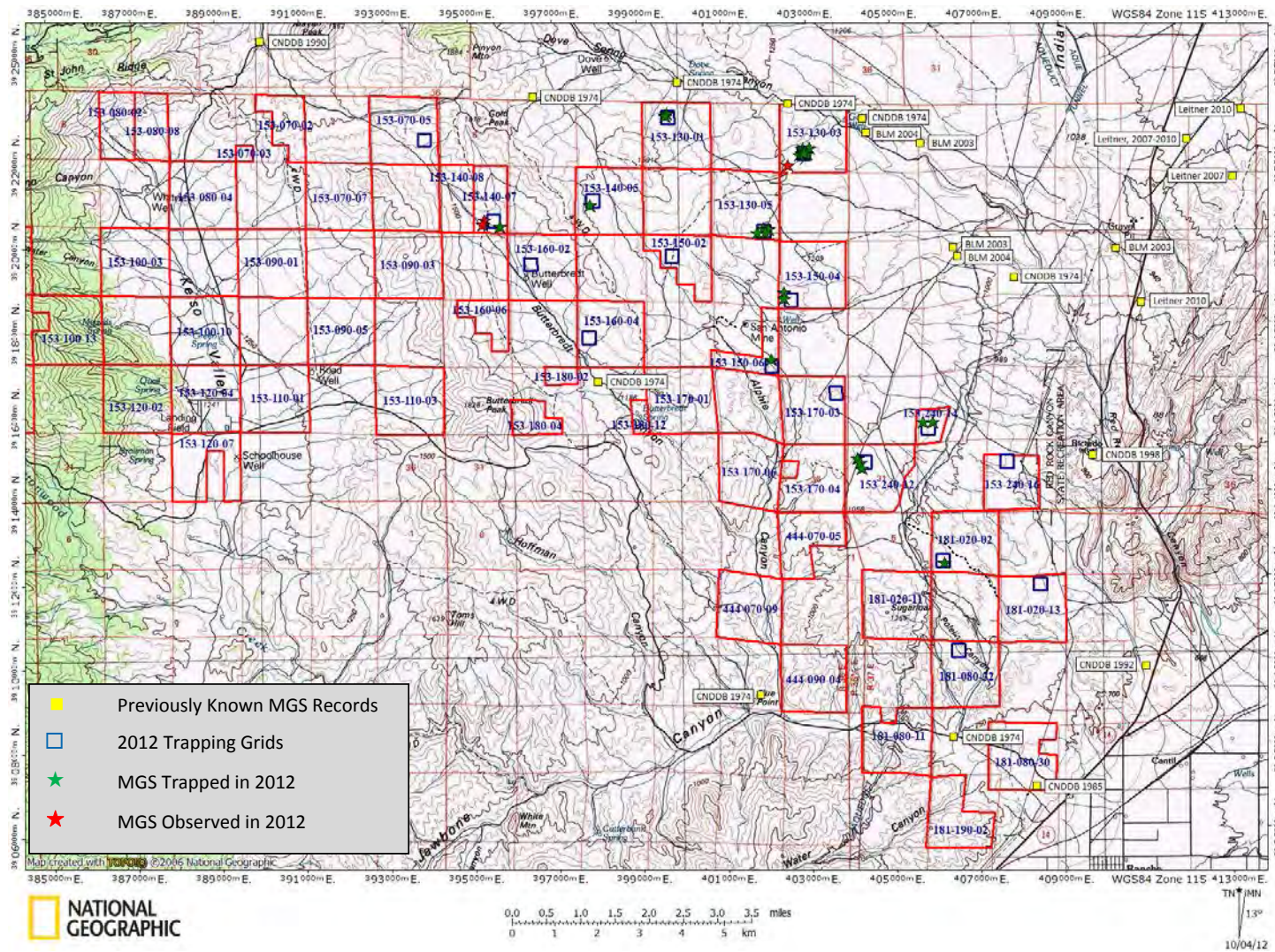


Figure 6. Results of Mohave ground squirrel surveys for Renewable Resources Acquisition Project in 2012.

Table 3. Results of nocturnal small mammal trapping for Renewable Resources property acquisition project, 2012. Relative abundance is # of individuals per 100 trap-nights.

APN	<i>Dipodomys merriami</i>	<i>Dipodomys microps</i>	<i>Dipodomys panamintinus</i>	<i>Chaetodipus formosus</i>	<i>Perognathus longimembris</i>	<i>Neotoma lepida</i>	<i>Onychomys torridus</i>	<i>Peromyscus crinitus</i>	<i>Peromyscus maniculatus</i>	<i>Peromyscus truei</i>	Species Richness	# Individuals	Relative Abundance
153-070-05	3	0	72	0	7	2	4	0	22	5	7	115	28.75
153-130-01	0	0	110	0	1	11	2	0	21	0	5	145	48.33
153-130-03	1	0	82	5	0	20	9	3	23	3	8	146	48.67
153-130-05	2	0	101	1	3	8	1	0	15	0	7	131	43.67
153-140-05	0	0	66	0	1	10	6	0	25	2	6	110	27.50
153-140-07	0	0	70	0	4	9	8	0	18	4	6	113	28.25
153-150-02	0	0	72	0	3	13	1	2	25	1	7	117	29.25
153-150-04	4	0	118	0	6	3	3	0	1	0	6	135	45.00
153-150-06	9	0	114	0	0	6	4	0	28	0	5	161	53.67
153-160-02	0	0	81	0	9	11	3	0	15	0	5	119	33.75
153-160-04	4	0	98	0	1	2	3	0	27	0	6	135	29.75
153-170-03	7	0	106	0	2	2	4	0	20	0	6	141	47.00
153-240-12	14	0	102	0	1	0	2	0	23	0	5	142	47.33
153-240-14	43	0	96	2	0	1	1	0	13	0	6	156	52.00
153-240-16	65	0	31	6	0	4	10	0	43	0	6	159	39.75
181-020-02	28	0	83	9	0	9	0	0	92	0	5	221	55.25
181-020-13	69	0	95	2	1	0	3	0	29	0	6	199	49.75
181-080-32	50	2	87	12	0	5	2	0	50	0	7	208	52.00
# Individuals	299	2	1584	37	39	116	66	5	490	15		2653	42.20
% Individuals	11.3	0.1	59.7	1.4	1.5	4.4	2.5	0.2	18.5	0.6			
# Grids	13	1	18	7	12	16	17	2	18	5			
% Grids	72.2	5.6	100.0	38.9	66.7	88.9	94.4	11.1	100.0	27.8			

Species richness of nocturnal small mammals ranged from five to eight species per grid. Overall, 2,653 individuals were captured. Relative abundance (new individuals per 100 trap-nights) ranged between 27.50 and 55.25.

Two species (Panamint kangaroo rat and deer mouse) were captured on every grid, and accounted for 59.1% and 18.47% of all individuals, respectively. Merriam's kangaroo rat was captured frequently in the eastern part of the study area and less frequently as elevations increased. Overall, it was captured on 13 of the 18 grids and accounted for 11.3% of all individuals. Little pocket mouse, southern grasshopper mouse and desert woodrat were widespread (> 50% of all grids) but detected in relatively low numbers (1% to 5% of all individuals). Four other species were captured relatively infrequently: the

great basin kangaroo rat was present on a single grid at the eastern edge of the project area, the canyon mouse was captured at two grids characterized by large rock outcrops, the pinyon mouse was captured at five grids at higher elevations in dense Joshua tree woodland, and the long-tailed pocket mouse was captured at seven grids in the eastern part of the study area.

Camera Surveys

A total of 144 camera-nights were conducted at the 18 sample sites. The only mammalian predators detected were coyote (*Canis latrans*) and bobcat (*Lynx rufus*). No American badgers or desert kit fox were detected. Other species detected at camera stations included white-tailed antelope ground squirrel, black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), Panamint kangaroo rat, California quail (*Callipepla californica*), chukar (*Alectoris chukar*), greater roadrunner (*Geococcyx californianus*), cactus wren (*Campylorhynchus brunneicapillus*) and northern mockingbird (*Mimus polyglottos*).

Transect Surveys and Incidental Observations

Several special-status species were observed during standardized visual transects or while working on trapping grids, maintaining camera stations and driving onsite (Table 4). Evidence of desert tortoise was observed on five of the parcels (Table 5). Scat was observed on APN 153-150-04, 153-170-03, 153-240-12 and 153-240-16, while skeletal remains were observed on APN 153-240-16 and 181-080-32.

Mohave ground squirrels were observed in two localities in proximity to the trapping grid on APN 153-140-07 and detected by call near the trapping grid on APN 153-130-03. Probable observations at two locations on 153-160-04 in Butterbrecht Canyon could not be confirmed.

Evidence of American badger (scat, dens, digging) was detected on six parcels: 153-130-03, 153-160-02, 153-170-03, 153-240-14, 153-240-16 and 181-020-13. These sites are scattered throughout the study area, reflecting a widespread but seemingly low-density distribution in the area. Evidence of desert kit fox (scat) was detected in only two sites (APN 153-240-12 and 153-240-16) in the eastern part of the project area.

Loggerhead shrikes were widespread and present at 15 of 18 study sites (Table 4). LeConte's thrashers were observed at five sites and a nest was found on APN 153-130-05. Five special-status raptors were observed: golden eagle (*Aquila chrysaetos*) (four sites), prairie falcon (*Falco mexicanus*) (two sites), northern harrier (*Circus cyaneus*) (two sites), Swainson's hawk (*Buteo swainsoni*) (one site) and osprey (*Pandion haliaetus*) (one site). The latter three raptors were considered migrants. Black swifts (*Cypseloides niger*) and Vaux's swift (*Chaetura vauxi*) were also seen flying over two sites during migration.

Table 4. Special-status wildlife observed or detected by sign at Onyx Ranch, 2012.

APN	Desert Tortoise Sign	Osprey	Northern Harrier	Swainson's Hawk	Golden Eagle	Prairie Falcon	Loggerhead Shrike	Black Swift	Vaux's Swift	LeConte's Thrasher	Kit Fox Sign	American Badger Sign
153-070-05							X	X				
153-130-01				X			X	X				
153-130-03							X					X
153-130-05			X		X		X			X		
153-140-05					X							
153-140-07							X		X			
153-150-02							X			X		
153-150-04	X											
153-150-06							X		X	X		
153-160-02							X					X
153-160-04					X		X			X		
153-170-03	X						X			X		X
153-240-12			X		X		X				X	
153-240-14							X					X
153-240-16	X					X	X				X	X
181-020-02												
181-020-13	X	X				X	X					X
181-080-32	X						X					

DISCUSSION AND RECOMMENDATIONS

The Renewable Resources Acquisition Project includes ~28,500 acres of a property historically known as Onyx Ranch in northeastern Kern County, California. The site is at the western edge of the range of the Mohave ground squirrel, a species listed as Threatened under the California Endangered Species Act. An initial habitat assessment identified ~30 Renewable Resources parcels that support potential Mohave ground squirrel habitat (Biosearch 2011). Live-trapping was conducted at 18 of these parcels in 2012, primarily in the northeastern portion of the project area, to ascertain the general distribution of the species. Although the 2012 trapping effort did not follow current CDFG survey protocols for the species (a single 5-day trapping session was conducted rather than three 5-day trapping sessions), the methodology was intended to sample a large area and to direct future sampling efforts, and was not intended to establish absence from specific parcels.

Mohave ground squirrels were present at 10 of 18 sites sampled in the northeastern part of Onyx Ranch. A total of 25 adults were captured, and three other individuals were detected in proximity to trapping grids. For a variety of reasons, Mohave ground squirrels may be difficult to detect, but the number of individuals coupled with the high recapture rate suggest that the 2012 season was ideal to conduct live-trapping for adult Mohave ground squirrels throughout the study area. Large-scale studies conducted in other portions of the species' range in 2012 also noted relatively high capture rates (Leitner, pers. comm.).

As expected, given the lack of rainfall during the preceding winter, none of the Mohave ground squirrels trapped showed evidence of reproductive activity and no juveniles were trapped. Individual body mass covered a wide range (100 to 196 grams) throughout the season, which indicated that different age classes were present (Leitner, et al. 1995). The four years prior to 2012 provided sufficient rainfall to allow for successful reproduction of the species range-wide (Leitner, pers. comm.; Laabs and Allaback, pers. obs.). The high ratio of females to males trapped in 2012 (2.1:1) is consistent with results from other studies, which have shown ratios from 1.3:1 to 7:1 (Leitner and Leitner 1998).

Results from the present study indicate that the Mohave ground squirrel is widespread in the northeastern part of Onyx Ranch as far west as Butterbredt Canyon. The species was trapped in Creosote Scrub, Mixed Mohave Woody Scrub, Blackbush Scrub and Joshua Tree Woodland. The 2012 survey effort did not sample areas of steep terrain or rocky soils. Although Mohave ground squirrels are not generally considered to occur in these habitats, juveniles may traverse such areas during dispersal (Harris and Leitner 2005).

Although Kelso Valley is generally considered to be outside the range of the Mohave ground squirrel, suitable habitat is present, and the species is present in adjacent Butterbredt Canyon. A Mohave ground squirrel was observed in 1990 at the intersection of Kelso Valley Road and Butterbredt Canyon Road (CNDDDB 2012), approximately one mile north of Onyx Ranch. Additional live-trapping studies are therefore recommended

to confirm presence on those Renewable Resources parcels in Kelso Valley that provide potential habitat.

Dietary overlap between Mohave ground squirrels and cattle has been demonstrated (Leitner et al. 1995). The degree of overlap increases during dry years. In the Coso region, cattle preferentially fed on winterfat, a shrub species that also made up a large part of the diet of the Mohave ground squirrel (Leitner et al. 1995).

Although Mohave ground squirrels are known to persist in other areas that receive OHV use, the activity reduces the diversity of available forage (Leitner 2010). More research is needed to determine the level of OHV activity that the species can tolerate and still sustain reproducing populations. Restricting OHV use to existing established roads is recommended, in order to maintain appropriate plant diversity to sustain Mohave ground squirrel populations.

No special-status pocket mice were captured during 6,400 trap-nights. Habitat within the areas sampled did not appear suitable for the Tehachapi pocket mouse, which is most often associated with grassland, chaparral, oak savannah and yellow pine forest. Portions of the property at higher elevations (Butterbrecht Canyon, upper Alphie Canyon, Kelso Valley) appear to provide suitable habitat for the yellow-eared pocket mouse. Habitat for the San Joaquin pocket mouse, a species designated as Sensitive by the Bureau of Land Management, is limited to the parcels in the Caliente Creek watershed in the southwestern corner of the site.

The southern grasshopper mouse (*Onychomys torridus*), was present throughout the area sampled and was captured on 17 of the 18 sites sampled. Both *O. t. tularensis* (a CDFG Species of Special Concern) and *O. t. pulcher* (a common, widespread subspecies) have been reported from the project area (MVZ 2012). Genetic analysis is needed to clarify sub-specific affiliations of the southern grasshopper mice onsite.

The American badger, which is designated as a Species of Special Concern by CDFG, was detected by sign at 6 of the 18 locations sampled. The species has a large home range and no estimate of relative abundance can be made using the data collected. A relatively low number of individuals are likely present, but potential habitat exists throughout much of the project area.

The desert kit fox, which is designated as a protected under the Fish and Game Code of California, was found at only two study sites along the eastern edge of the study area, and it was not detected at the camera stations. However, the cameras were likely not in operation for long enough to collect sufficient data on wide-ranging carnivores such as desert kit fox. Suitable habitat for the species is present in the flatter terrain of the eastern part of the site.

Agassiz's desert tortoise sign was noted on five parcels in the eastern part of the site. Scat was found at four locations. A partially disarticulated carcass was found at one location

and scutes were present on two parcels. Scat was observed at two locations dominated by blackbush scrub, which is a plant community that is not typically associated with tortoise. Focused surveys for tortoise were conducted in 2012 by Leatherman BioConsulting, Inc. and are reported separately.

Several special-status bird species were observed incidentally to 2012 surveys. Loggerhead shrikes were widespread and present at 15 of 18 study sites and nesting was confirmed in several locales. LeConte's thrashers were observed at five sites, with a nest observed at one. Golden eagles were observed at four sites and prairie falcon at two sites. Potential nesting habitat was observed for both special-status raptors in cliffs at higher elevations. Focused surveys for special-status avian species were conducted in 2012 by TRA and are reported separately.

Disturbances observed in and around the 18 study locations included OHV trails and roads, many of which had been closed and some that were undergoing restoration. Evidence of use by cattle was widespread. Other disturbed or barren areas were localized as a result of camping, shooting or concentrating cattle. Very little litter or dumping was observed. Clearly both the BLM and Friends of Jawbone Canyon are actively managing the project area and reducing the incidence of off-trail use. Most of the study area appeared relatively undisturbed and supported a diverse wildlife assemblage.

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Appendix A. Vertebrate species observed or detected by sign in 2012, Renewable Resources Property Acquisition Project, Kern County

Reptilia	Reptiles
Testudinidae <i>Gopherus agassizi</i>	Land Tortoises Agassiz's desert tortoise
Crotaphytidae <i>Gambelia wislizenii</i>	Collared and Leopard Lizards Long-nosed leopard lizard
Phrynosomatidae <i>Callisaurus draconoides</i> <i>Sceloporus magister</i> <i>Sceloporus occidentalis</i> <i>Uta stansburiana</i> <i>Phrynosoma platyrhinos</i>	Spiny Lizards Zebra-tailed lizard Desert spiny lizard Western fence lizard Side-blotched lizard Desert horned lizard
Xantusiidae <i>Xantusia vigilis</i>	Night Lizards Desert night lizard
Teiidae <i>Aspidoscelis tigris</i>	Whiptails and Their Allies Western whiptail
Colubridae <i>Masticophis flagellum</i> <i>Salvadora hexalepis</i> <i>Arizona elegans</i> <i>Pituophis catenifer</i>	Colubrids Coachwhip Western patch-nosed snake Glossy snake Gopher snake
Viperidae <i>Crotalus oreganus</i> <i>Crotalus scutulatus</i>	Vipers Western rattlesnake Mohave rattlesnake
Aves	Birds
Ardeidae <i>Ardea alba</i>	Hérons, Egrets and Bitterns Great egret
Cathartidae <i>Cathartes aura</i>	New World Vultures Turkey vulture
Pandionidae <i>Pandion haliaetus</i>	Ospreys Osprey

Accipitridae	Hawks, Kites and Eagles
<i>Circus cyaneus</i>	Northern harrier
<i>Accipiter cooperii</i>	Cooper's hawk
<i>Buteo jamaicensis</i>	Red-tailed hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Aquila chrysaetos</i>	Golden eagle
Falconidae	Falcons and Caracaras
<i>Falco sparverius</i>	American kestrel
<i>Falco mexicanus</i>	Prairie falcon
Phasianidae	Grouse and Ptarmigans
<i>Alectoris chukar</i>	Chukar (introduced)
Odontophoridae	New World Quail
<i>Callipepla californica</i>	California quail
Columbidae	Pigeons and Doves
<i>Zenaida macroura</i>	Mourning dove
Cuculidae	Cuckoos and Anis
<i>Geococcyx californianus</i>	Greater roadrunner
Strigidae	Typical Owls
<i>Bubo virginianus</i>	Great horned owl
Caprimulgidae	Nightjars
<i>Chordeiles acutipennis</i>	Lesser nighthawk
<i>Phalaenoptilus nuttallii</i>	Common poorwill
Apodidae	Swifts
<i>Cypseloides niger</i>	Black swift
<i>Chaetura vauxi</i>	Vaux's swift
<i>Aeronautes saxatalis</i>	White-throated swift
Trochilidae	Hummingbirds
<i>Calypte costae</i>	Costa's hummingbird
Picidae	Woodpeckers
<i>Picoides scalaris</i>	Ladder-backed woodpecker
<i>Colaptes auratus</i>	Northern flicker
Tyrannidae	Tyrant Flycatchers
<i>Contopus sordidulus</i>	Western wood-pewee
<i>Empidonax wrightii</i>	Gray flycatcher

<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Sayornis nigricans</i>	Black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher
<i>Tyrannus verticalis</i>	Western kingbird
Laniidae	Shrikes
<i>Lanius ludovicianus</i>	Loggerhead shrike
Vireonidae	Vireos
<i>Vireo gilvus</i>	Warbling vireo
Corvidae	Jays, Magpies and Crows
<i>Aphelocoma californica</i>	Western scrub-jay
<i>Corvus corax</i>	Common raven
Alaudidae	Larks
<i>Eremophila alpestris</i>	Horned lark
Hirundinidae	Swallows
<i>Tachycineta thalassina</i>	Violet-green swallow
<i>Petrochelidon pyrrhonota</i>	Cliff swallow
<i>Hirundo rustica</i>	Barn swallow
Troglodytidae	Wrens
<i>Campylorhynchus brunneicapillus</i>	Cactus wren
<i>Salpinctes obsoletus</i>	Rock wren
Silviidae	Old World warblers and gnatcatchers
<i>Polioptila caerulea</i>	Blue-gray gnatcatcher
Turdidae	Thrushes
<i>Catharus ustulatus</i>	Swainson's thrush
<i>Catharus guttatus</i>	Hermit thrush
<i>Turdus migratorius</i>	American robin
Mimidae	Mimic thrushes
<i>Mimus polyglottos</i>	Northern mockingbird
<i>Oreoscoptes montanus</i>	Sage thrasher
<i>Toxostoma lecontei</i>	LeConte's thrasher
<i>Toxostoma redivivum</i>	California thrasher
Sturnidae	Starlings
<i>Sturnus vulgaris</i>	European starling (introduced)

Bombycillidae*Bombycilla cedrorum***Parulidae**

Oreothlypis celata
Dendroica coronata
Dendroica nigrescens
Dendroica townsendi
Dendroica petechia
Oporornis tolmiei
Geothlypis trichas
Wilsonia pusilla

Thraupidae*Piranga ludoviciana***Emberizidae**

Pipilo chlorurus
Pipilo maculatus
Melospiza crissalis
Spizella passerina
Spizella breweri
Amphispiza belli
Amphispiza bilineata
Amphispiza melanocorys
Passerculus sandwichensis
Zonotrichia leucophrys

Cardinalidae

Pheucticus melanocephalus
Passerina amoena

Icteridae*Icterus parisorum***Fringillidae**

Carpodacus purpureus
Carpodacus mexicanus
Carduelis psaltria

Mammalia**Leporidae**

Sylvilagus audubonii
Lepus californicus

Waxwings

Cedar waxwing

Wood-Warblers

Orange-crowned warbler
Yellow-rumped warbler
Black-throated gray warbler
Townsend's warbler
Yellow warbler
MacGillivray's warbler
Common yellowthroat
Wilson's warbler

Tanagers

Western tanager

Sparrows

Green-tailed towhee
Spotted towhee
California towhee
Chipping sparrow
Brewer's sparrow
Sage sparrow
Black-throated sparrow
Lark bunting
Savannah sparrow
White-crowned sparrow

Cardinals and Allies

Black-headed grosbeak
Lazuli bunting

Blackbirds

Scott's oriole

Finches

Purple finch
House finch
Lesser goldfinch

Mammals**Rabbits and hares**

Desert cottontail
Black-tailed jackrabbit

Sciuridae	Squirrels
<i>Ammospermophilus leucurus</i>	White-tailed antelope squirrel
<i>Xerospermophilus mohavensis</i>	Mohave ground squirrel
<i>Spermophilus beecheyi</i>	California ground squirrel*
Geomyidae	Pocket gophers
<i>Thomomys bottae</i>	Botta's pocket gopher
Heteromyidae	Pocket mice and kangaroo rats
<i>Dipodomys microps</i>	Chisel-toothed kangaroo rat
<i>Dipodomys panamintinus</i>	Panamint kangaroo rat
<i>Dipodomys merriami</i>	Merriam's kangaroo rat
<i>Chaetodipus formosus</i>	Long-tailed pocket mouse
<i>Perognathus longimembris</i>	Little pocket mouse
Family Muridae	Mice, rats and voles
<i>Peromyscus maniculatus</i>	Deer mouse
<i>Peromyscus crinitus</i>	Canyon mouse
<i>Peromyscus truei</i>	Pinyon mouse
<i>Onychomys torridus</i>	Southern grasshopper mouse
<i>Neotoma lepida</i>	Desert woodrat
<i>Neotoma macrotis</i>	Big-eared woodrat
Canidae	Foxes, Wolves and relatives
<i>Canis latrans</i>	Coyote
<i>Vulpes macrotis</i>	Kit fox
Mustelidae	Weasels, Skunks and Relatives
<i>Taxidea taxus</i>	American badger
Felidae	Cats
<i>Lynx rufus</i>	Bobcat
Cervidae	Deer, elk and relatives
<i>Odocoileus hemionus</i>	Mule deer

*observed on BLM land near Dove Springs

Appendix B. Relative abundance of antelope ground squirrels (Individuals /500 trap-days*) at Onyx Ranch in 2012. * = Sites trapped for 400 trap-days due to weather.

Site #	Adult Females	Juvenile Females	Adult Males	Juvenile Males	# Individuals
153-070-05	5	2	19	1	27
153-130-01	21	0	13	0	34
153-130-03	19	0	18	0	37
153-130-05	27	0	20	0	47
153-140-05	14	2	17	1	34
153-140-07	20	1	23	4	48
153-150-02	10	0	17	0	27
153-150-04	14	0	17	0	31
153-150-06*	15	0	14	0	29*
153-160-02	14	1	14	2	31
153-160-04	17	8	21	5	51
153-170-03*	11	0	9	0	20*
153-240-12*	7	0	19	0	26*
153-240-14*	10	0	12	0	22*
153-240-16	22	0	16	0	38
181-020-02	24	0	24	0	48
181-020-13	18	0	16	0	34
181-080-32	24	0	22	0	46
Total	292	14	311	13	630

Appendix C. Mohave ground squirrel trapping localities (1st capture only for each individual).

Grid	Date	ID	UTM N	UTM E
3	4/24/2012	1	402459	3918759
3	4/25/2012	2	402459	3918619
4	4/23/2012	1	401974	3920281
4	4/25/2012	2	402114	3920281
4	4/26/2012	3	401834	3920176
4	4/26/2012	4	402044	3920176
5	3/28/2012	1	406212	3912311
7	4/9/2012	1	404271	3914565
7	4/9/2012	2	404236	3914705
7	4/11/2012	3	404166	3914810
8	4/10/2012	1	402146	3917176
9	4/23/2012	1	402858	3922028
9	4/23/2012	2	402928	3922063
9	4/23/2012	3	402928	3922028

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9	4/23/2012	4	403033	3922028
9	4/24/2012	5	402963	3922063
9	4/25/2012	6	403033	3922063
9	4/25/2012	7	402928	3922168
9	4/25/2012	8	403103	3922168
10	5/9/2012	1	395740	3920390
14	4/23/2012	1	399679	3922984
14	4/23/2012	2	399713	3923018
15	4/9/2012	1	405721	3915655
15	4/12/2012	2	405962	3915654
17	5/21/2012	1	397882	3920884

Appendix D. Agassiz's desert tortoise sign observed at Onyx Ranch, 2012.

Date	Observer		UTM E	UTM N	Notes
3/19/2012	DL	11	408425	3911732	Scat on Grid 2
3/19/2012	DL	11	408374	3911722	Scat on Grid 2
3/20/2012	DL	11	406391	3910178	Scutes on Grid 1
3/26/2012	MA	11	407541	3914676	Carcass on Grid 0
3/26/2012	MA	11	407577	3914893	Scat on Grid 0
3/28/2012	DL	11	408506	3911654	Scat on Grid 2
3/28/2012	DL	11	408555	3911868	Scat on Grid 2
3/30/2012	CM	11	406957	3909711	Scutes near Grid 1
3/30/2012	CM	11	406654	3910071	Scutes on Grid 1
4/11/2012	MA	11	403473	3915731	Scat on Transect south of Grid 6
4/24/2012	DL	11	402735	3918623	Juvenile scat on Grid 3

Appendix E. Onyx Ranch Mohave Ground Squirrel Trapping Grid Photos, 2012.



APN 153-240-16 Facing East



APN 153-240-16 Facing West



APN 181-080-32 Facing East



APN 181-080-32 Facing West



APN 181-020-13 Facing East



APN 181-020-13 Facing West

Appendix E. Onyx Ranch Mohave Ground Squirrel Trapping Grid Photos, 2012.



APN 153-150-04 Facing East



APN 153-150-04 Facing West



APN 153-130-05 Facing East



APN 153-130-05 Facing West



APN 181-020-02 Facing East



APN 181-020-02 Facing West

Appendix E. Onyx Ranch Mohave Ground Squirrel Trapping Grid Photos, 2012.



APN 153-170-03 Facing East



APN 153-170-03 Facing West



APN 153-240-12 Facing East



APN 153-240-12 Facing West



APN 153-150-06 Facing East



APN 153-150-06 Facing West

Appendix E. Onyx Ranch Mohave Ground Squirrel Trapping Grid Photos, 2012.



APN 153-130-03 Facing East



APN 153-130-03 Facing West



APN 153-140-07 Facing East



APN 153-140-07 Facing West



APN 153-070-05 Facing East



APN 153-070-05 Facing West

Appendix E. Onyx Ranch Mohave Ground Squirrel Trapping Grid Photos, 2012.



APN 153-160-02 Facing East



APN 153-160-02 Facing West



APN 153-160-04 Facing East



APN 153-160-04 Facing West



APN 153-130-01 Facing East



APN 153-130-01 Facing West

Appendix E. Onyx Ranch Mohave Ground Squirrel Trapping Grid Photos, 2012.



APN 153-240-14 Facing North



APN 153-240-14 Facing South



APN 153-150-02 Facing East



APN 153-150-02 Facing West



APN 153-140-05 Facing East



APN 153-140-05 Facing West

APPENDIX I

BIOLOGY TABLES

TRA Environmental Sciences, Inc.

Table I-1. Summary of Elevation, Soils, Vegetation Types, and Disturbances for the Acquisition Parcels				
Parcel No.	Elevation Range (ft.)	Soils	Vegetation	Disturbances
Jawbone Canyon Parcels				
J-1	2,550-3,450	Jawbone and Typic Torriorthents-Rock Outcrop	lower Mojave woody scrub, creosote and bursage scrub, desert wash and terrace, blackbrush scrub, rock outcrops	Abundant OHV tracks, erosion
J-2	2,464-2,962	Cutterbank soils and Koehn sands	creosote and bursage scrub, desert wash and terrace, wetland and riparian	Abundant OHV tracks
J-3	2,360-3,240	Koehn sands and Jawbone associations	creosote and bursage scrub, desert wash and terrace, blackbrush scrubland, upper Mojave woody scrub	Abundant OHV tracks, erosion; invasive plants
J-4	2,130-2,440	Cutterbank soils and Koehn sands	creosote and bursage scrub, desert wash and terrace, wetland and riparian, barren, developed	Abundant OHV tracks, invasive plants
J-5	2,360-3,316	Jawbone association, Koehn sands and Cutterbank soils	creosote and bursage scrub, wetland and riparian, blackbrush scrubland, Joshua tree woodland, desert wash and terrace, barren	Abundant OHV tracks in lower portion
Sugarloaf Area Parcels				
S-1	3,120-3,340	Dove canyon loamy sand and Cutterbank soils	blackbrush scrubland, creosote and bursage scrub, desert wash and terrace	Some roads and OHV tracks
S-2	3,360-3,480	Dove canyon loamy sand and Cutterbank soils	blackbrush scrubland, desert wash and terrace	Moderate amount of OHV tracks
S-3	2,800-3,180	Cutterbank lakebed soils, Dove canyon loamy sand	creosote and bursage scrub, lower Mojave woody scrub, barren, upper Mojave woody scrub, desert wash and terrace, wetland and riparian	Small amount of OHV disturbance
S-4	2,760-3,320	Cutterbank lakebed soils, Dove canyon loamy sand	creosote and bursage scrub, desert wash and terrace, wetland and riparian	Little OHV disturbance, 1 designated road
S-5	3,000-4,132	Typic Torriorthents-Rock Outcrops, Jawbone Association, Cutterbank soils	lower Mojave woody scrub, creosote and bursage scrub, desert wash and terrace, rock outcrop, wetland and riparian	Moderate OHV disturbance
S-6	2,500-2,967	Cutterbank lakebed soils, Koehn coarse sands	creosote and bursage scrub, barren, desert wash and terrace, wetland and riparian	Moderate OHV disturbance

Table I-1. Summary of Elevation, Soils, Vegetation Types, and Disturbances for the Acquisition Parcels				
Parcel No.	Elevation Range (ft.)	Soils	Vegetation	Disturbances
Dove Springs Area Parcels				
D-1	4,320-4,960	Goldpeak-Wingap-Pinyonpeak complex	Joshua tree woodland, blackbrush scrubland, grassland	A few tracks from OHV or livestock
D-2	3,620-4,160	Pinyonpeak-Wingap-Rock Outcrop and Goldpeak complex	wetland and riparian, desert wash and terrace, lower Mojave woody scrub, Joshua tree woodland, blackbrush scrubland, upper Mojave woody scrub	Moderate OHV and livestock disturbance
D-3	4,040-4,606	Goldpeak-Wingap-Pinyonpeak complex	Joshua tree woodland, blackbrush scrubland	Low level of OHV disturbance
D-4	3,760-4,040	Goldpeak gravelly loamy sand	Joshua tree woodland	Moderate OHV disturbance
Alphie Canyon Area Parcels				
A-1	4,600-5,080	Goldpeak-Pinyonpeak-Wingate complex and Wingate-Pinyonpeak soils	Joshua tree woodland, blackbrush scrubland, desert wash and terrace	Low to moderate OHV and livestock disturbance
A-2	4,280-4,617	Wingate-Pinyonpeak and Goldpeak-Pinyonpeak-Wingate complex	Joshua tree woodland	Low to moderate OHV and livestock disturbance
A-3	3,780-4,200	Wingap-Pinyonpeak and Goldpeak soils	Joshua tree woodland, blackbrush scrubland, desert wash and terrace	Moderate OHV disturbance
A-4	3,320-3,856	Wingap, Pinyonpeak, Goldpeak and Jawbone-Typic Haplargids-Rock Outcrop soils	Joshua tree woodland, blackbrush scrubland, lower Mojave woody scrub, creosote and bursage scrub, barren, desert wash and terrace, wetland and riparian	Some OHV disturbance, invasive plants
A-5	3,040-3,920	Wingap-Pinyonpeak and Jawbone-Typic Haplargids	Joshua tree woodland, blackbrush scrubland, lower Mojave woody scrub, creosote and bursage scrub, barren, desert wash and terrace, wetland and riparian	Moderate OHV disturbance
A-6	3,200-3,680	Jawbone, Wingate-Pinyonpeak-Goldpeak, Typic Torriorthents, and Dovecanyon loamy sands	blackbrush scrubland, lower Mojave woody scrub, creosote and bursage scrub, desert wash and terrace	Moderate OHV disturbance, erodible soils

Table I-1. Summary of Elevation, Soils, Vegetation Types, and Disturbances for the Acquisition Parcels				
Parcel No.	Elevation Range (ft.)	Soils	Vegetation	Disturbances
A-7	2,960-3,584	Typic Torriorthents-Rock Outcrop soils and Dovecanyon loamy sand	blackbrush scrubland, lower Mojave woody scrub, desert wash and terrace	Moderate OHV disturbance
A-8	2,680-3,320	Jawbone-Typic Haplargids-Rock Outcrop association, Typic Torriorthents and Koehn fine sands	blackbrush scrubland, creosote and bursage scrub, desert wash and terrace, lower Mojave woody scrub, Joshua tree woodland, barren	Moderate OHV disturbance
Butterbredt Area Parcels				
B-1	5,000-5,560	Grandora-Pinyonpeak association	Joshua tree woodland, upper Mojave woody scrub	Designated roads only
B-2	4,720-5,360	Grandora-Pinyonpeak association and Goldpeak-Pinyonpeak-Wingap complex	Joshua tree woodland, upper Mojave woody scrub, blackbrush scrubland	Low level of vehicle disturbance
B-3	4,600-5,200	Grandora-Pinyonpeak association and Goldpeak-Pinyonpeak-Wingap complex	Joshua tree woodland	Low level of OHV disturbance
B-4	4,320-5,040	Goldpeak-Pinyonpeak-Wingap complex	Joshua tree woodland, blackbrush scrubland, juniper woodland	Butterbredt Well, non-native plants
B-5	4,500-5,200	Goldpeak-Pinyonpeak-Wingap complex	Joshua tree woodland, blackbrush scrubland	Light OHV and livestock disturbance
B-6	4,060-4,818	Goldpeak-Pinyonpeak-Wingap complex	Joshua tree woodland, blackbrush scrubland	Low level of OHV disturbance
B-7	4,420-5,409	Wingap-Pinyonpeak association	Upper Mojave woody scrub, Joshua tree woodland, blackbrush scrubland	Low level of OHV disturbance, erosion
B-8	4,140-4,500	Wingap-Pinyonpeak association	Blackbrush scrubland	Little disturbance
B-9	3,720-4,000	Wingap-Pinyonpeak association	Joshua tree woodland, blackbrush scrubland, desert wash and terrace, wetland and riparian	Abundant birdwatchers, invasive plants
B-10	3,640-4,760	Wingap-Pinyonpeak association	Joshua tree woodland, blackbrush scrubland, desert wash and terrace, wetland and riparian	Low to moderate OHV and livestock disturbance

Table I-1. Summary of Elevation, Soils, Vegetation Types, and Disturbances for the Acquisition Parcels				
Parcel No.	Elevation Range (ft.)	Soils	Vegetation	Disturbances
Kelso Valley Area Parcels				
K-1	4,480-5,800	Xyno-Rock Outcrop-Canebrake association, Chollawell and Inyo soils	Upper Mojave woody scrub, desert wash and terrace, rock outcrop, wetland and riparian	Historic ranch roads, wildfire
K-2	4,390-5,640	Xyno-Rock Outcrop-Canebrake association, Chollawell and Inyo soils	Upper Mojave woody scrub, desert wash and terrace, rock outcrop, wetland and riparian, Joshua tree woodland	Historic ranch road, wildfire
K-3	4,680-4,840	Chollawell-Inyo complex	Joshua tree woodland, desert wash and terrace	Little disturbance
K-4	4,620-5,240	Grandora-Pinyonpeak association	Upper Mojave woody scrub, pine forest and woodland, desert wash and terrace	Low level vehicle and recreational disturbance
K-5	4,240-4,390	Inyo-Riverwash, Inyo, and Chollawell	Upper Mojave woody scrub, desert wash and terrace, Joshua tree woodland, grassland	Historic ranch roads, wildfire
K-6	4,220-4,643	Chollawell-Inyo complex and Inyo-Riverwash soils	Upper Mojave woody scrub, desert wash and terrace, Joshua tree woodland, blackbrush scrubland	Kelso Valley Rd. and historic ranch roads
K-7	4,270-6,274	Chollawell-Inyo complex and Wingap-Pinyonpeak soils	Upper Mojave woody scrub, Joshua tree woodland, blackbrush scrubland	Little disturbance
K-8	5,280-7,704	Sorrell-Martee-Rock Outcrop association	Pine forest and woodland, oak forest and woodland	Forest road, wildfire
K-9	4,175-4,680	Chollawell, cobbly and gravelly complex, Kernville-Faycreek Rock Outcrop, Inyo gravelly loam and Inyo-Riverwash	Upper Mojave woody scrub, desert wash and terrace, Joshua tree woodland, barren and rock outcrop, pine forest and woodland, wetland and riparian	Historic ranch roads, wildfire
K-10	4,180-4,700	Chollawell-Inyo complex	Joshua tree woodland, desert wash and terrace	Light vehicle disturbance
K-11	4,800-5,803	Wingap-Pinyonpeak association	Upper Mojave woody scrub, Joshua tree woodland, blackbrush scrubland	Little disturbance
K-12	4,600-6,760	Sorrell-Martee-Rock Outcrop association	Pine forest and woodland, oak forest and woodland, juniper woodland	Wildfire
K-13	4,020-4,175	Kelval fine sandy loam, Kernfork loam and Inyo gravelly loamy coarse sand	Desert wash and terrace, Joshua tree woodland, wetland and riparian, grassland, juniper woodland, developed	Moderate disturbance from livestock and wildfire

Table I-1. Summary of Elevation, Soils, Vegetation Types, and Disturbances for the Acquisition Parcels				
Parcel No.	Elevation Range (ft.)	Soils	Vegetation	Disturbances
K-14	4,230-4,900	Chollawell gravelly loamy coarse sand	Joshua tree woodland, blackbrush scrubland	Light vehicle disturbance
K-15	4,880-6,480	Sorrell-Martee-Rock Outcrop group	Pine forest and woodland, oak forest and woodland, grassland	Little disturbance
K-16	4,200-5,280	Sorrell-Martee-Rock Outcrop and Kernville-Faycreek-Rock Outcrop groups	Pine forest and woodland, oak forest and woodland, juniper woodland, grassland, upper Mojave woody scrub, barren and rock outcrop	Wildfire, livestock
K-17	4,000-4,090	Kernfork loam, Chollawell and Inyo gravelly loamy coarse sand	Wetland and riparian, grassland, desert wash and terrace	Wildfire and hydrology disturbances
K-18	3,950-4,210	Chollawell and Inyo gravelly sandy soils	Joshua tree woodland, blackbrush scrubland, desert wash and terrace, juniper woodland, upper Mojave woody scrub	Moderate disturbance from roads and vehicles
K-19	4,000-4,200	Hoffman-Tips-Pilotwell association	Juniper woodland, Joshua tree woodland, blackbrush scrubland, desert wash and terrace, upper Mojave woody scrub	Jawbone Canyon Road
K-20	3,870-4,100	Kernfork loam and Chollawell gravelly loamy coarse sand	Wetland and riparian, grassland, desert wash and terrace, juniper woodland, oak forest and woodland	Hydrology and wildfire disturbances
Landers Meadow Parcels				
L-1	6,210-6,380	Wind River-Dome Rock group, Monache soils, and Scodie, Sacatar-Canebrake complex soils	Wetland and riparian, pine forest and woodland, upper Mojave woody scrub	Light vehicle disturbance
L-2	6,320-6,350	Deerspring fine sandy loams and Monache variant soils, Scodie-Sacatar-Canebrake complex	Wetland and riparian, pine forest and woodland, upper Mojave woody scrub	Little disturbance
L-3	6,400-6,840	Scodie-Sacatar-Canebrake association, and Sorrell-Martee-Rock Outcrop association	Pine forest and woodland	Light vehicle disturbance
Caliente Creek Parcels				
C-1	3,480-4,730	Tunis-Tollhouse-Sorrell Association	Juniper woodland, upper Mojave woody scrub, grassland, oak forest and woodland, pine forest and woodland	Light vehicle disturbance

Parcel No.	Elevation Range (ft.)	Soils	Vegetation	Disturbances
C-2	4,000-4,620	Tunis-Tollhouse-Sorrell Association	Upper Mojave woody scrub, grassland, oak forest and woodland, pine forest and woodland	Light vehicle disturbance
C-3	Unknown	Unknown	Juniper woodland, grassland, oak forest and woodland, pine forest and woodland	Unknown
C-4	3,600-5,000	Locobill-Backcanyon-Sesame complex and Tunis-Tollhouse-Sorrell association	Juniper woodland, upper Mojave woody scrub, grassland, oak forest and woodland, pine forest and woodland	Light vehicle disturbance

Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area ^b	Sources
Insects					
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT	Streamside habitats below 3,000 ft throughout the Central Valley.	Riparian and oak savanna habitats with elderberry shrubs; elderberry is the host plant.	None; no suitable habitat (i.e. elderberry shrubs) found in the project area.	1
Amphibians and Reptiles					
Kern Plateau slender salamander (<i>Batrachoseps robustus</i>)	USFS S	Occurs on the Kern Plateau of the southeastern Sierra Nevada in Kern County from 5,580 - 9,200 ft. (1,700 - 2,800 m), on the eastern slopes of the Sierra Nevada draining into the Owens Valley and Indian Wells Valley in Inyo County, at elevations of 4,690 to 8,000 ft. (1,430–2,440 m) and the Scodie Mountains in Kern County at elevations of 6,500 - 6,640 ft. (1,980 - 2,025 m).	Near springs and seeps in Jeffery pine/red fir and lodgepole pine forests and in riparian scrub.	Low. Only known from Kern Plateau and Scodie Mountains.	1, 2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Tehachapi slender salamander (<i>Batrachoseps stebbinsi</i>)	ST BLM S USFS S	Found in scattered populations in the Caliente Creek drainage at the juncture of the Sierra Nevada and the Tehachapi Mountains, and in isolated canyons on the northern slopes of the Tehachapi Mountains from Tejon Canyon to Fort Tejon.	Moist canyons and ravines in oak and mixed woodlands.	Moderate. Potential habitat present in southwestern corner of project area in Caliente Creek watershed.	1, 2
yellow-blotched salamander (<i>Ensatina eschscholtzii croceator</i>)	CSSC BLM S USFS S	This California endemic subspecies occurs in the lower Kern River Canyon, the Paiute Mountains, Breckenridge Mountain, the Tehachapi mountains, on Mt. Pinos, near Fort Tejon, and near Frazier-Alamo mountain.	Oak woodland, pine and fir woodlands.	Moderate. Suitable habitat present in southwest corner of project area in Piute Mountains.	1, 2
Western pond turtle (<i>Actinemys marmorata</i>)	CSSC BLM S USFS S	From Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley and on western slope of Sierra Nevada.	Ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Moderate. Suitable aquatic habitat present at ponds in Kelso Valley. Not known from the project area.	1, 2
desert tortoise (<i>Gopherus agassizii</i>)	FT ST	In California, it is found throughout the Mojave Desert south along the Colorado river and along the east side of the Salton Basin. Absent from the Coachella Valley.	Variety of desert scrub habitats with friable soils.	Present. This species was observed in the eastern portion of the project area during the Spring 2012 desert tortoise surveys.	1, 2, 3, 4

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Coast horned lizard (<i>Phrynosoma blainvillii</i>)	CSSC BLM S USFS S	Historically, found along the Pacific coast from the Baja California border west of the deserts and the Sierra Nevada, north to the Bay Area, and inland as far north as Shasta Reservoir, and south into Baja California. Ranges up onto the Kern Plateau east of the crest of the Sierra Nevada. Current range is more fragmented.	Chaparral, grasslands, coniferous forests in fine, loose soils.	High. Suitable habitats present throughout much of project site. Present throughout adjacent NRSP.	1, 2, 6
silvery legless lizard (<i>Anniella pulchra pulchra</i>)	CSSC USFS S	Occurs from the southern edge of the San Joaquin River in northern Contra Costa County south to northwestern Baja California Del Norte just south of Colonia Guerrero. Five lineages; Lineage D occurs in project area.	Dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and riparian habitats with moist, sandy soils.	High. Suitable habitats in moist, sandy soils. Observed in 2010 during surveys for NSRP.	2, 6
rosy boa (<i>Charina trivirgata</i>)	USFS S	Occurs in the extreme south of California, in Arizona and in Northern Mexico.	Inhabits arid scrublands, semi-arid shrublands, rocky shrublands, rocky deserts, canyons, and other rocky areas. Appears to be common in riparian areas, but does not require permanent water.	None. The project area is outside of this species' range.	1

Table I-2. Special-status Wildlife Potentially Occurring in the Project Area					
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area ^b	Sources
Birds					
American white pelican (nesting colony) (<i>Pelecanus erythrorhynchos</i>)	CSSC	Within California, a year-round resident along the Coast and Central Valley from the San Francisco Bay Area south to the border with Mexico; and a summer resident in the northeast corner of California.	White pelicans nest on the ground in colonies on earthen, sandy or rocky, islands, peninsulas or tule mats. They forage in shallow inland waters or shallow coastal marine waters.	Present. Observed in the project area incidentally during Spring 2012 avian surveys. White pelicans do not breed in the project area, but are known to migrate through.	5
Northern harrier (<i>Circus cyaneus</i>)	CSSC	Throughout lowland California; has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	Present. Observed in the project area incidentally during Spring 2012 avian surveys. Potential nesting habitat present in Kelso Valley. Known to migrate through area.	2, 3, 4, 5
white-tailed kite (<i>Elanus leucurus</i>)	CFP	Lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills, to western San Diego County at Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Low. No nesting habitat present, project area is at the edge of this species' range. May occasionally pass through area.	2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Cooper's hawk (<i>Accipiter cooperii</i>)	WL	Year-round resident throughout California except the Southeastern corner of the State, where it is a winter resident.	Breeds in extensive forests and smaller woodlots of deciduous, coniferous, and mixed pine-hardwoods, as well as in pine plantations, in both suburban and urban habitats. It captures a variety of prey, mainly medium-sized birds and mammals such as doves, jays, robins, chipmunks, and other rodents.	Present. This species was observed in the project area incidentally during the Spring 2012 avian surveys.	5
Northern goshawk (<i>Accipiter gentilis</i>)	CSSC BLM S USFS S	Year round resident in northern Coast Ranges, the Klamath and Siskiyou Mountains, Modoc Plateau, Warner Mountains and south through the Sierra Nevada. Also occurs in the Tehachapi Mountains, Glass Mountain region, White-Inyo ranges, Mount Pinor-Frazier Mountain area and the San Gabriel, San Bernardino, San Jacinto, and Cuyamaca mountains.	Nests in mature conifer forests; winters in variety of habitats.	Moderate. Rare breeder in southern Sierra Nevada; nearest nesting records from Greenhorn Mountains. Known to migrate through Kelso Valley.	2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Swainson's hawk (<i>Buteo swainsoni</i>)	ST USFS S	Lower Sacramento and San Joaquin Valleys, Klamath Basin, and Butte Valley; highest nesting densities near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	Present. Observed in the project area incidentally during Spring 2012 avian and Mojave ground squirrel surveys. Outside breeding range. Known to pass through area during migration.	2, 3, 5
ferruginous hawk (<i>Buteo regalis</i>)	USFS S WL	Does not nest in California; winter visitor along coast from Sonoma to San Diego Counties, east to Sierra Nevada foothills and southeastern deserts, Inyo-White Mountains, plains east of Cascade Range, and Siskiyou County.	Open terrain in plains and foothills where ground squirrels and other prey are available.	Present. Suitable wintering habitat present. Known from Kelso Valley and Butterbredt Canyon.	2
golden eagle (<i>Aquila chrysaetos</i>)	CFP	Foothills and mountains throughout California.	Nests on cliffs and escarpments or in tall trees overlooking open country; forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals.	Present. Observed in the project area incidentally during Spring 2012 avian and Mojave ground squirrel surveys.	1, 2, 3, 4, 5, 6

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Osprey (<i>Pandion haliaetus</i>)	WL USFS S	Within California, the breeding range is in Northern California and the winter range is mainly along the coast, extending inland in two small areas in the northern part of its winter range and across the Sierras into the Mojave Desert.	Nests near open water atop trees, rocky cliffs and promontories as well as artificial sites such as channel markers and utility towers. Feeds almost exclusively on fish.	Present. Observed in the project area incidentally during Spring 2012 avian surveys and Mojave ground squirrel surveys. Known to migrate through the project area.	3, 5
prairie falcon (<i>Falco mexicanus</i>)	WL	Permanent resident in south Coast, Transverse, Peninsular, and northern Cascade Ranges; southeastern deserts, Inyo-White Mountains, foothills surrounding the Central Valley; and in the Sierra Nevada in Modoc, Lassen, and Plumas Counties; winters in Central Valley, along the coast from Santa Barbara to San Diego Counties, and in Marin, Sonoma, Humboldt, Del Norte, and Inyo Counties.	Nests on cliffs or escarpments, usually overlooking dry, open terrain or uplands.	Present. Observed in the project area incidentally during Spring 2012 avian and Mojave ground squirrel surveys. Suitable nesting habitat present on cliffs; Observed in 2010 during surveys for NSRP. Nest identified near Sugarloaf in 2011.	1, 2, 3, 5, 6
American peregrine falcon (<i>Falco peregrines anatum</i>)	CFP	Year-round resident throughout California.	Nests on cliffs or man-made structures such as buildings and bridges; feeds on birds.	Present. Has been observed at Butterbred Spring. Outside known breeding range.	2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Western snowy plover (<i>Charadrius alexandrinus</i>) (interior population)	FT CSSC	In California, inland populations occur in the southern San Joaquin Valley, the Klamath Basin, Modoc Plateau, the Great Basin desert and in the Mojave and Colorado deserts.	In interior California, snowy plovers breed on barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural wastewater ponds, and salt evaporation ponds.	Low. No suitable habitat in project area. The closest known occurrence is at Koehn Lake, approximately 5 miles to the east.	1
mountain plover (<i>Charadrius montanus</i>) (wintering)	CSSC BLM S	In California, winters in the Central and Imperial Valleys, Central San Diego County, southeastern and western Los Angeles County and in isolated pockets along the coast.	Winters in open habitats, agricultural fields.	Moderate. Suitable wintering habitat present in eastern portion of project area.	1, 2
long-billed curlew (<i>Numenius americanus</i>)	WL	Occurs as a winter (non-breeding) migrant along the California coast, and in the Central and Imperial Valleys. Summer (breeding) migrant in northeastern California and in the Owens Valley.	Nests in meadows; winters in open habitats, wetlands, grasslands and agricultural fields.	Low. Outside breeding range; known to winter in Antelope Valley. There are no records of this species from the project area.	2
long-eared owl (<i>Asio otus</i>)	CSSC	In California, occurs throughout the state except in the Central Valley, in pockets along the coast and in the far central south.	Nests in riparian habitats and other dense stands of trees.	Present. Known to breed at Butterbred Springs. Suitable nesting habitat at Butterbred Spring. Foraging habitat present throughout project site.	1, 2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
burrowing owl (<i>Athene cunicularia</i>)	CSSC BLM S	Lowlands throughout California, including Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast.	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows.	Present. A pair and at least one juvenile were observed incidentally near Jawbone Canyon Road during Spring 2012 avian surveys.	1, 2, 4, 5
Vaux's swift (<i>Chaetura vauxi</i>) (nesting)	CSSC	A summer (breeding) migrant in northern California and coastal California from the Oregon border to Monterey County, and in the Sierra Nevada from the Oregon border to northern Kern County.	Nests in snags and hollow trees in redwood and Douglas fir forests.	Present. Observed in the project area during Spring 2012 avian and Mojave ground squirrel surveys. No nesting habitat present. Common migrant through project area.	2, 3, 5, 6
black swift (<i>Cypseloides niger</i>)	CSSC	This species occurs in California as a summer resident and its breeding range is patchily distributed throughout the State excluding the Central Valley and much of the coast.	Nests behind or beside permanent or semi-permanent waterfalls, on perpendicular cliffs near water and in sea caves.	Present. This species was observed incidentally in the project area during the Spring 2012 Mojave ground squirrel surveys. There is no nesting habitat in the project area.	3
olive-sided flycatcher (<i>Contopus cooperi</i>)	CSSC	A summer (breeding) migrant in the Cascade Range and Modoc Plateau in northern California, Sierra Nevada in eastern California, Coast Ranges, and Transverse and Peninsular Ranges in Southern California.	Nests in coniferous forests.	Present. Observed at the cottonwood spring at the intersection of Jawbone Canyon and Kelso Valley Roads in May 2012. No nesting habitat present. Common migrant through project area.	2, 5, 6

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
willow flycatcher (<i>Empidonax traillii</i>)	SE USFS S	Occurs as a summer (breeding) migrant in moist thickets and riparian areas throughout California.	Nests in dense riparian habitats with perennial water.	Present. No nesting habitat present. Common migrant through project area. Has been observed at Butterbredt Springs. Observed in 2010 during surveys for NSRP.	2, 6
loggerhead shrike (<i>Lanius ludocivianus</i>)	CSSC	Resident and winter visitor in lowlands and foothills throughout California; rare on coastal slope north of Mendocino County, occurring only in winter.	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Present. Frequently observed in project area during the Spring 2012 avian surveys. Resident species known to breed in the project area.	2, 3, 4, 5
least bell's vireo (<i>Vireo belli pusillis</i>)	FE SE	Occurs as a summer (breeding) migrant in the far south of California and in northern Baja California.	Nests in riparian habitats, generally in dense vegetation near surface water.	Present. No nesting habitat present. Casual migrant through area. Has been observed at Butterbredt Spring and Jawbone Canyon.	2
California horned lark (<i>Eremophila alpestris actia</i>)	WL	Much of the state; less common in mountainous areas of the north coast and in coniferous or chaparral habitats.	Common to abundant resident in variety of open habitats, usually where large trees and shrubs are absent; grasslands and deserts to dwarf shrub habitats above tree line.	Present. Observed in the project area during Spring 2012 avian surveys.	1, 4, 5

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
purple martin (<i>Progne subis</i>)	CSSC	Summer (breeding) migrant in northern and coastal California, in the Sierra Nevada, in isolated pockets of the Central Valley, in the Tehachapi Mountains and in mountainous regions of San Diego County.	Nests in snags in montane forests.	Present. This species has been recorded at Butterbredt Springs. Suitable habitat occurs in the western portion of the site.	2
Bendire's thrasher (<i>Toxostoma bendirei</i>)	CSSC BLM S	In California, it is patchily distributed in the Eastern and Southern Mojave and in the Colorado Desert.	Nests in open desert washes and scrub habitats.	Present. Suitable habitat in many parts of site. Known from Kelso Valley and Butterbredt Canyon.	2
yellow warbler (<i>Dendroica petechia</i>)	CSSC	Nests over all California except Central Valley, Mojave Desert region, and high altitudes in Sierra Nevada; winters along Colorado River and in parts of Imperial and Riverside Counties.	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near stream courses.	Present. Observed at Butterbredt Springs incidentally in May 2012. Common migrant through project area.	2, 4, 5
yellow-breasted chat (<i>Icteria virens</i>) (nesting)	CSSC	Summer (breeding) migrant in northern California, in portions of the Central Valley and the west slope of the Sierra Nevada, on the Central and Southern coast, and in portions of the southern California deserts.	Nests in dense riparian and shrub habitats.	Present. Observed at Butterbredt Springs incidentally in May 2012. Common migrant through project area.	2, 5
grasshopper sparrow (<i>Ammodramus savannarum</i>)	CSSC	Summer (breeding) migrant along the California coast.	Nests in grasslands.	Low. Outside known breeding area and there are no records of this species in the area.	2

Table I-2. Special-status Wildlife Potentially Occurring in the Project Area					
Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
tricolored blackbird (<i>Agelaius tricolor</i>)	CSSC BLM S	Permanent resident in Central Valley from Butte to Kern Counties; breeds at scattered coastal locations from Marin to San Diego Counties and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony.	Low. Marginal habitat at ponds in Kelso Valley. Nearest known nesting record from near Koehn Lake.	1, 2
Mammals					
Western mastiff bat (<i>Eumops perotis californicus</i>)	CSSC BLM S	Uncommon resident in southeastern San Joaquin Valley and Coastal Ranges from Monterey County southward through southern California, from the coast eastward to the Colorado Desert.	Roosts in high rock crevices, occasionally buildings.	High. Roosting habitat present in rock crevices. Detected during surveys for NSRP.	2, 6
pocketed free-tailed bat (<i>Nyctinomops femorosaccus</i>)	CSSC	Found in Riverside, San Diego, and Imperial Counties; rare in California.	Roosts in caves and rocky crevices in semi-arid habitats.	Moderate. Suitable habitat present throughout much of project area.	2
big free-tailed bat (<i>Nyctinomops macrotis</i>)	CSSC	Rare in California; found only in urban areas of San Diego and as a vagrant elsewhere.	Roosts in rock crevices. Associated with pinyon-juniper habitat.	Moderate. Suitable habitat present throughout much of project area.	2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
pallid bat (<i>Antrozous pallidus</i>)	CSSC BLM S USFS S	Throughout California except high Sierra from Shasta to Kern Counties and northwest coast, primarily at lower and mid-elevations.	Occurs in a variety of typically arid habitats including all types of woodland especially oak savanna and grassland. May also be found in riparian areas and wetlands, orchards, vineyards, and cropland if appropriate roosting sites are available.	High. Roosting habitat present in mines and trees. Detected during surveys for NSRP. Known from Red Rock Canyon.	1, 2, 6
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	CSSC; BLM S USFS S	Found throughout California, but details of its distribution are not well known.	Roosts in caves, buildings, hollow trees; forages in many habitats. Most abundant in mesic habitats.	High. Roosting habitat present in mines and trees. Detected during surveys for NSRP. Known from Piute Mountains.	1, 2, 6
spotted bat (<i>Euderma maculatum</i>)	CSSC BLM S	Found in foothills, mountains and desert regions of southern California.	Roosts in large cliffs, forages in a variety of habitats.	High. Suitable roosting habitat in cliffs. Known from Red Rock Canyon.	1, 2
Western red bat (<i>Lasiurus blossevillii</i>)	CSSC USFS S	Scattered throughout much of California at lower elevations.	Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage.	High. Suitable roosting habitat at Butterbred Spring. Detected during surveys for NSRP.	2, 6
small-footed myotis (<i>Myotis ciliolabrum</i>)	BLM S	Occurs in coastal California from Contra Costa County south to the Mexican border, on the west and east sides of the Sierra Nevada, in Great Basin, and in desert habitats from Modoc to Kern and San Bernardino Counties.	Roosts in mines, crevices and trees; forages in scrub and woodland.	High. Roosting habitat present in mines and rock crevices. Detected during surveys for NSRP.	2, 6

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
long-eared myotis (<i>Myotis evotis</i>)	BLM S	Occurs along the entire coast and in the Sierra Nevada, Cascades, and Great Basin from the Oregon border south through the Tehachapi Mountains to the Coast Ranges; uncommon in most of its range.	Roosts in rock crevices, trees and mines; forage in forest and woodland.	High. Roosting habitat present in mines and rock crevices. Detected during surveys for NSRP.	2, 6
fringed myotis (<i>Myotis thysanodes</i>)	BLM S	Widespread in California; occurs in all areas but the Central Valley and Colorado and Mojave deserts.	Roosts in rock crevices, trees and mines; forage in scrub and woodlands.	High. Roosting habitat present in mines and rock crevices. Detected during surveys for NSRP.	2, 6
Yuma myotis (<i>Myotis yumanensis</i>)	BLM S	Common and widespread in California; uncommon in the Mojave and Colorado Desert regions, except for the mountain ranges bordering the Colorado River Valley.	Roosts in buildings, trees & crevices, forage in variety of habitats.	High. Roosting habitat present in rock crevices and trees. Detected during surveys for NSRP.	2, 6
Tulare grasshopper mouse (<i>Onychomys torridus tularensis</i>)	CSSC BLM S	Occurs along the western margin of the Tulare Basin, including western Kern County; in Carrizo Plain Natural Area; along the Cuyama Valley side of the Caliente Mountains, San Luis Obispo County; and in the Ciervo-Panoche Region, in Fresno and San Benito counties.	Desert scrub habitats.	High. Suitable habitat throughout project site. Known from Red Rock Canyon SP and Kelso Valley.	1, 2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Tehachapi pocket mouse (<i>Perognathus alticola inexpectatus</i>)	CSSC BLM S USFS S	Occurs from the vicinity of Tehachapi Pass, west to Mount Pinos, and south to Elizabeth and Quail Lakes, at elevations from 1030 to 1830 meters.	Grassland, pinyon-juniper, Joshua tree woodland, oak savannah	Moderate. Suitable habitat in Joshua tree woodland, pinyon-juniper and oak savannah. Nearest known record from near Tehachapi, ~15 miles SSW.	2
San Joaquin pocket mouse (<i>Perognathus inornatus inornatus</i>)	BLM S	In the Central and Salinas Valleys between 1,100 and 2,000 ft. (350 and 600 m.).	Grasslands and open scrub habitats with friable soils.	High. Suitable habitat in southwestern part of project site. Known from near Twin Oaks, about 7 miles southwest of the southwestern corner of the project area.	1, 2
yellow-eared pocket mouse (<i>Perognathus parvus xanthonotus</i>)	BLM S	Inhabits the eastern slopes of the Piute Mountains and Sierra Nevada along the western fringe of the Mojave Desert.	Joshua tree woodland, desert scrub, pinyon-juniper, sagebrush and bunchgrass habitats.	High. Suitable habitat in northwestern portion of project site. Known from head of Kelso Valley.	1, 2

Common Name (Scientific Name)	Listing Status^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area^b	Sources
Mohave ground squirrel (<i>Xerospermophilus mohavensis</i>)	ST	Occurs in portions of Inyo, Kern, Los Angeles and San Bernardino counties in the western Mojave Desert.	Creosote scrub, saltbush scrub in western Mojave Desert.	Present. Species detected in multiple locations in the project area in Spring 2012 small mammal trapping surveys. Suitable habitat throughout much of project area with the exception of very steep, rocky terrain. Tolerant of some level of OHV use. Known from Jawbone Canyon, Dove Spring Canyon, Butterbredt Canyon and Red Rock Canyon SP.	2
Ringtail (<i>Bassariscus astutus</i>)	CFP	Occurs throughout California in low to middle elevations, except in the far northeast and in the Central Valley from San Joaquin to Kern Counties.	Primarily near riparian habitats, but also in forest and shrub habitats.	Moderate. No known records from area. Potential habitat in Piute Mountains and in proximity to water-sources including Dove Spring Canyon, Butterbredt Canyon and Alpie Spring.	2
Pacific fisher (<i>Martes pennanti pacifica</i>) DPS)	CSSC BLM S USFS S	In California, occurs only in the far north and southern Sierra Nevada.	Closed-canopy coniferous forests.	Moderate. Suitable habitat in western edge of project site. Near southern edge of range. Known from Piute Mountains.	1, 2

Table I-2. Special-status Wildlife Potentially Occurring in the Project Area					
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area ^b	Sources
American badger (<i>Taxidea taxus</i>)	CSSC	Occurs throughout California and the western United States and Canada.	Variety of open habitats with friable soils.	Present. Documented in the project area during Spring 2012 surveys for Mohave ground squirrel.	1, 2, 3, 4
desert kit fox (<i>Vulpes macrotis</i>)	Protected fur-bearing mammal	In California, occurs in the southern Central Valley and in southeast California.	Inhabits arid and semi-arid regions encompassing desert scrub, chaparral, halophytic, and grassland communities; at elevations ranging from 1,312 to 6,234 ft. (400 to 1,900 m). Loose textured soils may be preferred for denning.	Present. Documented in the project area during Spring 2012 surveys for Mohave ground squirrel.	1, 2, 3
^a Status explanations: Federal: FE = Listed as endangered under the Federal Endangered Species Act. FT = Listed as threatened under the Federal Endangered Species Act. BCC = Fish and Wildlife Service Birds of Conservation Concern (Regions 32 or 33) BLM S = Listed as Sensitive Species by Bureau of Land Management USFS S = Listed as Sensitive Species by US Forest Service State: SE= Listed as endangered under the California Endangered Species Act. ST= Listed as threatened under the California Endangered Species Act. CSSC = Species of Special Concern designated by California Department of Fish and Game CFP = Fully Protected Species under California Fish and Game Code. WL = On the California Department of Fish and Game Watch List. Other Acronyms: NSRP = North Sky River Project HSWEP = Hoffman Summit Wind Energy Project			^b Potential Occurrence explanations: Present: Species was observed on the project site, or recent species records (within five years) from literature are known within the project area. High: The CNDDDB or other reputable documents record the occurrence of the species off-site, but within a 10-mile radius of the project area and within the last 10 years. High-quality suitable habitat is present within the project area. Moderate: Species does not meet all terms of High or Low category. For example: CNDDDB or other reputable documents may record the occurrence of the species near but beyond a 10-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented. Low: The CNDDDB or other documents may or may not record the occurrence of the species within a 10-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.		

Table I-2. Special-status Wildlife Potentially Occurring in the Project Area					
Common Name (Scientific Name)	Listing Status ^a	Geographic Distribution in California	Habitat Requirements	Potential Occurrence in the Project Area ^b	Sources
			None:	CNDDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area.	
Sources:					
<ol style="list-style-type: none"> 1. California Natural Diversity Database (CNDDDB). 2012. California Department of Fish and Game, Biogeographic Data Branch. Last updated August, 2012. 2. Biosearch Associates. 2011. Preliminary Habitat Assessment for Special-Status Vertebrates, Onyx Ranch Acquisition Project Site, Kern County, California. Letter report prepared for TRA Environmental Sciences, Inc. December 16. 3. Biosearch Associates. 2012. Special-status Species Surveys for Renewable Resources Property Acquisition Project, Kern County, CA. Report prepared for TRA Environmental Sciences, Inc. August 9. 4. Leatherman Bioconsulting, Inc. 2012. Desert Tortoise Survey of Renewable Resources Property Acquisition Project, Kern County, CA. Report prepared for TRA Environmental Sciences, Inc. August. 5. TRA Environmental Sciences, Inc. 2012. Renewable Resources Property Acquisition Project Avian Study Report. September. 6. Biological studies performed for adjacent wind energy development projects: North Sky River Project and Hoffman Summit Wind Energy Project. 					

APPENDIX J

**A CULTURAL RESOURCE SURVEY FOR THE ONYX RANCH
ACQUISITION KERN COUNTY, CA
California Department of Parks and Recreation, OHMVR Division**

A Cultural Resource Survey for the Onyx Ranch Acquisition Kern County, California



(photo courtesy of California State Parks 2011)

Prepared for

State of California,
Department of Parks and Recreation,
Off-Highway Motor Vehicle Recreation Division

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August 2012

All confidential cultural information has been removed in accordance with Government Code 6254.10

EXECUTIVE SUMMARY

The State of California, Department of Parks and Recreation (DPR) Off-Highway Motor Vehicle Recreation (OHMVR) Division has conducted a cultural resource survey for the proposed acquisition of land located in Kern County within the Mojave Desert. The acquisition area consists of land privately owned by Renewable Resources Group. The acquisition area is located adjacent to land owned by the Bureau of Land Management (BLM), California State Parks (Red Rock State Park), and additional private land owners. The project area is located north of the towns of Mojave and Tehachapi. The cultural resource survey occurred in compliance with the California Environmental Quality Act (CEQA).

Pre-field research consisted of a record search at the Southern San Joaquin Valley Information Center (CSU, Bakersfield) of the California Historical Resources Information System on January 20, 2011 by Associate State Archaeologists Kelly Long and Alicia Perez. An additional record search was conducted at the Bureau of Land Management's (BLM) Ridgecrest Field Office on October 3, 2011 by Kelly and Alicia. The OHMVR Division archives and the California State Library were also consulted as part of the pre-field research. A record search of the Native American Heritage Commission (NAHC) sacred files was also conducted. Consultation with Native American tribes and individuals listed on the contact list provided by NAHC was also completed.

The field work was completed by archaeologists with the OHMVR Division and the Archaeology, History & Museums Division. Supplemental field work was also conducted by the consulting firm Far Western Anthropological Research Group, Inc. This report includes an overview of the regulatory context for the cultural resource inventory as well as prehistoric, ethnographic and historic overviews of the project area. Additionally, this report summarizes the results of all fieldwork which took place in March, April and October of 2011, and June of 2012. As a result of the field work, 6 previously recorded sites and 23 new sites were identified within the project area for a total of 29 sites, 13 of which are prehistoric, 1 multi-component, and 15 historic-era sites. 63 isolated finds were also recorded and include 20 prehistoric, 42 historic, and one multi-component. In addition to fieldwork results, this report also provides cultural resource management recommendations for resources located within the project area. The results from this report will be incorporated into the final Environmental Impact Report (EIR) for this acquisition. Appendix A includes correspondence between DPR and the Native American Heritage Commission as well as with members of the Native American community. Appendix B includes the DPR 523 archaeological site records. Appendix C includes the *Addendum Report on an Archaeological Survey for the Proposed Onyx Ranch, Land Acquisition, Kern County, California* report by Far Western (2012).

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INTRODUCTION

A cultural resource survey was conducted of areas within the proposed Onyx Ranch acquisition boundary. The archaeological field work included the relocation of all previously recorded sites, and the recordation of newly identified resources. DPR Associate State Archaeologists, Alicia Perez and Kelly Long, and Assistant State Archaeologist Margaret Kress and Archaeological Project Lead Joanna Collier with the OHMVR Division, along with Associate State Archaeologist Chris Corey and Assistant State Archaeologist Patrick Riordan from the Archaeology, History, & Museums Division, completed the field work. The archaeological field work occurred in March, April and October of 2011. Supplemental field work was also conducted by Far Western Anthropological Research Group, Inc. in June of 2012 (Appendix C).

Pre-field research consisted of a record search at the Southern San Joaquin Valley Information Center (CSU, Bakersfield) of the California Historical Resources Information System on January 20, 2011 by Associate State Archaeologists Kelly Long and Alicia Perez. An additional record search was conducted at the Bureau of Land Management (BLM) Ridgecrest Field Office on October 3, 2011 by Kelly and Alicia. OHMVR Division archaeologists met with BLM archaeologists to discuss the project and exchange information. Additional research was conducted at the OHMVR Division archives, and the California State Library. A record search of the Native American Heritage Commission (NAHC) sacred files was also conducted. Consultation with Native American tribes and individuals listed on the contact list provided by NAHC was also completed. This correspondence is located in Appendix A. As a result of the field work, six previously recorded sites and 23 new sites within the project area for a total of 29 sites, 13 of which are prehistoric, one multi-component, and 15 historic-era sites. 63 isolated finds were also recorded; 20 prehistoric, 42 historic-era, and one multi-component. Results of the inventory are noted in Table 3, and Figure 4 through Figure 11. The archaeological DPR 523 site records are located in Appendix B of this report.

In compliance with CEQA, the purpose of this cultural resource study is to provide baseline data regarding the existence and current conditions of cultural resources located within the proposed acquisition boundary. Results from this study will be included in the environmental impact report (EIR) to be completed on behalf of the proposed acquisition. The purpose of an EIR is to provide public agencies and the public detailed information about the effect(s) which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project (Public Resources Code [PRC] § 21061). The results from this cultural resource inventory will provide the following:

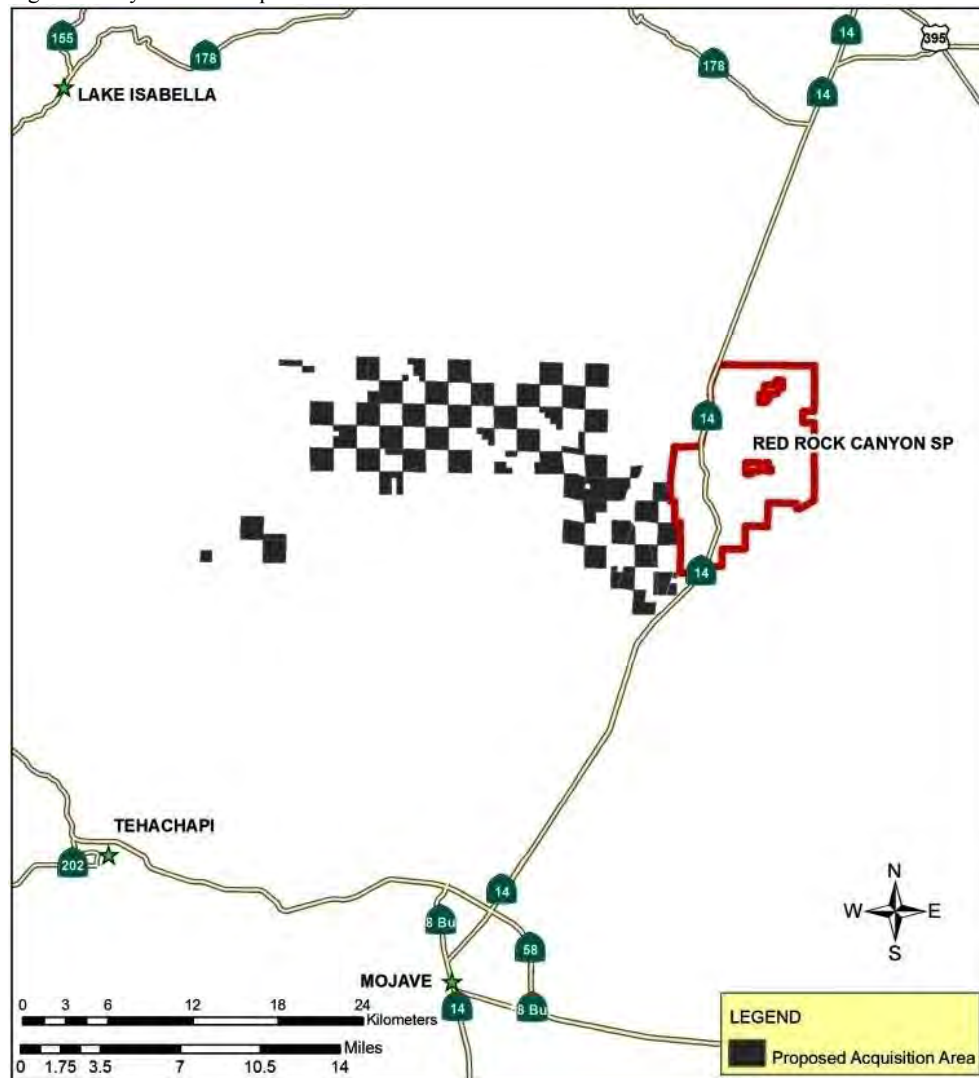
- a cultural resource setting, including prehistoric, ethnographic and historic overviews, and previous cultural resource studies of the project area,
- a current inventory of known cultural resources within the project area,
- preliminary resource evaluations according to the National Register of Historic Places and the California Register of Historical Resources significance and integrity criteria
- an assessment of the potential for significant impacts to historical resources, and
- options for avoiding or minimizing impacts to historical resources in compliance with CEQA and Public Resources Code (PRC) §5024 and PRC §5024.5

PROJECT AREA AND DESCRIPTION

Project Location

The State of California, Department of Parks and Recreation (DPR), Off-Highway Motor Vehicle Recreation (OHMVR) Division has conducted a cultural resource survey for the proposed acquisition of land located in Kern County within the Mojave Desert. The acquisition area consists of land privately owned by Renewable Resources Group and is located adjacent to land owned by the Bureau of Land Management (BLM), California State Parks (Red Rock State Park), and additional private land owners. The project area is located north of the towns of Mojave and Tehachapi (Figure 1).

Figure 1. Onyx Ranch Acquisition General Area



REGULATORY CONTEXT

The California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) establishes statutory requirements for the formal review and analysis of projects. The *CEQA Guidelines* have been adopted by the State to guide public agencies in implementing CEQA. CEQA (PRC Sections 21000, et seq.) requires that before approving most state discretionary projects the Lead Agency must identify and examine the significant adverse environmental effects which may result from that project. An initial study must be prepared for projects which are not exempt from CEQA, and will be used to determine whether or not a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report is necessary for the project (14 CCR 15063). The effectiveness of the initial study depends largely upon an accurate evaluation of the project's potential to significantly directly or indirectly effect known archaeological resources.

An effective determination of whether or not a project will adversely affect archaeological resources is contingent upon supporting baseline data that includes, but is not limited to, archaeological archival research, field work, analyses, and resource evaluations. A record search to determine whether any previously identified resources that exist within the project boundary is the first step in determining whether there may be archaeological resources present. A record search is conducted at the applicable California Historical Resources Information System (CHRIS). There are 11 regional centers that maintain the State Archaeological Inventory as part of the Historical Resources File System. This system maintains current information on recorded archaeological sites, as well as resources listed in the California Register of Historical Resources. Additional sources of information include colleges and universities within archaeology departments, the local historical or archaeological society, local Native American groups, or appropriate archives and repositories. Most importantly, the Native American Heritage Commission maintains a file of sacred lands which contain information unavailable elsewhere. If the project area has never been surveyed for archaeological resources, the lead agency should require a field survey by a qualified state professional archaeologist to identify, record, and evaluate known archaeological resources within the project boundary.

CEQA recognizes archaeological resources as part of the environment. For the purpose of CEQA, "environment" is defined to include "the physical conditions which exist within the area which will be affected by the proposed project, including...objects of historic or aesthetic significance" (PRC § 21060.5). A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment (§ 21084.1). Additionally, if the lead agency determines that a project may have a significant effect on unique archaeological resources, these effects will be addressed in an environmental impact report, or proper mitigations can be made to lessen or avoid impacts all together (PRC § 21083.2). PRC § 21084.1 and 21083.2 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. The former applies to archaeological sites which are listed on or eligible for listing on the California Register of Historical Resources, the latter applies to other "unique" archaeological resources. Either of these benchmarks may indicate that a proposed project may have a potential adverse effect on archaeological resources.

Historical Resources

A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment (PRC § 21084.1). Pursuant to subsection (a) of 14 CCR 15064.5 the term "historical resources" includes the following:

- (1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (PRC §5024.1, Title CCR, Section 4850 et seq.).
- (2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources code or identified as significant in an historical resource survey meeting the

requirements of section 5024.1(g) of the Public Resources Code, shall be presumed historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

- (3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852) including the following:
- (A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
 - (B) Is associated with the lives of persons important in our past;
 - (C) Embodies the distinctive characteristics of type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
 - (D) Has yielded, or may be likely to yield, information important in prehistory or history.
- (4) the fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined by Public Resources Code sections 5020.1(j) or 5024.1.

Aside from meeting the above listed criteria, in order for an archaeological resource to be a historical resource it must also be at least 50 years old and embody several aspects of integrity (location, design, setting, material, workmanship, feeling, and association).

Unique Archaeological Resources

PRC § 21083.2 explicitly requires that the initial study examine whether the project may have a significant adverse effect on "unique archaeological resources." Pursuant to part (g) of that section, a unique archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person

The resource must also be at least 100 years old and possess "substantial stratigraphic integrity" (i.e. is substantially undisturbed); and the resource involves "important research questions that historical research has shown can be answered only with archaeological methods".

It is important to note that if it is proven that an archaeological resource is neither a historical or unique resource the effects of the project on those resources shall not be considered a significant effect on the environment, and no further CEQA review is required (14 CCR 15064.5).

PRC § 5024 and § 5024.5

As a state agency, DPR is also required to follow PRC § 5024 and PRC § 5024.5 when it comes to resource management. As of 1982, PRC § 5024 requires each state agency to make a good faith effort to formulate policies to preserve and maintain all state-owned historical resources under its jurisdiction, and to submit to the State Historic Preservation Officer (SHPO) an inventory of all state-owned structures over 50 years of age under its jurisdiction. Additionally, PRC § 5024 permits the SHPO to determine which historical resources identified in inventories meet National Register of Historic Places and state historical landmark criteria for inclusion on the master list of historical resources. The SHPO will maintain this master list comprised of all inventoried structures submitted and determined significant pursuant to subsection (d) of PRC § 5024 along with all state-owned historical resources currently listed in the National Register or registered as a state historical landmark under state agency jurisdiction. In an effort to keep an updated master list, each state agency is required to submit inventory updates to the SHPO along with an annual report of preservation activities. The SHPO shall provide state agencies with advice and assistance as needed with regards to historical resources for instance, during projects that may affect historical resources listed in or eligible to the National Register, or registered or eligible as a state historical landmark. DPR has had an active and on-going historic preservation program with the SHPO since January 1982 and is required to submit annual inventory updates as well as the preservation and protection measures of historical resources to SHPO (CA-DPR 2011; CA-OHP 1999).

It is DPR policy to require a 5024 Cultural Review of DPR-related projects to effectively preserve and maintain all state-owned historical resources under its jurisdiction. With this in mind, it is recommended that the Project Manager(s) contact an OHMVR Division archaeologist prior to drafting the Project Evaluation Form (PEF). The PEF-DPR 183 form is used by DPR to initiate environmental review of certain projects, to record resource specialist input on the project's potential to cause adverse environmental impacts, and to contribute to or support a decision as to the appropriate environmental document (Categorical Exemption, Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) required for compliance with CEQA. Open communication between the Project Manager(s) and an OHMVR Division archaeologist helps to ensure that a project is designed in such a way that it either completely avoids impacting a site or has very minimal site impacts. When a Cultural Resource Specialist conducts a 5024 Review of a project it is their responsibility to ensure it occurs according to the Secretary of the Interior's Standards. These Standards are implemented nation-wide and are used by the Office of Historic Preservation and public agencies to help ensure projects are reviewed, and to promote responsible preservation practices that help protect resources. Most importantly, when a project will affect state-owned historical resources, as described in Public Resources Code 5024, and the lead agency is a state agency, the lead agency shall consult with the State Historic Preservation Officer as provided in PRC § 5024.5 (14 CCR 15064.5).

The 5024 Review will generate a 5024 Report that will be affixed to the PEF. This report includes detail about the prehistory and/or history of the project area, details of known sites within the project area, whether or not there will be project impacts to known sites, and recommendations for either avoiding or minimizing site impacts according to the Secretary of Interior's Standards. CEQA § 21083.2 Archaeological Resources also provides appropriate resource protection standards such as capping or covering archaeological sites with a layer of soil before developing on the site as a form of minimizing site impact. The 5024 Review along with the Report ensures DPR's compliance with CEQA Guidelines and PRC § 5024.

A thorough 5024 Review of a project is contingent upon the Project Manager(s) involving an OHMVR Division archaeologist early on in the project development phase, specifically the early design phase. This includes meetings between the Project Manager(s) and an OHMVR Division archaeologist at the project area with project design maps in hand to discuss the placement of buildings and structures and/or possible ground disturbance. Additionally, OHMVR Division archaeologists frequently communicate with local Native American Tribal affiliates and they are commonly invited to attend these project meetings to ensure resources are protected to the highest standards. It is during these early project meetings where recommendations and mitigations to avoid or lessen impacts to known resources within the project area are discussed and documented in the PEF.

Department of Parks and Recreation Native American Consultation Policy and Implementation

It is the Department's policy to involve Native California Indian groups in all plans and practices that have impacts on the cultural resources under the Department's stewardship. Prior to implementing projects or policies that may have impacts to Native American sites within the State Park System; the Department will actively consult with local Native California Indian groups regarding the protection, preservation, and/or mitigation of cultural sites and sacred places in the State Park System. Departmental Notice 2007 *Native American Consultation Policy and Implementation Procedures* identifies the following nine areas of activity where consultation between local Native California Indian groups and California State Parks is required:

1. Acquisition of properties where cultural sites are present
2. During the General Plan process and/or development of Management Plans
3. Planning, design, and implementation of capital outlay projects
4. Issues of concern identified by the tribes
5. Plant and mineral gathering by Native people
6. Access to Native California Indian ceremonial sites
7. Archaeological permitting
8. Mitigation of vandalism and development of protective measures at Native American sites
9. When using the Native voice in presenting the story of California native Indian people in park units

Executive Order B-10-11

In September of 2011 California Governor Edmund G. Brown Jr. filed with the Office of the Secretary of the State Executive Order B-10-11. This Executive Order acknowledges the important relationship that many Native American California Tribes have with their native home of California. As described in the Executive Order, the term "Tribes" includes all Federally Recognized Tribes and additional California Native Americans. The Executive Order affirms that the State of California recognizes and reaffirms the inherent right of these Tribes to exercise sovereign authority over their members and territory. Most importantly, it is ordered that it is the policy of this Administration that every state agency and department subject to Governor Edmund G. Brown's control shall encourage communication and consultation with California Indian Tribes.

ARCHAEOLOGICAL CONTEXT

Prehistoric Overview

The chronological sequence for the Mojave Desert includes six chronological periods: Lake Mojave Complex, Pinto Complex, Deadman Lake Complex, Gypsum Complex, Rose Spring Complex and a Late Prehistoric Complex (Warren 1980 and 1984; Warren and Crabtree 1986; Sutton et al. 2007). The following section outlines this chronological sequence adapted from Warren (1980 and 1984) Warren and Crabtree (1986), and Sutton et al. (2007) for the Mojave Desert.

Chronological Sequence

Paleo-Indian Cultural Complex (ca. 12,000 to 10,000 B.P.) There is a lack of strong evidence for human occupation of the western Mojave Desert prior to the early Holocene. Pre-Holocene occupation sites, for instance those identified in Tule Springs (Harrington and Simpson 1961), Lake China (Davis 1978), and Lake Mani (Simpson 1958, 1960, 1961) remain unsupported by further convincing archaeological data. The Paleo-Indian Period for this region dates from 12,000 to 10,000 B.P. or the Terminal Pleistocene. This period was a time of extreme environmental change as the cooler, wetter conditions of the Terminal Pleistocene transitioned into the warmer and drier Holocene. This time period is also distinguished by large fluted Clovis projectile points and related hunting material occurring in the archaeological record, all of which are commonly viewed as representing Big Game Hunting Tradition focused on the exploitation of Pleistocene mega fauna (Moratto 1984: 79). This period lacks substantiated evidence of milling equipment, although a variety of plant resources and small game were also exploited (Sutton 1996: 227). Fluted points occur more frequently in the northern Mojave Desert than in the west with higher occurrence frequencies around the shorelines of Pleistocene lakes, for instance a single Clovis occupation site identified at Lake China (Davis 1978; Davis and Panlaqui 1978a, 1978b, 1978c; Sutton et al. 2007:233-234). Our understanding of this time period is poor since evidence for this culture has been developed from a few isolated finds. It has been suggested that the people of this culture were “highly mobile, living in small, temporary camps located near (then) permanent water sources” (Sutton et al. 2007:234).

Lake Mojave Cultural Complex (ca. 10,000 to 8,000 B.P.) Cultural materials dating to this time period have been assigned to the Playa and Malpais cultures (Rogers 1939), the San Dieguito Complex (Warren 1967), and the Lake Mojave Complex (Warren and Crabtree 1986). Assemblages associated to the Lake Mojave Cultural Complex were first identified at Lake Mojave (Campbell et al. 1937) and include Lake Mojave series projectile points (leaf-shaped, long stemmed projectile points with narrow shoulders) and Silver Lake projectile points (short bladed, stemmed pointed with distinct shoulders). Additional diagnostic items associated with the Lake Mojave Complex include Great Basin stemmed points, bifaces, scrapers, graters, perforators, and additional heavy core tools, in addition to flaked stone crescents and the occasional ground stone tool (Sutton et al. 2007:234).

In the Mojave Desert this assemblage is typically found adjacent to ancient lakes, and most of the studied components of this time period are surface finds that lack datable artifacts. The largest collections of radiocarbon dates for this time period have come from the Fort Irwin area (Basgall and Hall 1994). During this time period, the environment was gradually changing. The remnant pluvial lakes from the Pleistocene were disappearing and new environments were taking hold. This uncertainty in resource patches can be seen in the tools found from sites representing this time period. Large bifacial and unifacial tools appear to have been curated and reworked for a long period of time and were transported during the seasonal foraging travels. Although groundstone artifacts occur during this time period, the wear patterns on the recovered artifacts suggest a low reliance on plant resources (Sutton et al. 2007:237). Groups during this time period would have consisted of small, highly mobile camps that practiced a forager-like strategy in order to monitor resource availability. The availability of rich resources would have greatly influenced camp placement (Sutton et al. 2007). Overall, this phase is considered ancestral to the Early Archaic cultures of the Pinto period, and represents a shift toward a more diversified and generalized economy (Sutton 1996: 228).

Pinto Cultural Complex (ca. 8,000 to 5,000 B.C.) During the Middle Holocene, the chronologies are more complex and difficult to define. Sites from this time period have been located across a wide range of topographic and environmental zones. Water was the determining factor for long-term habitation sites. It has been suggested that “it may be significant that the Pinto Complex emerged subsequent to the most dramatic climatic fluctuations of the Early Holocene, after which biotic conditions presumably became more predictable” (Sutton et al. 2007:238-239). The primary cultural complex associated from 8,000 to 5,000 BP was the Pinto Complex which is assumed to have neatly followed or even overlapped with the Lake Mojave Complex (Sutton et al. 2007:238). This period is marked by the appearance of Pinto series projectile points and named for the Pinto Basin Site, and are characterized as thick, shouldered, expanding stem points with concave bases, and are usually produced by percussion reduction methods with limited pressure retouch (Campbell and Campbell 1935).

Warren (1984) sees this period as marking the beginnings of cultural adaptation to the desert, as materials characteristic of the Pinto period gradually replace those of the preceding Lake Mojave period. Major technological shifts include the appearance of Pinto points and domed scrapers. Similar tool curation and reworking is seen during this time period. There is the Pinto series projectile point that was used for spears rather than darts. The presence of *Olivella* shell beads suggests interaction with groups across the region, however reduced toolstone source diversity implies a reduction in foraging ranges (Sutton et al. 2007:238). Groundstone implements appear to be more important and used during this time period and are present in almost all recorded Pinto deposits. Warren (1990) theorizes the increase of milling implements coincided with the development to the exploitation of hard seeds, which is seen as a part of a process of subsistence diversification brought on by increased aridity and reduced ecosystem carrying capacity.

Sites associated with this period are usually found in open settings near water sources and are large and contain midden features; evidence of long-term occupational periods (Sutton et al. 2007). Also evident in the archaeological record is a transition from big game hunting to a more broadly based economy (Sutton 1996: 231). Small rodents and reptile faunal along with freshwater mussel have been identified in Pinto period archaeological contexts (Sutton 1996: 232).

Deadman Lake Cultural Complex (ca. 9,500 to 7,200 B.P.) The Deadman Lake Cultural Complex appears to have been a separate cultural complex during the Middle Holocene and was proposed for the first time by Sutton et al. (2007:239). Radiocarbon dates from this cultural deposit place it between ca. 9,500 to 7,200 BP This cultural complex has only been recognized at the Twenty-nine Palms area in the southeastern Mojave Desert. It is different from the Pinto Complex in that assemblages are “characterized by small- to medium-size contracting-stemmed or lozenge-shaped points, extensive concentrations of battered cobbles and core tools, abundant bifaces, simple flake tools, and milling implements” (Sutton et al. 2007:239). However, the Deadman Lake Complex is possibly a local occurrence primarily because “comparable assemblages are yet to be reported from other regions of the Mojave Desert” (Sutton et al. 2007:239). A possible sampling bias could exist in the archaeological literature where the Deadman Lake Complex has simply been unrecognized, but until such a bias can be confirmed Sutton suggests that “any characterization of the broader cultural system must be provisional at best” (Sutton et al. 2007:239).

Towards the end of the Middle Holocene, or 5,000 to 4,000 BP, environmental conditions became hotter and drier in the Mojave Desert and there are few recorded archaeological sites from this time period. Many researchers suggest there was a 1,000-year “hiatus” between the Pinto and Deadman Lake Complexes and the later Gypsum Complex. It has been suggested that population densities were very low during this time period and some areas were largely abandoned (Sutton et al. 2007:241).

The Gypsum Cultural Complex (ca. 4,000 to 1730 B.P.) The Late Holocene is well documented throughout the Great Basin. The beginning of the Late Holocene was wetter and cooler than the Middle Holocene, most notably the barren pans in the Mojave Sink episodically held perennial water. An increase in moisture levels would have likely created favorable living conditions in the desert, and likely influenced changes in cultural adaptations such as population, trade, and social complexity (Spaulding 1995; Sutton 1996: 232). The Gypsum Complex is the earliest Late Holocene complex dating from 4000 BP and 1730 BP. This period is marked by population increases and broadening economic activities as technological adaptation to the desert

environment evolved. Hunting practices continued and the processing of plant resources increased in practice and is evident by the high volume and diversity of ground stone artifacts in the archaeological record. Sites were open and the use of rock shelters increased during this time. Base camps located near water resources and near substantial subsistence resources occur with extensive midden deposits. Additional site types include special purpose sites located in upland settings also occur during this period (Warren 1984; Warren and Crabtree 1986). There are very few deep deposits from this time period which suggests highly transient groups moving across the region (Sutton et al. 2007:241). Sutton claims

Gypsum components tend to be smaller but somewhat more numerous than those of preceding occupations and are found over a more diverse array of locations. Along with the marker projectile point types, artifact assemblages include evidence of ritual activities, such as quartz crystals, paint, and rock art, as well as numerous bifaces. Exploitation of artiodactyls, lagomorphs, and rodents is evident from a number of Gypsum Complex sites [Sutton et al. 2007:241]

This cultural complex is “defined by the presence of a range of corner-notched (Elko series), concave base (Humboldt series), and well-shouldered contracting stemmed (Gypsum series) point forms” (Sutton et al. 2007:241). Additional artifacts associated to this period include: rectangular-based knives, flake scrapers, occasional large scraper planes, choppers, and hammerstones. Handstones and milling tools continue to be part of the conventional tool kit while the mortar and pestle appear for the first time. Considerable archaeological evidence has been identified that suggests increased contact with the California Coast and the Southwest occurred during this period. Additionally, split-twig figurines and zoomorphic petroglyphs are suggestive of ritualistic practices (Grant et al. 1968).

In the Fort Irwin area, Gypsum period sites have been documented that include faunal assemblages that contain a large number of artiodactyl remains when compared to other later sites. Faunal evidence such as suggests a shift in subsistence orientation and mobility may have occurred along with a decrease in residential mobility near the end of the Gypsum period (Basgall et al. 1988; Sutton 1996: 234). Rock art images have been identified that suggest the hunting of mountain sheep played an important role during the Gypsum period (Grant et al. 1968). Additionally, artiodactyl, lagomorph, rodent, and tortoise remains have all been identified in Gypsum period sites in the central Mojave Desert (Hall and Basgall 1994).

Rose Spring Cultural Context (cal. A.D. 200 to 1100) The transition between the Gypsum Complex into the subsequent Rose Spring Complex was a time of major cultural change across the Mojave Desert. It has been suggested that “the general dating of the Rose Spring Complex is ca. cal A.D. 200 to 1100” (Sutton et al. 2007:241). The bow and arrow were introduced during this time period and the diagnostic projectile points changed to smaller points like the Eastgate and Rose Spring point types that are assumed to be arrowheads. It is generally thought that populations increased across the Mojave during the Rose Spring Complex and is reflected in marked changes in artifact assemblages. Additionally, middens and long-term habitation sites became more frequent and developed. Aside from diagnostic projectile points, it has been suggested that common artifacts of the Rose Spring Complex include “stone knives, drills, pipes, bone awls, various milling implements, marine shell ornaments, and large quantities of obsidian” (Sutton et al. 2007:241). Once again, Rose Spring sites are commonly found near water and “populations appear to have reached their peak during this time” (Sutton et al. 2007:241-242). It has been suggested that “the resource emphasis was clearly on medium to small game, predominantly lagomorphs and rodents” (Sutton et al. 2007:242). Obsidian use increased during this time period and was an important factor that influenced settlement and subsistence patterns. The majority of obsidian used during this time period comes from the Coso Volcanic Field.

It is important to mention that the Medieval Climatic Anomaly (MCA), a significant period of intense drought, began during the middle of the Rose Springs Complex. It intensified and lasted for several hundreds of years and dried many of the lakes in the desert. As a result, subsistence patterns no longer revolved around lakes but rather ephemeral springs and drainages. Additionally, the improvement of the bow and arrow technology might have taken a toll on the resource base as human populations rose. As technology improved and human population numbers rose, the overburdened resource base has been theorized to have declined significantly forcing people to seek out new

resource patches. The overtaxed or stressed environmental conditions during and after the MCA more than likely contributed to the end of the Rose Spring Complex around cal A.D. 1100 (Sutton et al. 2007:242).

The Late Prehistoric Complexes of the Mojave Desert, from about cal A.D. 1100 to historic contact developed in an environment that never fully recovered from the MCA and continued to deteriorate even more. Even though new technologies were introduced, populations appear to have declined (Sutton et al. 2007:242). Two distinct cultural spheres in the region appear at this time

The northern sphere is characterized by both Desert side-notched and Cottonwood projectile points, brownware ceramics, some buffware near the Mojave River, and the use of obsidian obtained mostly from northern sources (primarily Coso). The eastern sphere is characterized by the presence of both brownware and buffware ceramics, a dominance of Cottonwood projectile points, and the exclusive use of local obsidian sources. For some reason, groups in the eastern Mojave were not participating in the Coso obsidian trade. The area just north of the Mojave River seems to have been the boundary between the two spheres [Sutton et al. 2007:242]

Known archaeological sites from this time period include

A variety of types, including a few major villages with associated cemeteries, as well as special purpose and seasonal sites. Artifact assemblages consist of Desert series projectile points, buffware and brownware ceramics, shell and steatite beads, slate pendants, incised stones, and a variety of milling tools. Faunal remains typically consist of lagomorphs, deer, rodents, and some reptiles. Obsidian use dropped off significantly, and flaked stone tool manufacture shifted to silicate stone [Sutton et al. 2007:242]

Ethnographic Overview

The project area lies within the Great Basin cultural province but given its proximity to the California cultural province, it is only natural that the prehistoric populations of this area would share many Californian traits (Kroeber 1925). The project area is located within the traditional range of the Nīwī or Kawaiisu people. The Kawaiisu tribe is generally placed within the Great Basin cultural area, but the group shares many similar traits to the California cultural area. The term Kawaiisu is a Yokuts word, but was never used by the people themselves. The most accurate word is Nīwī which is their word for themselves.

The area occupied by this ethnographic group includes several mountain ranges including a portion of the southern Sierra Nevada Mountains, the Piute Mountains, and Tehachapi Mountains. According to Garfinkel and Williams (2011)

They lived in the far southern Sierra Nevada and the Tehachapi Mountains and occupied a large swath of the western Mohave Desert from Little Lake and the southern Panamint Valley and Death Valley, east to Barstow and south to the Mojave River and Victorville [77]

The group had ties to the San Joaquin Valley and large portions of the western Mojave Desert during their seasonal subsistence rounds. The Kawaiisu were surrounded by the Tubatulabal and Koso (Panamint Shoshone) to the north, the Southern Paiute to the east, the Serrano and Kitanemuk to the south, and the Yokuts tribes to the west in the San Joaquin Valley.

Kroeber estimated that the original population count of the Kawaiisu prior to historic contact was approximately 500 individuals. They were part of the westernmost branch of the Southern Numic Division of languages. The Numic branch was the northern most manifestation of the Uto-Aztecan language family. It is thought that the Kawaiisu lived in this area for approximately 2000 years and manifested during the expansion of Numic speakers in the area. Additionally, the Kawaiisu lack a migration story in their myths, and Sutton hypothesized that they moved into the mountains after previously living in the western Mojave. Drier conditions probably forced them out of the desert and into surrounding areas (Sampson 2006; Zigmond 1986).

The Kawaiisu relied on hunting and gathering for subsistence. They gathered acorns and pinyon pine nuts in the fall and seed-producing plants in the spring (Garfinkel and Williams 2011:78). Important vegetal resources included oak (*Quercus spp.*), juniper (*Juniperus spp.*), Bull Pine (*Pinus sabiniana*), pinyon pine (*Pinus monophylla*), yucca (*Yucca brevifolia* and *Y. whipplei*), Indian rice grass (*Achnatherum hymenoides*), tick seed (*Coreopsis bigelovii*), blazing star (*Mentzelia spp.*), tansy mustard (*Descurainia pinnata*), and chia (*Salvia columbariae* and *S. carduacea*) (Garfinkel and Williams 2011:78-79). Bighorn sheep, deer, pronghorn antelope, jackrabbits, quail, fish, and chuckwallas were also important game.

Because of their reliance on the annual availability of plants and animals, the Kawaiisu adopted a seasonal migration pattern

Summer was a period where there was considerable mobility and fall was spent in the higher mountains gathering acorns and pinyon nuts. The Kawaiisu, like other California foraging groups, occupied permanent winter village sites located at reliable water sources that would permit leaching of acorns. Winter villages were the sites of fiestas and mourning ceremonies that were held after the fall harvest of tree crops. During the spring, summer, and fall, smaller groups of related individuals set up temporary camps for foraging and/or hunting. Village sites often featured bedrock milling locations for the processing of acorns. Pinyon pine nut gathering camps, temporarily occupied in the fall, featured cone roasting pits and sometimes nut grinding bedrock slicks as well [Garfinkel and Williams 2011:78]

This group did not recognize tribal cohesion as is seen in neighboring Californian groups like the Yokuts. Garfinkel and Williams (2011) suggest that “chiefs were known but no single individual united the Kawaiisu as a whole” (80). The Kawaiisu were organized at the family level and these families would search for food together and cooperate with related families for various economic necessities (Sampson 2006:9-10).

Structures created and used by this group included a winter house, summer house, sweathouse, a temporary brush enclosure, and granaries for food storage (Sampson 2006:10; Zigmund 1986).

Garfinkel and Williams (2011) provide a recent report dedicated solely to the Kawaiisu with a chapter on place names. Hava-yugwi-nü-wa=ika meant “old road or trail around Butterbrecht Canyon” (39). Jawbone Canyon was called either moko-havi-dü or shiga-vü and refers to the pictographs recorded on the higher ridges at the head of the canyon (Garfinkel and Williams 2011:40). This ridge “commemorates when Chipmunk was hunting and saw a deer at the bottom of the canyon and slid down the mountain with his tail making a trench in order to get a better shot at the game (Garfinkel and Williams 2011:41). The Jawbone Pass was “an area where the Kawaiisu camped when in route to and from Kelso Valley on the way to Koehn Lake” (Garfinkel and Williams 2011:41).

Kelso Canyon was called peelakawi, and it served as an important route between the Kawaiisu and the Tubatulabal ethnographic area on the South Fork of the Kern River (Garfinkel and Williams 2011:41). Kelso Creek that runs through this canyon was called muruna-vi-dü. The entire Kelso Valley region was called paayaa-vi-dü=aka (Garfinkel and Williams 2011:42).

Puguro’oci was a ridge in the Kelso Valley where native Kawaiisu women would pick berries. The word means “dog hole” and a place where Kawaiisu reported to have seen supernatural dogs (Garfinkel and Williams 2011:54).

Sageland, a historic mining town, is just north of the project area along Kelso Valley Road and was called maha-vidi or mah-va’a-di. There was a native cemetery in the vicinity of Sageland and a large village in a nearby canyon (Garfinkel and Williams 2011:56).

Lander Meadow, the northwestern-most portion of the project area was called pa-wazidi-bi and the largest meadow in the Piute Mountains (Garfinkel and Williams 2011:44).

The first European contact with the Kawaiisu was in 1776 by Fr. Francisco Garcés during his travels from the Colorado River to Mission San Gabriel. While searching for a route from Sonora to the San Joaquin Valley he crossed into Kawaiisu territory on May 11, 1776 (Garfinkel and Williams 2011:69).

The José Palomares expedition traveled through Kawaiisu territory in 1808 and reported that runaways from Missions San Fernando and San Gabriel were given protection by the local natives (Garfinkel and Williams 2011:71). Several other attempts to retrieve mission runaways from Kawaiisu territory continued through the late 1820s.

Joseph Walker, a fur trapper entered the area in 1834 and features like Walker Basin and Walker Pass are attributed to him. John C. Fremont passed through the area in 1844. Mexican armies were in the area after the decline of the Mission system to quell native raiding of livestock (Garfinkel and Williams 2011:73). American armies further increased pressure on the native groups and “the Kawaiisu found themselves caught in the middle between non-native punitive expeditions and native groups to the west and north which were involved in this raiding” (Garfinkel and Williams 2011:73).

The Gold Rush brought more American settlement into the area in the late 1850s. A survey expedition for the transcontinental railroad began in 1853 across the Tehachapi’s. Between 1861-1863 as mining increased and more land was sought to develop, the Koso (Panamint Shoshone) along with some Tubatulabal and Kawaiisu fought back. Captain Moses A. McLaughlin led 908 Native American out of the area to the Sebastian Indian Reservation in 1863, but most of them returned to their native lands (Garfinkel and Williams 2011: 74).

On April 19, 1863, Captain Moses A. McLaughlin along with 44 soldiers arrived at the Indian Rancheria of Paligawan during a native spring ceremony. Local settlers and a local native chief, Joe Chico, had alerted the army of a possible uprising of the local native people against the settlers. Thirty-five defenseless Native American men were singled out and slaughtered by the army (Garfinkel and Williams 2011:43). The women and children hid during the massacre and later buried the deceased. Betty Buckskin, who married an early pioneer Butterbrecht, survived the massacre and lived the rest of her years in Kelso Canyon near the current project area.

Violence between settlers and natives continued during this time until the late 1860s. By the end of the Civil War sheep herding became popular and some of the native people were employed in this industry (Garfinkel and Williams 2011:75). According to Garfinkel and Williams (2011), “in 1906, some 40 native people were enumerated at Caliente, with other Kawaiisu and relatives also being recorded at this time, including eight at Paiute Rancheria, 15 at Tehachapi, 23 at Walker Basin, and 30 at Kelso Canyon and Kelso Valley” (75). Towards the end of the 19th century, “native families became increasingly dependent on farming and wage work . . . ranch and cattle work was particularly important. . . . Kawaiisu families continue to reside in the Monolith/Tehachapi areas and at the Paiute Mountain Rancherias during the 20th century” (Garfinkel and Williams 2011:75-76).

Historic Overview

The first Spanish explorer given credit to enter the desert environs of Kern County was Francisco Garces, a Spanish priest. Instead of partaking in Juan Bautista de Anza’s 1776 expedition, he traveled the area alone with one Indian guide (Peirson 1956:1). He explored the Mojave River, Kern River, Mojave Desert, and discovered a pass between the Tehachapi Mountains and Sierra Nevada. Although there are conflicting dates, Jedediah Strong Smith is also credited as an early pioneer in the area being the first American to cross the Mojave Desert around 1826 (Peirson 1956:2). Another explorer, Joseph Reddeford Walker was on the scene in 1834, and Walker’s Pass that leads from Kern County’s desert area into the San Joaquin Valley is named after him (Peirson 1956:2-3). John C. Fremont passed through the area in the 1840s and named the Mojave River (Peirson 1956:3-4).

The western Mojave Desert, in its earliest times, was an important travel corridor for prehistoric people because of the availability of water in an otherwise arid environment. Early Gold Rush miners, pioneers and immigrants used those prehistoric trails to travel across the desert. Shipments and provisions for the Gold Rush were shipped across present-day Red Rock Canyon SP. The mountain range in the park was termed El Paso during this time period.

Accounts claim “a freight station and stage stop was established near Ricardo Campground in the present day park by 1873” (Sampson 2006:11).

Kelso Valley in the project area was named after John W. Kelso, a merchant in Keyesville (Darling 1988:66). He transported his supplies “by freight wagon from Los Angeles to the Kern River mines in the 1850’s” (Darling 1988:66). In 1857, he was transporting 5,000 pounds of goods at a time (Hensher 2002:67). From Los Angeles, the freight wagons could “head up Jawbone Canyon and then pass through Butterbredt Canyon and Kelso Valley to the south fork of the Kern River” (Hensher 2002:41).

A wave of miners poured into this area in the 1850’s, and “while the majority of travelers to Kern River went by way of Fort Tejon, heavy teams also went through the desert, Jawbone Canyon, and Kelso Valley” (Barras 1976:25). Local mines sprouted up during this time. Sageland is just north of the project area along Kelso Valley Road and was a historic mining town and supply center associated with the St. John, Burning Moscow, and Hortensia mines (Garfinkel and Williams 2011:56). It was settled in 1864. Butterbredt Canyon, portions of which are in the project area, was named after an early pioneer, Frederick Butterbredt, Sr. (Garfinkel and Williams 2011:39). Butterbredt was born in Germany and immigrated to the region during the area’s early mining development. He married Betty Buckskin who was born in Kelso Canyon and survived the Keyesville McLaughlin Massacre (Garfinkel and Williams 2011:39, 41, 43).

According to C. Hart Merriam

Mr. Butterbredt, his Indian wife, her mother, and grandmother lived at a ranch in the canyon on Kelso Creek about eight miles south of Weldon. Butterbredt had received a homestead patent in 1901 for the northwest quarter of Section 27, T27S, R35E, MDBM, at the confluence of Kelso and Pinyon Creeks, and this was presumably the site of the ranch [Garfinkel and Williams 2011:41]

This would place the old Butterbredt homestead approximately 8 miles north of the project area along Kelso Valley Road.

The railroad came through the desert in 1876 and the town of Mojave was formed (Peirson 1956:5). The railroad brought people and business to the desert. Early borax mining took place on Borax Lake, now Searles Lake (80 miles from Mojave), and shipments were transported through Mojave (Peirson 1956:5). In 1890, gold was discovered and a mini-Gold Rush spread through the Mojave Desert area but was short-lived.

During the early 1900’s the area thrived as the Los Angeles Aqueduct was constructed to bring water from the Owens River to Los Angeles (Peirson 1956:7). Mining throughout the area began again in the 1930s. New mining was triggered by the Great Depression. The settlement patterns became more permanent than the relatively intermittent mining lifestyle that had preceded it. Important mines in the area include Grubstake Hill, the Golden Rule, Pasadena Mine, the Daly Claim, and Florence #7 (Sampson 2006:11). Mining for pumicite, an active ingredient for certain household cleansers, took place near Last Chance Canyon in Red Rock Canyon SP. Mining took place in the hills of Jawbone Canyon as late as 1939 (Darling 1988:63).

The military also played an important role in the development of the area. A Navy air base was established during World War II near Mojave (Peirson 1956:8). Additionally, the installation of the Air Force base at Edwards, CA has also added development.

STUDY METHODS

Records and Literature Search

A record search was conducted of the project area at the Southern San Joaquin Valley Information Center (CSU, Bakersfield) of the California Historical Resources Information System on January 20, 2011 by Associate State Archaeologists Kelly Long and Alicia Perez. The Southern San Joaquin Valley Information Center, an affiliate of the State of California Office of Historic Preservation (CA-OHP), is the official state repository of archaeological and historical records and reports for Kern County. Included in the literature review were the *California Points of Historical Interest* (1992) and the *Historic Properties Directory* (through June 16, 2006). The *Historic Properties Directory* includes updated listings of the National Register of Historic Places, the California Historical Landmarks, the California Register of Historical Resources, and the California Points of Historical Interest.

An additional record search was conducted for this phase of the project at the Bureau of Land Management's (BLM) Ridgecrest Field Office on October 3, 2011 by Kelly and Alicia. OHMVR Division archaeologists met with BLM archaeologists to discuss the project and exchange information. Additional research was conducted using the files and literature of the OHMVR Division cultural resource library. Supplemental prehistoric and historic background information was gathered from the California State Library in Sacramento.

On February 16, 2011 and on April 26, 2012 OHMVR Division archaeologists contacted the Native American Heritage Commission (NAHC) to request a record search of their sacred lands files. The NAHC reported no previously recorded sacred areas were known to exist within areas of the project boundary. Copies of this correspondence are located in Appendix A. The NAHC also provided a recent list of Native American individuals/organizations that may have knowledge of cultural resources within the project boundary. Certified letters were mailed to all individuals and organizations on the NAHC contact list on March 17, 2011. Copies of the correspondence are also located in Appendix A. The OHMVR Division did not receive any response and all individuals and organizations were again contacted via email on April 27, 2011. Several of the emails failed to send and phone calls were made to these individuals. From this third attempt at Tribal consultation, Tribal Chairwoman, Donna Begay with the Tubatulabals of Kern Valley contacted Alicia Perez on April 27, 2011. A Native American consultation meeting with Donna Begay occurred on August 8, 2011 at Hungry Valley SVRA. Associate State Archaeologists Alicia Perez and Kelly Long were accompanied by Senior Environmental Scientist Kim Matthews and Environmental Scientist Chris Hon. The objectives for this initial consultation meeting was to provide Donna with an overview of the project description and results from the cultural resource inventory of the project area. Donna provided the OHMVR Division with GIS data of all known sites within and adjacent to the project boundary. Additional consultation letters were sent to all individuals and organizations on the NAHC contact list on May 7, 2012. Only Chairperson, Katherine Montes-Morgan with the Tejon Indian Tribe responded and indicated that although "the Tejon Indian Tribe has no conflict with the proposed project, but wants to be contacted if sites are located in project area". Alicia Perez called Katherine Montes-Morgan on July 17, 2012 to provide the Tejon Indian Tribe with the results of the cultural resource inventory. To date, the Tejon Indian Tribe has not contacted the OHMVR Division. As the date of this report, consultation with the Tubatulabals of Kern Valley continues.

The record search, literature review, and Native American consultation was conducted to accomplish the following: (1) to identify previously recorded or known archaeological or historical resources within the project area; and (2) to determine the likelihood of unrecorded resources based on historical references, Native American consultation, and the distribution and environmental settings of nearby sites.

The record search conducted at the Southern San Joaquin Valley Information Center, BLM Ridgecrest Field Office, and consultation with Donna Begay identified 18 previously recorded sites within the project area; six prehistoric resources, 9 historic-era resources and two multi-component resources, (Table 1) (Figure 2). One resource's occupation period is unknown. Approximately five previous archaeological surveys have been conducted within the project area (Table 2).

Table 1. Previously Recorded Sites Within the Project Area

TRINOMIAL #	PRIMARY #	DATE (Recorded/Updated)	RECORDED BY	Resource
CA-KER-208/H		1950	G. Guthrie	AP4. Bedrock milling feature, AP15. Habitation debris, AH4. Privies/dumps/trash scatters, AH10. Machinery, AH16. other
CA-KER-913	P-15-000913	2002	M. Richards, S. Dietler, N. Tabares	AP2. Lithic scatter, AP4. Bedrock milling features, AP5. Petroglyphs, AP6. Pictographs
CA-5944H		2003	J. Nelson	AH9. Mines, AH11. Walls/fences, AH15. Standing structures
CA-KER-6393H		2002	B. Brown	AH4. Trash scatter
CA-KER-7025	P-15-012438	2006	J. Lloyd (Applied Earthworks)	AP2. Lithic scatter, AP3. Ceramic scatter, AP4. Bedrock milling features, AP6. Pictograph, AP15. Habitation debris
CA-KER-7127H		2002	R. Bevill	AH2. Foundations, AH4. Trash scatters
CA-KER-7153H	P-15-012695	2002	D. Tyree	AH2. Foundations, AH4. Trash scatter
CA-KER-7154H	P-15-012696	2002	M. Hale, S. Lippman	AH2. Foundations
CA-KER-7900H	P-15-014142	2009	D. Tyree	AH9. Mine shaft and tailings
CA-KER-7902			D. Tyree	AP2. Lithic scatter, AP4. Bedrock milling features, AP16. other
	P-15-007212			Unknown
	P-15-010464	2002	M. Richards	AP2. Lithic
	P-15-011101	2002	M. Richards, C. Backes, A. Tabares	AP2. Lithic
Butterbredt Well Locus A		2009	D. Tyree	AH5. Wells/cisterns
Butterbredt Well Locus B		2009	D. Tyree	AH5. Wells/cisterns
JBB-16 (Alphie Springs)		2009	D. Tyree	AH2. Foundations, AH4. Trash, AH5. Well, AH6. Water conveyance, AH7. Road, AH9. Mine adits, AH11. Fence, AP2. Lithic scatter, AP15. Habitation debris
JBB-36		2009	D. Tyree	AP4. Bedrock milling features
JBB-50H		2010	D. Tyree	HP35. CCC Property, AH5. Wells

Figure 2. Previously Recorded Sites Within Project Area

Table 2. Previous Archaeological Studies Within Project Boundary

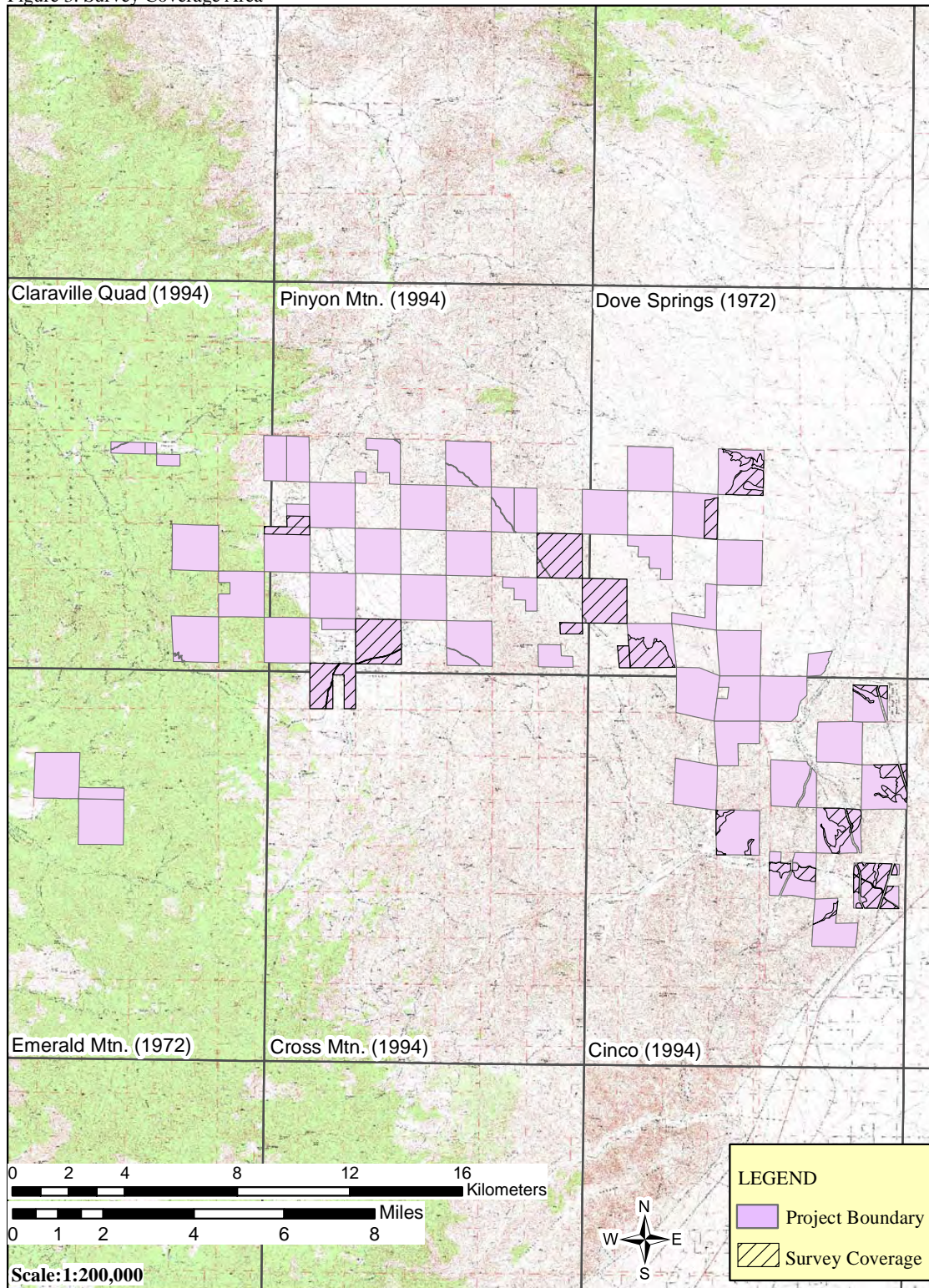
Date Published	Author/Agency	Report Name	Site(s) Referenced
2003	URS Corporation	Archaeological Inventory Within the Jawbone Area of Critical Environmental Concern (ACEC), Kern County, California	KER-5944H, -6393H
2002	URS Corporation	Archaeological Inventory of the First and Second Los Angeles Aqueducts and Selected Access Roads, Kern, Inyo, and Los Angeles Counties, California	KER-7127H, -7154H
2011	BLM Ridgecrest Office	Unpublished Cultural Resource Inventory Report	KER-913
2002	Ancient Enterprises	Cultural Resources Survey Report for the Bureau of Land Management Open Areas Within the Jawbone/Butterbredt Area of Critical Environmental Concern, Dove Springs Open Area and Jawbone Canyon State Park, Kern County, California	KER-913, P-15-010464, P-15-011101
2009	BLM Ridgecrest Office	OHV Route SC-176 Jawbone-Butterbredt ACEC Project #CA-650-2009-39	KER-7900H, -7901H

Field Methods and Results

The project area encompasses approximately 28,000 acres. DPR Associate State Archaeologists, Alicia Perez and Kelly Long, Assistant State Archaeologist Margaret Kress and Archaeological Project Lead Joanna Collier with the OHMVR Division, and DPR Associate State Archaeologist Chris Corey and Assistant State Archaeologist Patrick Riordan from the Archaeology, History, & Museums Division participated in the cultural resource survey during the months of March, April and October 2011. Supplemental archaeological field work was completed by Far Western Anthropological Research Group, Inc. in June 2012 (Appendix C).

The purpose of the cultural resource survey was to conduct a complete visual intensive survey of all lands within the project area in order to: A) relocate and update all previously recorded sites; and B) to record newly identified resources. A complete visual intensive survey is one in which archaeologically-trained individuals systematically traverse the area at 10-meter intervals or less, inspecting the ground surface for all evidence of prior human activity. However, a complete visual intensive survey was problematic because of poor ground visibility and steep topography. Additionally, given the immensity of the project area combined with time constraints only 3,508 acres were surveyed by DPR archaeologists and 1,200 acres were surveyed by Far Western archaeologists for a total of 4,708 acres (Figure 3).

Figure 3. Survey Coverage Area



STUDY RESULTS

DPR and Far Western archaeological field work recorded six previously recorded sites and 23 new sites within the project area for a total of 29 sites, 13 of which are prehistoric, one multi-component, and 15 historic-era sites. 63 isolated finds were also recorded; 20 prehistoric, 42 historic-era, and one multi-component (Table 3). All sites were recorded and updated using DPR 523 site records. One Rose Spring Corner-notched obsidian projectile point was collected from CA-KER-7025 and one Cottonwood obsidian projectile point was collected from P-15-015857. The collection is stored at the OHMVR Division HQ in Sacramento. A Trimble GeoExplorer XH was used to record all site boundaries and geographic data. ArcGIS 10 was used to prepare the geographic data for all sites and the State Parks Cultural Resource Geodatabase for the Onyx Ranch Acquisition was used to archive all of the geographic data. All geographic data was collected using North American Datum 1983 and maps were projected using Universal Transverse Mercator, Zone 11. Metadata was prepared for all collected geographic data. Locations of known sites can be found on Figure 4 through Figure 11.

Table 3. Cultural Resources Recorded within Project Boundary

Trinomial or Primary, Resource Name	Prehistoric/Historic-Era/Multi-component	Resource Description	Relocated Yes/No
CA-KER-208/H	Multi-component	AP4. Bedrock milling feature, AP15. Habitation debris, AH4. Privies/dumps/trash scatters, AH10. Machinery, AH16. other	No
CA-KER-913	Prehistoric	AP2. Lithic scatter, AP4. Bedrock milling features, AP5. Petroglyphs, AP6. Pictographs	Yes; 10/17/2011 & 10/18/2011
CA-KER-5944H	Historic-era	AH9. Mines/quarries/tailings	Yes; 6/17/2012
CA-KER-6393H	Historic-era	AH4. Trash	Yes; 6/14/2012
CA-KER-7025	Prehistoric	AP2. Lithic scatter, AP3. Ceramic scatter, AP4. Bedrock milling features, AP6. Pictograph, AP15. Habitation debris	Yes; 10/19/2011
CA-KER-7127H	Historic-era	AH2. Foundations, AH4. Trash scatter	Yes; 6/17/2012
CA-KER-7153H	Historic-era	AH2. Foundations, AH4. Trash scatter	No
CA-KER-7154H	Historic-era	AH2. Foundations	No
CA-KER-7900H	Historic-era	AH9. Mine shaft and tailings	No
CA-KER-7902	Prehistoric	AP2. Lithic scatter, AP4. Bedrock milling features, AP16. other	No
P-15-007212		Unknown	No
P-15-010464	Prehistoric	AP2. Lithic	No; 10/18/2011
P-15-011101	Prehistoric	AP2. Lithic	No; 10/19/2011
Butterbredt Well Locus A	Historic-era	AH5. Wells/cisterns	No
Butterbredt Well Locus B	Historic-era	AH5. Wells/cisterns	No
JBB-16 (Alphie Springs)	Multi-component	AH2. Foundations, AH4. Trash, AH5. Well, AH6. Water conveyance, AH7. Road, AH9. Mine adits, AH11. Fence, AP2. Lithic scatter, AP15. Habitation debris	No
JBB-36	Prehistoric	AP4. Bedrock milling features	No
JBB-50H	Historic-era	HP35. CCC Property, AH5. Wells	Yes; 10/18/2011
CA-KER-8422 (Butterbredt Grind)	Prehistoric	AP2. Lithic scatter, AP4. Bedrock milling feature	New resource
CA-KER-8423H (Butterbredt Terraces)	Historic-era	AH4. Water conveyance system, AH16. other	New resource
CA-KER-8424 (Grinding with a View)	Prehistoric	AP2. Lithic scatter, AP4. Bedrock milling feature, AP14. Rock shelter/cave, AP15. Habitation debris	New resource
CA-KER-8425H (Mystery Foundations)	Historic-era	AH2. Foundations/structure pads, AH4. Privies/dumps/trash scatters, AH7. Roads/trails/railroad grades, AH9. Mines/quarries/tailings, AH11. Walls/fences	New resource
CA-KER-8426 (Obsidian Bench)	Prehistoric	AP2. Lithic scatter	New resource
CA-KER-8427	Prehistoric	AP4. Bedrock milling feature	New resource

(04192011A)			
Trinomial or Primary, Resource Name	Prehistoric/Historic-Era/Multi-component	Resource Description	Relocated Yes/No
CA-KER-8428 (04192011B)	Prehistoric	AP4. Bedrock milling feature	New resource
CA-KER-8715H (Schoolhouse Well)	Historic-era	AH3. Landscaping/orchard, AH5. Wells/cisterns, AH6. Water conveyance system, AH10. Machinery, AH16. Other	New resource
CA-KER-8716/H (The Edge of Glory Site)	Multi-component	AH4. Privies/dumps/trash scatters, AP2. Lithic scatter, AP4. Bedrock milling feature	New resource
CA-KER-8718H (10182011A)	Historic-era	AH2, AH3. Landscaping/orchard AH4. Privies/dumps/trash scatters, AH5. Wells/cisterns	New resource
CA-KER-8719H Little Stone House on (the Prairie)	Historic-era	AH15. Standing structure	New resource
CA-KER-8720 (Joanna's Flake Site)	Prehistoric	AP2. Lithic scatter	New resource
CA-KER-8721 (Joanna's Milling Station)	Prehistoric	AP4. Bedrock milling feature	New resource
STH-01	Historic-era	AH4. Privies/dumps/trash scatters, AH9. Mines/quarries/tailings	New resource
STH-02	Prehistoric	AP2. Lithic scatter	New resource
STH-03	Historic-era	AH4. Privies/dumps/trash scatters	New resource
STH-04	Historic-era	AH4. Privies/dumps/trash scatters	New resource
STH-05	Historic-era	AH4. Privies/dumps/trash scatters	New resource
STH-06	Prehistoric	AP2. Lithic scatter	New resource
STS-01	Prehistoric	AP2. Lithic scatter	New resource
STS-02	Historic-era	AH4. Privies/dumps/trash scatters	New resource
STS-03	Historic-era	AH4. Privies/dumps/trash scatters	New resource
STS-04	Prehistoric	AP2. Lithic scatter, AP11. Hearths/pits	New resource
CA-KER-8717H (10172011C)	Historic-era isolate	AH6. Water conveyance system, AH7. Roads/trails/railroad grades	New resource
P-15-015213 (Margaret's Pestle)	Prehistoric isolate	AP2. Lithic scatter	New resource
P-15-015218 (04192011C)	Historic-era isolate	AH9. Mines/quarries/tailings	New resource
P-15-015856 (10182011B)	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
P-15-015857 (10192011A)	Prehistoric isolate	AP2. Lithic scatter	New resource
P-15-015860 (Margaret's Mano Isolate)	Prehistoric isolate	AP2. Lithic scatter	New resource
P-15-015861 (Red Chert Core Isolate)	Prehistoric isolate	AP2. Lithic scatter	New resource
Historic 1	Historic-era isolate	AH5. Wells/cisterns	New resource
Historic 2	Historic-era isolate	AH5. Wells/cisterns	New resource
ITH-01	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-03	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-04	Multi-component	AP2. Lithic scatter, AH4. Privies/dumps/trash scatters	New resource
ITH-05	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-06	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-07	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-08	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-09	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-10	Historic-era	AH4. Privies/dumps/trash scatters	New resource

	isolate		
Trinomial or Primary, Resource Name	Prehistoric/Historic-Era/Multi-component	Resource Description	Relocated Yes/No
ITH-11	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-12	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-13	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-14	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-15	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-16	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-17	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-18	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-19	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-20	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-21	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-22	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-23	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-24	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-25	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-26	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-27	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-28	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-29	Prehistoric isolate	AP2. Lithic scatter	New resource
ITH-30	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-31	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITH-32	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-01	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-02	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-03	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-04	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-05	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-06	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-07	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-08	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-09	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-10	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-11	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-12	Prehistoric isolate	AP2. Lithic scatter	New resource

Trinomial or Primary, Resource Name	Prehistoric/Historic-Era/ Multi-component	Resource Description	Relocated Yes/No
ITS-13	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-14	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-15	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-16	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-17	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-18	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-19	Prehistoric isolate	AP2. Lithic scatter	New resource
ITS-20	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-21	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-22	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource
ITS-23	Historic-era isolate	AH4. Privies/dumps/trash scatters	New resource

Figure 4. Recorded Resources Overview

Figure 5. Recorded Resources

Figure 6. Recorded Resources

Figure 7. Recorded Resources

Figure 8. Recorded Resources

Figure 9. Recorded Resources

Figure 10. Recorded Resources

Figure 11. Recorded Resources

CURRENT CULTURAL RESOURCE CONDITIONS AND CULTURAL RESOURCE MANAGEMENT PROGRAM

Current Cultural Resource Conditions

In pursuant to subsection (b) of 14 CCR 15064.5, a substantial adverse change in the significance of an historical resource because of a project is defined as “the demolition, destruction, relocation, or alteration of a resource or its immediate surroundings such that its significance is materially impaired”. In general, a historical resource’s significance is materially impaired when it can no longer convey its historical significance and therefore can no longer justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources, the local register of historical resources pursuant to § 5020.1(k) of the Public Resources Code, or its identification in an historical resources survey meeting the requirements of § 5024.1(g) of the Public Resources Code. A substantial adverse change to a historical resource also includes the adverse demolition or material alteration of a historical resource’s physical characteristics that convey its historical significance and argue its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for the purpose of CEQA.

Knowledge of which resources within the Onyx Ranch project boundary are eligible for either the National Register of Historic Places or the California Register of Historical Resources identifies the following: (1) resources that will require protection and preservation measures; (2) the level of significant effect to known resources because of a project; and (3) avoidance or mitigation measures to minimize or eliminate significant project impacts according to CEQA, and PRC § 5024 and PRC § 5024.5.

National Register of Historic Places Criteria

The criteria for determining whether a property is eligible for listing in the National Register of Historic Places (NRHP) are found in 36 CFR 60.4 and are reproduced below:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinctions; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

For a property to qualify for the NRHP, it must meet at least one of the above National Register Criteria for Evaluation by

Being associated with an important context *and*

Retaining historic integrity of those features necessary to convey its significance

California Register of Historical Resources Criteria

The California Register of Historical Resources (CRHR) also has a four-criterion approach that mirrors the NRHP. The significance criteria for archaeological and historical sites are defined in the CRHR and are found in the CEQA guidelines (14 CCR 15064.5). For a resource to be eligible for listing in the CRHR, it must be significant at the local, state, or national level in accordance with at least one of the following criteria:

1. Is associated with events contributing to the broad patterns of the state's history or culture; or
2. Is associated with historically important people; or
3. Embodies distinctive characteristics of a type, period, or construction method, or represents the work of a creative individual; or
4. Has the potential for yielding important information on California's history or prehistory.

A resource also has to be at least 50 years old and must possess several of the seven levels of integrity to be eligible for listing in the CRHR. Integrity is defined as "...the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance" (California Office of Historic Preservation 2006a). The seven levels of integrity are location, design, setting, materials, workmanship, feeling, and association. Resources that are listed in the NRHP are automatically eligible for the CRHR (PRC § 5024.1(c)).

Both NRHP and CRHR evaluations must be made within an appropriate historic context. A historic context includes three components: a time period, place, and event. A historic context is developed through one or more research themes to help identify the resources' significance at the local, state, or national level. A resources' integrity is based on its ability to convey its significance through data requirements. Data requirements can best be described as evidence found within the archaeological record that conveys the resources' historical significance. If the appropriate data requirements are lacking, the resource arguably lacks significance and is therefore not an eligible resource.

It was not feasible during this current cultural resource inventory to perform the appropriate level of prehistoric, ethnographic, and historic research to adequately develop research themes to evaluate the recorded resources. However, preliminary field evaluations of the resources' eligibility to both Registers were conducted based on historic context, data potential, and current integrity conditions. For the purpose of simplification, as the NRHP and CRHR criteria are nearly identical, criteria for both have been combined here (e.g., Criterion A/1 would apply to resources that contribute to the broad patterns of national, state, and local history). The eligibility of the prehistoric resources are solely considered under Criterion D/4 and may have additional values under criteria A/1, B/2, and C/3; but these evaluations will require consultation with the local tribal community. Last, isolates were not evaluated as they arguably do not contain extensive data potential.

Table 5. Preliminary Field Evaluations of Recorded Resources

Trinomial/Primary	Historic Context	Data Potential	Current Condition/Integrity	Eligible to the National Register and/or California Register Y/N
CA-KER-913	Cultural affiliation, Chronology, Technology, Settlement, Subsistence	milling stations, pictographs, rock shelters, hearths, midden, lithics, ceramics	Good, likely being impacted by cattle grazing	Yes; D/4
CA-KER-5944H	1880-1914 early mining and prospecting land use history	Mine shafts and adits, standing structures, trash scatters	Good	Yes; D/4
CA-KER-6393H	1880-1914 Los Angeles aqueduct	Can scatter	Poor	Historic context and data potential unknown without further historic research, also evident

Trinomial/Primary	Historic Context	Data Potential	Current Condition/Integrity	integrity issues Eligible to the National Register and/or California Register Y/N
CA-KER-7025	Cultural affiliation, Chronology, Technology, Settlement, Subsistence	midden, milling stations, pictograph, ceramics, groundstone, flaked stone tools, debitage, faunal remains, hearth features	Fair, cattle graze in the area and fire has disturbed site along with a dozer trail	Yes; D/4
CA-KER-7127H	Jawbone Camp, associated with the Los Angeles aqueduct	Foundations, trash scatter	Poor, evidence of heavy OHV impact and use	Historic context and data potential unknown without further historic research, also evident integrity issues
CA-KER-8422	Subsistence	six bedrock milling features	Good, site is within the fence for the Butterbredt Preserve, cattle grazing, evidence of clay pigeon shooting	Yes; D/4
CA-KER-8423H	1880-1945 ranch or mining land use site	Terraces and trash	Good, cattle grazing occurs	Historic context and data potential unknown without further historic research
CA-KER-8424	Chronology, Technology, Settlement, Subsistence	four milling station features, and one rock shelter feature, midden, obsidian flakes, chert cores, chert flakes	Good, recent shell casings and broken beer bottles, but no damage and minimal disturbance	Yes; D/4
CA-KER-8425H	1914-1945 mining land use site	Foundations, mining evidence	Poor, dirt road has bisected site	Historic context and data potential unknown without further historic research, also evident integrity issues
CA-KER-8426	Technology	Flakes, biface	Fair, dirt road bisects site	Context and data potential unknown without further research, also evident integrity issues
CA-KER-8427	Technology, Subsistence	milling features	Good	Yes; D/4
CA-KER-8428	Technology, Subsistence	milling feature, cupules, obsidian waste flake	Good	Yes; D/4
CA-KER-8715H	1914-1915 windmill land use history site	Well and associated water conveyance features	Fair, cattle grazing and feature rot	Historic context and data potential unknown without further historic research
CA-KER-8716/H	Chronology, Technology, Settlement, Subsistence	bedrock milling features, flakes (obsidian, white chert, chalcedony, and quartzite) and a historic-era dam	Fair, cattle grazing, historic activities have displaced Feature 5.	The prehistoric element is eligible under D/4; it is unknown if the historic-era component is eligible
CA-KER-8718H	1850s Kelso Valley mining land use site	large habitation site with eight habitation features and assorted artifacts	Fair, cattle grazing	Yes; D/4
CA-KER-8719H	Early to mid-20 th century Kelso Valley land use and habitation site	Stone structure, rock alignments	Poor, structure almost completely collapsed, also located close to road	Historic context and data potential unknown without further historic research, also evident integrity issues
CA-KER-8720	Technology	flakes scatter (including one with cortex and one shatter) of various material including: chalcedony, chert, and basalt	Good, but in close proximity to trails	Yes; D/4
CA-KER-8721	Subsistence	fifteen milling features and mano	Good, but in close proximity to trails	Yes; D/4
JBB-50H	Civilian Conservation Corps (CCC) from the 1930s-1940	well, water tank, and a barbed-wire enclosure	Poor, graffiti, modern trash, bullet holes	Historic context and data potential unknown without further historic

				research, also evident integrity issues
Trinomial/Primary	Historic Context	Data Potential	Current Condition/Integrity	Eligible to the National Register and/or California Register Y/N
STH-01	Work camp associated with the Los Angeles aqueduct, 1885 to post 1945	Mining prospect features, trash scatters	Fair, erosion	Historic context and data potential unknown without further historic research, also evident integrity issues
STH-02	Technology	Flake scatter, one core	Fair, erosion	Context and data potential unknown without further research
STH-03	1885 and 1914 work camp associated with the Los Angeles aqueduct	Can dump	Good	Yes; D/4
STH-04	Post-1945 land use and habitation site	Can dump	Good	Historic context and data potential unknown without further historic research
STH-05	1914 to post-1945 land use and habitation site	Trash scatter	Poor, erosional impacts	Historic context and data potential unknown without further historic research, also evident integrity issues
STH-06	Technology	Lithic scatter and core	Fair, erosional impacts	Context and data potential unknown without further research, also evident integrity issues
STS-01	Technology	Lithic scatter and core	Fair, erosional impacts	Context and data potential unknown without further research, also evident integrity issues
STS-02	1930s-1950s single use dump site	Can dump	Fair	Historic context and data potential unknown without further historic research, also evident integrity issues
STS-03	1914-1931 trash scatter, likely associated with the Los Angeles aqueduct	Can dump	Good	Historic context and data potential unknown without further historic research
STS-04	Technology, habitation	Lithic scatter, handstones, milling slab, and hearths	Fair	Yes; D/4

Cultural Resource Management Program

The Cultural Resource Management Goal for this project is to identify, protect, preserve, and interpret the cultural resources within the project area. The cultural resources within the project area have the potential to contain important information about the prehistoric lifeways of the area as well as yield significant data regarding the historical occupation and land use history of this region. All cultural resources that exist within the project area will be incorporated within the existing OHMVR Division Cultural Resource Management Program and will be subject to the following Cultural Resource Management Guidelines:

1. In accordance with PRC §5024 and PRC §5024.5, known cultural resource will be evaluated according to the NRHP and/or the CRHR criteria. A Determination of Eligibility (DOE) from the State Historic Preservation Officer (SHPO) for listing the resource on the NRHP/CRHR will also be obtained for known resources. If resources are determined to be eligible for NRHP/CRHR, protection measures consistent with

the Secretary of Interior's Standards for the Treatment of Historic Properties and CEQA will be generated. In the event a complete inventory and/or resource evaluations are not feasible, all known cultural resources will be managed as potentially significant for listing in the NRHP/CRHR in accordance with Department policy;

2. Identify significant cultural resources that are in need of data recovery, or are in areas of high risk of impact/vandalism. Initiate a data recovery effort, including surveys, GIS mapping, analysis, and documentation to develop specific management guidelines for the monitoring, site treatment and protection of significant cultural resources;
3. Areas with eligible and/or potentially eligible resources should be set aside as educational and scientific areas with limited and/or controlled public access to prevent further destruction of these heritage treasures;
4. Determine the eligibility of cultural resources within proposed project areas prior to construction. If significant cultural resources are discovered within or adjacent to areas that will be affected by planned or proposed activities, the activities will be designed to avoid or minimize impacts to the identified resources. If cultural resources are discovered inadvertently during construction activities, cease construction activities within and in the vicinity of the find and consult an OHMVR Division archaeologist or other qualified cultural resource specialist to determine the potential significance of the find per NRHP/CRHR criteria. If the find is determined to be significant, develop and implement mitigation measures in consultation with the archaeologist consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties, and CEQA. Mitigations could include avoidance, site capping, project redesign, or data recovery;
5. Maintain appropriate confidentiality of all cultural resources in conformance with Government Code 6254 "Restriction of Archaeological Record Disclosure" and 6254.10 "Information Maintained by Department of Parks and Recreation";
6. Consultation with local California Indian tribes and organizations who are culturally affiliated and connected to the area will occur on a regular basis to ensure productive, collaborative working relationships, especially when considering management practices involving the project area's natural and cultural resources of interest and concern to Native American individuals and communities;
7. Conduct a focused ethnographic study of the project area through archival research and consultation with California Indian tribes and organizations that are culturally affiliated and connected to the area to identify possible traditional cultural properties (TCPs) and additional culturally sensitive and sacred areas; and
8. Conduct a focused archival research on the history of the project area to identify historic context(s) for the historic-era resources located in the project boundary. Identify and record historic buildings, structures, sites, objects, and landscape features for those that lack such documentation. Develop treatment recommendations for significant historic structures and identify compatible and non-compatible uses

Table 6 indicates the recommended future actions required for the proper resource management and preservation of known resources located within the project area. Isolated finds are not included, as they do not likely meet NRHP and CRHR criteria and therefore do not require further resource management or protection.

Table 6. Resource Management and Preservation Recommendations

Trinomial or Primary #/Site Name	Placement of Protection Signs and/or Interpretative Signs	Notify Park Rangers and Other Park Staff to Patrol Site	Restrict Access	Placement of Protective Fencing or Additional Protective Measures	Conduct 5024 Review of Proposed Projects	Native American Consultation	Include in Archaeological Site Stewardship Program
CA-KER-913	X	X	X	X	X	X	X
CA-KER-5944H	X	X	X	X	X		X
CA-KER-6393H					X		X
CA-KER-7025	X	X	X	X	X	X	X
CA-KER-7127H					X		
CA-KER-8422	X	X	X	X	X	X	X
CA-KER-8423H					X		X
CA-KER-8424	X	X	X	X	X	X	X
CA-KER-8425H					X		X
CA-KER-8426			X		X	X	X
CA-KER-8427					X	X	X
CA-KER-8428					X	X	X
CA-KER-8715H		X			X		X
CA-KER-8716/H	X	X	X	X	X	X	X
CA-KER-8718H			X		X		X
CA-KER-8719H	X	X	X	X	X		X
CA-KER-8720					X	X	X
CA-KER-8721					X	X	X
JBB-50H		X			X		X

Trinomial or Primary #/Site Name	Placement of Protection Signs and/or Interpretative Signs	Notify Park Rangers and Other Park Staff to Patrol Site	Restrict Access	Placement of Protective Fencing or Additional Protective Measures	Conduct 5024 Review of Proposed Projects	Native American Consultation	Include in Archaeological Site Stewardship Program
STH-01					X		X
STH-02					X	X	X
STH-03					X		X
STH-04					X		X
STH-05					X		X
STH-06					X	X	X
STS-01					X	X	X
STS-02					X		X
STS-03					X		X
STS-04					X	X	X

Upon acquisition, it is recommended that all areas not included in the current cultural resource survey be examined for cultural resources. If this is not feasible, all future projects proposed in areas that have not been surveyed for cultural resources will require a cultural resource survey along with Native American consultation in accordance with CEQA, PRC § 5024 and §5024.5 and Executive Order B-10-11.

According to CEQA Guidelines, when archaeological resources are located within a project boundary, avoidance or preservation of the known archaeological resource in an undisturbed state is the preferable course of action. CEQA requires the Lead Agency to examine and impose mitigation measures or feasible project alternatives that would avoid or minimize any impacts or potential impacts identified in an EIR or a mitigated Negative Declaration. Generally, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995), Weeks and Grimmer, shall be considered as mitigated to a level of less than a significant impact on the historical resource. A lead agency shall identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource (14 CCR 15064.5). In compliance with CEQA, and PRC §5024 and PRC §5024.5 the following mitigations and recommendations will be included in all future proposed development and maintenance projects within the project area.

Preservation in Place

In pursuant to part 14 CCR 15126.4, public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature. Planning construction to avoid archaeological sites is an example of how to ensure the preservation in place of archaeological sites, and it is DPR's *preferred* manner for mitigating impacts to archaeological sites. Preservation in place maintains the relationship between artifacts and the archaeological context, and most importantly this option can help to avoid conflict with religious or cultural values of groups associated with the site. Thus, the preferred method to avoid significant project impacts to known

historical resources within the Onyx Ranch project area is for no ground disturbing activities to occur within known cultural resource boundaries or culturally sensitive areas.

Mitigation Monitoring and Reporting Program

PRC § 21081.6 requires that a public agency shall adopt a reporting or monitoring program in order to mitigate or avoid significant effects on the environment under subdivision (a)(1) or adopts a mitigated Negative Declaration. All projects that involve ground disturbing activities within the vicinity of a known culturally sensitive area should have an archaeological monitoring plan drafted and in place prior to the commencement of project activities. This monitoring plan should also include Native American consultation and involvement.

Human Remains

Resources have not been identified within the project area as having Native American human remains on the surface; however, it is not safe to assume that subsurface remains do not exist. In the event that human remains are accidentally discovered, the project must come to a complete stop and no further excavation or disturbance of the area or vicinity will occur. The county coroner is to be called immediately to determine that the remains are of Native American ancestry. If the coroner confirms that the remains are Native American, within a 24 hours of the discovery the coroner is to contact the Native American Heritage Commission. The Commission will identify the person(s) believed to be the Most Likely Descendent (MLD), and the MLD will decide, along with the property owner, to appropriate treatment or disposal of the human remains and associated grave goods as provided in PRC § 5097.98. If the Native American Heritage Commission cannot identify the MLD, the MLD fails to make a recommendation, or the property owner rejects the MLD's recommendations, the property owner can rebury the remains and associated burial goods in an area not subject to ground disturbance (14 CCR 15064.5).

Accidental Discoveries

As part of the objectives, criteria, and procedures required by PRC § 21082, provisions for resources accidentally discovered during a project will be drafted prior to ground disturbing activities. The provisions should include an immediate evaluation of the find by a qualified state archaeologist. In the event the find is determined to be an historical or unique archaeological resource, avoidance measures or appropriate mitigations will be made by the archaeologist. Work could continue in other parts of the project area while historical or unique archaeological mitigations take place (14 CCR 15064.5).

Native American Consultation and Monitoring

Native American consultation will continue during the immediate, as well as future, proposed projects. Regular consultation with California Indian Tribes and organizations that are culturally affiliated and connected to the region will ensure productive, collaborative working relationships, especially when considering management practices involving the project area's natural and cultural resources.

In addition to the project mitigations and recommendations listed above, it is highly recommended that the following cultural resource management elements are incorporated into the cultural resource management program for this project.

Annual Cultural Resource Management Training

The success of the OHMVR Division Cultural Resource Management Program does not solely rely on the resource management and preservation efforts afforded by Division archaeologists. The success of the Program is also contingent on the involvement of additional Division staff such as Interpreters, Environmental Scientists, Park Rangers, and District Superintendents among further park staff. Annual Cultural Resource Training Workshops have proven to be a viable educational opportunity for park staff to learn about the prehistory, ethnography, and history of the resources located within their particular SVRA. The workshops also include information about the types of archaeology that is found within the SVRA and how to distinguish between an artifact (an item modified by

humans) and a natural object that has not been modified and used by humans. Most importantly, an effective way to manage the discovery of unanticipated archaeological resources is to plan ahead through cultural resource education of SVRA field staff.

Annual workshops by OHMVR Division archaeologists are a good way to educate and familiarize new and old park field staff on how to identify cultural resources and what to do upon their discovery. Because OHMVR Division archaeologists are stationed in the Sacramento Headquarters Office it is important to train park field staff in the basic fundamentals of what they should and should not do with a newly discovered archaeological resource until a qualified archaeologist can assess the find.

The workshop is also designed to provide important information about cultural resource management and protection, with a primary lesson being that cultural resources are non-renewable. Once destroyed or removed from their original location and setting, their integrity is ruined. OHMVR Division archaeologists instruct the field staff to abide by the following rules when an unanticipated resource is discovered: (1) document the geographical location of the resource, (2) take a photograph (although do not photograph human remains), (3) inform a supervisor, and (4) contact an OHMVR Division archaeologist. Most importantly, do not move or remove any element of the resource. In addition to these steps, it is important that the location of the resource is not discussed over the radio and the photographs are not duplicated and/or shared with park staff other than the supervisor.

California Archaeological Site Stewardship Program (CASSP)

The California Archaeological Site Stewardship Program (CASSP) is volunteer archaeological site stewardship program offered through the Society for California Archaeology. The CASSP is utilized by a multitude of state agencies to involve members of the public in an effort to better monitor, preserve, and manage archaeological sites. CASSP is comprised of volunteers who share a common goal and desire to protect California's rich cultural heritage. The objective of this program is to recruit professional archaeologists and trained volunteers as stewards to monitor sites throughout the state. The application of CASSP at the OHMVR Division SVRA's helps to reinforce its ongoing effort to preserve prehistoric and historic-era cultural resources.

A cultural resource inventory provides the most current condition of archaeological resources located within an SVRA; therefore, it is common to initiate CASSP following a cultural resource inventory. To initiate a CASSP, a CASSP representative works with an OHMVR Division archaeologist to identify the stewardship needs and goals of the park, including identifying which archaeological sites would most benefit from ongoing monitoring. Once the goals and needs are established, a CASSP volunteer workshop is held and members of the public participate in a two-day workshop that includes one 8-hour day in a classroom setting and one, in-field training day with an OHMVR Division archaeologist at the park unit. Volunteers receive training in the following areas: CASSP goals, cultural prehistory and history pertaining to the park unit they will be volunteering at, legal requirements, ethical and confidential requirements related to the treatment of archaeological resources, safety in the field, and basic knowledge of archaeological field surveying methods. The benefits of utilizing CASSP to monitor resources include:

- Efficient management and preservation of cultural resources through regular monitoring of site conditions;
- Active preservation of cultural resources through early identification of site impact;
- Early identification of sites that require immediate preservation management, such as fencing for better protection;
- A complete annual inventory of each monitoring visit, including documentation of changes to site condition, and mitigations developed for better site preservation to be included in the annual report to the State Historic Preservation Office; and
- Public outreach and educational opportunities for various user groups, stake holders, and members of the public to learn about archaeology, including its management, and preservation.

The success of the CASSP is contingent upon the commitment, involvement, and oversight of park staff and the OHMVR Division archaeologists. CASSP volunteers require training and guidance to adequately monitor cultural resources. Upon acquisition, the cultural resources within the project area will greatly benefit from CASSP.

PRC 5097.5

Last, because the OHMVR Division's law enforcement officers' deal with the public and the protection of OHMVR Division cultural resources on a daily basis, it is important to mention PRC 5097.5. PRC 5097.5 states that it is illegal for any person to knowingly and willfully excavate or remove, destroy, injure, or deface cultural resources. Furthermore, the crime is a misdemeanor punishable by a fine not to exceed \$10,000 and/or county jail time for up to one year. In addition to a fine and/or jail time, the court can order restitution, and restitution will be granted of the commercial and archaeological value of the property.

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**NATIVE AMERICAN CONSULTATION
APPENDIX A**

**DPR 523 ARCHAEOLOGICAL SITE RECORDS
APPENDIX B**

ADDENDUM REPORT ON AN ARCHAEOLOGICAL SURVEY FOR THE PROPOSED ONYX RANCH LAND ACQUISITION, KERN COUNTY, CALIFORNIA (2012)
APPENDIX C

APPENDIX K

**PRELIMINARY ASSESSMENT OF EROSION HAZARD
POTENTIAL FOR EASTERN KERN COUNTY
California Geological Survey**

NATURAL RESOURCES AGENCY

EDMUND G. BROWN, JR., GOVERNOR

**DEPARTMENT OF CONSERVATION****CALIFORNIA GEOLOGICAL SURVEY**

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TO: Phil Jenkins, Chief
Off-Highway Motor Vehicle Recreation Division
California State Parks

FROM: Pete Roffers, Engineering Geologist
California Geological Survey

DATE: December 17, 2012

SUBJECT: Preliminary assessment of erosion hazard potential for Eastern Kern
County Acquisition

This memorandum describes the preliminary assessment of erosion hazard potential in the Eastern Kern County Acquisition that was conducted by the California Geology Survey in October 2012.

The preliminary assessment of erosion hazard potential was made using the Erosion Hazard Rating (EHR) System presented in the Soil Conservation Guidelines/Standards Off-Highway Vehicle Recreation Management (see Division, 1991) and soil survey data provided by the Natural Resources Conservation Service (see U.S. Department of Agriculture, Natural Resources Conservation Service, multiple dates).

The EHR assessment method is described in detail in the Soil Conservation Guidelines/Standards (Division, 1991), and was conducted based on general guidelines provided in the 2008 Soil Conservation Standard and Guidelines (Division, 2008). The method utilizes information about soil type, vegetation cover, slope, and precipitation to derive an EHR. The assessment for the site was using a model developed in ArcGIS.

The EHR method determines the relative risk of surficial erosion from runoff drainage on an existing soil-covered surface. It provides a first measure of erosion risk, enabling land managers to assess baseline soil erosion conditions, as well as to evaluate, design, and plan soil-disturbing activities so that erosion hazard risk is minimized.

The extent of the study area used for this EHR assessment includes 129 soil map unit categories within four soil map areas designated by NRCS; 54 of these soil units occur within the acquisition parcel boundaries. The NRCS-assigned soil unit names and ID numbers for the 54 soil units are provided in Table 1 (attached). Soil units that are present in more than one of the four NRCS soil map areas are listed separately in this table for each map area in which they occur. To calculate EHR, soil textures are assigned values which depend on the slope steepness.

The Department of Conservation's mission is to balance today's needs with tomorrow's challenges and foster intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.

Phil Jenkins
December 17, 2012
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Six-hour precipitation intensity, soil cover, and slope length are also factored into the EHR rating. The precipitation intensity value was based on data obtained from the weather station at the Randsberg Fire Station, approximately 20 miles east of the site. The Randsberg weather station has an elevation of 3560 feet above MSL, which falls within the study site's elevation range of approximately 2150 feet to 7500 feet.

Soil vegetative cover was assumed constant throughout the site. The assigned cover value was based on a mix of ground cover vegetation, exposed soil, and shrub and tree canopy.

The topography covering the site is variable, including gentle, moderate, and steep slopes. The majority of the site lacks significant organic debris such as logs and large branches that could act to disrupt surface-water flow. The slope length value was held constant in the ArcGIS model, which utilized a 10-meter digital elevation model (DEM) from the USGS National Elevation Dataset (Gesch, 2007) to illustrate the topography of the site and surroundings. To more accurately reflect the topography represented by the 10-meter DEM, the slope length range value used in the EHR assessment was based on slopes greater than 50 feet in length.

Other NRCS factors used in the EHR calculation include infiltration and permeability ratings and depth to restrictive layer (e.g., bedrock).

The results of the preliminary EHR assessment for the site are illustrated on the accompanying EHR map included with this memorandum. The assessment of erosion hazard potential resulted in the following distribution of erosion hazard rating categories within the parcel units: < 1% Very High, 18% High, 25% Moderate, and 57% Low. The areas of higher relief within the study area are primarily underlain by Mesozoic granitic rocks, Pre-Cenozoic granitic and metamorphic rocks, or Pre-Cretaceous metamorphic rocks. The steepest slopes in the study area also occur within these areas, and the soils in these locations appear to be the most susceptible to erosion as measured by the applied EHR method. Included among the more erodible soils are soil-rock outcrop complexes with 30 to 60 percent slopes and moderate to very high runoff ratings, such as soil units 253, 253ne, 254, and 516. The areas of lowest assessed erosion hazard potential appear to be predominantly located in areas with Quaternary alluvium, soils derived from Pleistocene non-marine units, or soils derived from granitic bedrock with very gentle slopes.

Phil Jenkins
December 17, 2012
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Respectfully submitted,

original signed by:

Pete Roffers
Engineering Geologist
California Geological Survey

Concur:

original signed by:

Will J. Harris, PG 5679, CEG 2222, CHg 750
Senior Engineering Geologist
California Geological Survey



Table 1, attached.

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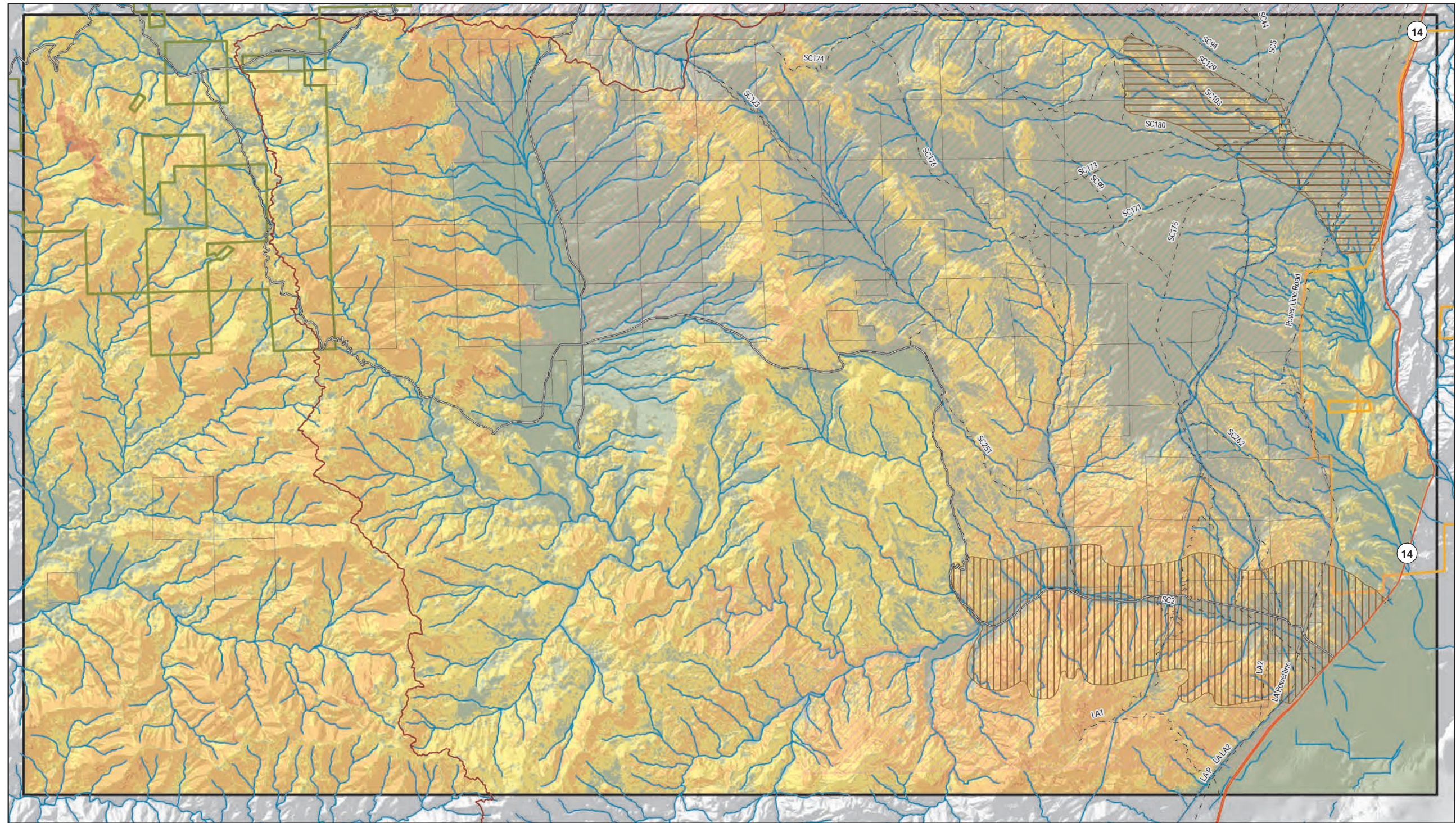
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Table 1. The 54 soil units present within the parcels of the study area (from NRCS).

Map Area	MUSYM	MUKEY	Soil Unit Name
CA668	210	467327	Kernfork fine sandy loam, 0 to 2 percent slopes, occasionally flooded
CA668	216	467332	Inyo-Riverwash complex, 0 to 5 percent slopes, frequently flooded
CA668	222	467336	Kelval fine sandy loam, 0 to 2 percent slopes, occasionally flooded
CA668	223	467337	Kelval stony sandy loam, 0 to 2 percent slopes, occasionally flooded
CA668	224	467338	Inyo gravelly loamy coarse sand, 0 to 9 percent slopes, occasionally flooded
CA668	241	467341	Inyo gravelly loamy coarse sand, 0 to 5 percent slopes
CA668	242	467342	Inyo gravelly loamy coarse sand, 5 to 15 percent slopes
CA668	243	467343	Kernfork loam, saline-sodic, 0 to 2 percent slopes, occasionally flooded
CA668	245	467344	Chollawell gravelly loamy coarse sand, 2 to 5 percent slopes
CA668	246	467345	Chollawell gravelly loamy coarse sand, 5 to 15 percent slopes
CA668	247	467346	Inyo-Tips-Rock outcrop complex, 5 to 30 percent slopes
CA668	250	467348	Hoffman-Tips-Pilotwell association, 15 to 50 percent slopes
CA668	253	467349	Sorrell-Martee-Rock outcrop complex, 30 to 60 percent slopes
CA760	253ne	2371018	Sorrell-Martee-Rock outcrop complex, 30 to 60 percent slopes
CA668	254	467350	Martee-Rock outcrop complex, 30 to 60 percent slopes
CA668	264	467356	Arujo-Walong-Tunis association, 9 to 30 percent slopes
CA668	268	467360	Tunis-Tollhouse-Sorrell association, 30 to 75 percent slopes
CA668	270	467362	Locobill-Backcanyon-Sesame complex, 20 to 60 percent slopes
CA668	275	467367	Strahle-Sesame-Tweedy association, 30 to 75 percent slopes
CA668	288	467380	Sorrell-Arujo-Rock outcrop association, 9 to 50 percent slopes
CA760	306	465179	Monache variant, drained, warm-Junipero family association, gently sloping
CA668	330	467400	Kernville-Faycreek-Rock outcrop complex, 30 to 75 percent slopes
CA668	505	467407	Chollawell gravelly loamy coarse sand, 5 to 20 percent slopes
CA668	512	467412	Chollawell gravelly sandy loam, cobbly substratum, 5 to 15 percent slopes
CA668	514	467413	Chollawell-Inyo complex, 5 to 15 percent slopes
CA668	516	467415	Xyno-Rock outcrop-Canebrake association, 30 to 60 percent slopes
CA668	554	467430	Deerspring fine sandy loam, 0 to 5 percent slopes
CA760	554ne	2371543	Deerspring fine sandy loam, 0 to 5 percent slopes
CA668	561	467436	Scodie-Sacatar-Canebrake complex, 5 to 30 percent slopes
CA760	561ne	2371551	Scodie-Sacatar-Canebrake complex, 5 to 30 percent slopes
CA760	687	465262	Wind River family-Dome-Rock outcrop association, moderately steep
CA682	3010	1868302	Jawbone-Typic Haplargids-Rock outcrop association, 30 to 60 percent slopes
CA682	3250	1725746	Jawbone association, 30 to 60 percent slopes
CA670	3250ne	2218107	Jawbone association, 30 to 60 percent slopes
CA682	3251	1725747	Jawbone association, 8 to 50 percent slopes
CA682	3280	1868300	Typic Torriorthents-Rock outcrop association, 30 to 60 percent slopes
CA682	3301	1487080	Cutterbank association, 15 to 60 percent slopes
CA670	3301nm	2218111	Cutterbank association, 15 to 60 percent slopes
CA682	3630	1487079	Koehn coarse sand, 2 to 8 percent slopes
CA670	3630nm	2218113	Koehn coarse sand, 2 to 8 percent slopes

Table 1. The 54 soil units present within the parcels of the study area (from NRCS).

Map Area	MUSYM	MUKEY	Soil Unit Name
CA682	4160	1480620	Dovecanyon-Cutterbank association, 4 to 50 percent slopes
CA682	4161	1480621	Dovecanyon loamy sand, 2 to 8 percent slopes
CA682	4240	1860304	Chollawell gravelly sandy loam, 5 to 15 percent slopes
CA682	4241	1860305	Chollawell-Inyo complex, 5 to 15 percent slopes
CA682	4430	1600983	Koehn sand, 2 to 8 percent slopes
CA682	4432	1725748	Koehn association, 2 to 4 percent slopes
CA670	4432ne	2218108	Koehn association, 2 to 4 percent slopes
CA668	5201	1895801	Wingap-Pinyonpeak association, 8 to 30 percent slopes
CA682	5201	1480617	Wingap-Pinyonpeak association, 8 to 30 percent slopes
CA682	5210	1725750	Grandora-Pinyonpeak association, 8 to 60 percent slopes
CA682	6001	1480616	Goldpeak-Pinyonpeak-Wingap complex, 2 to 30 percent slopes
CA682	6002	1480619	Goldpeak gravelly loamy sand, 2 to 8 percent slopes
CA682	6601	1480618	Pinyonpeak-Wingap-Rock outcrop association, 8 to 30 percent slopes



Erosion Hazard Rating Eastern Kern County Acquisition

January 2013

Erosion Hazard Rating

- very high
- high
- moderate
- low

- Trails
- Pacific Crest Trail
- State Hwy 14
- Roads

- Parcels
- Jawbone Open Area
- Dove Springs Open Area

- Red Rock Canyon State Park
- Sequoia National Forest
- ACEC Designation

