

Appendix C

Biological Resources

SLOVER DISTRIBUTION CENTER
DRAFT
ENVIRONMENTAL IMPACT REPORT

Information Summary

Report preparation date: May 4, 2017.

Fieldwork performed: March 8, 21, April 4, 19, and May 4, 2017 (Breeding survey for Burrowing Owl: April 6, 2017 (Nesting Raptor Survey)).

Title: General Biology; Including year 2017 Habitat Assessments and Surveys for breeding season Burrowing Owl (*Athene cunicularia*) and Nesting Raptors, on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048) Bloomington, San Bernardino County, California.

Project site location: South of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, CA - Fontana, U.S.G.S.-75.' Quadrangle, Township 1 S., Range 5 W., Section 28.

Assessor's Parcel Numbers: 256-041-001, -002, -003, -047, and -048

Case Number: P201400241

Owner/Applicant: JM Realty Group, Inc., 3535 Inland Empire Blvd., Ontario, CA 91764

Principle Investigator: Ken H. Osborne, Osborne Biological Consulting
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Report Summary

Delhi Sands Flower-loving Fly: A portion of the study site consists of a 1.02 acre residential parcel with associated home, landscaping, driveways, with portions of the site used in long established poultry/egg production. Lands so developed, managed or landscaped are *Unsuitable* for DSF. I conclude the subject property has no potential to support a population of DSF. The DSF has been determined to be absent on the remaining 16.32-acre portion of the study site over the course of recent focused surveys for this species (Osborne 2016).

Burrowing Owl: A 16.32-acre portion of the study site presents open fields of disturbed annual grassland and forbs, and the presence of a ground squirrel population with burrows. Piles of refuse and soil present on the site provide either burrows or other soil cavities suitable for Burrowing Owl. A year 2017 breeding season survey for Burrowing Owl found this species to be absent from the site. The 1.02 acre residential lot on the site, with its trees, home, and numerous dogs, is not suitable habitat for Burrowing Owl.

Nesting Raptors: An April 2017 investigation of the site determined there to be no nesting raptors on the site (Kidd Biological 2017).

CNDDDB and CNPS database queries: A review of all special-status plant and wildlife species, and natural communities of concern within 1) a three mile radius of the subject site, 2) within a 5 mile radius of the subject site, and 3) as occurring on the Fontana, CA, USGS 7.5' quadrangle map, were considered for their potential to occur on the subject site. I conclude that none of these special species is present on the site.

General biology: The history of disturbance (annual disking) on the site, and disturbed condition of the site likely eliminate potential for narrow endemic, rare, or endangered plant species. No rare plant species has been found on the site in the course of years of studies. There are no riparian or riverine habitats on the site. There are no potential jurisdictional waters. No vernal pool exists on the site.

Name and contact of Report Preparer: Ken H. Osborne (951) 360-6461

**General Biology; Including year 2017 Habitat Assessments and Surveys
for breeding season Burrowing Owl (*Athene cunicularia*) and Nesting
Raptors, on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -
003, -047, and -048) Bloomington, San Bernardino County, California.**

Prepared for:

**JM Realty Group, Inc.
3535 Inland Empire Blvd.
Ontario, CA 91764**

I hereby certify that the statements furnished above and in the attached exhibits present that data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



**Kendall H. Osborne
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May 5, 2017
Date

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SUMMARY

JM Realty Group, Inc. has requested my preparation of a general Biological Study, including renewed Habitat assessments and surveys for Burrowing Owl, a focused survey for Nesting Raptors, and relevant inquiries of the CNDDDB and CNPS databases for special plant and animal species, for a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, at Bloomington, San Bernardino County, California. This report further incorporates the results of previous and current surveys for Delhi Sands Flower-loving Fly.

Delhi Sands Flower-loving Fly: The 1.02 acre residential parcel on the site was determined to represent unsuitable habitat conditions for the DSF. The DSF has been determined to be absent on the remaining 16.32-acre portion of the site over the course of recent focused surveys for this species (Osborne 2016).

Burrowing Owl: The site evaluation concluded positive for Burrowing Owl habitat. Ground squirrel and their burrows appear on the site. A 1.02 acre residential parcel on the site is unsuitable for Burrowing Owl. The 16.32 acre portion of the site with open fields was surveyed for Burrowing Owl. As Burrowing Owl was not observed in the course of the current breeding season survey, it is concluded that Burrowing Owl is absent from the site.

CNDDDB and CNPS database queries: All special-status plant and wildlife species, and natural communities of concern within 1) a three mile radius of the subject site, 2) within a 5 mile radius of the subject site, and 3) as occurring on the Fontana, CA, USGS 7.5' quadrangle map, were considered for their potential to occur on the subject site.

This investigation found no potential for narrow endemic, rare, or endangered plant species. In addition, riparian or riverine habitats, vernal pools, or any other potential jurisdictional waters or wetlands have been found to be absent from the site. The investigation found small, partially developed parcels on land with abundant, disked annual vegetation, set in the larger context surrounding residential development.

1.0 INTRODUCTION

This report presents the methods and results of a series of biological evaluations and focused studies on a 17.34-acre site (Assessor's Parcel Nos. 256-041-020, -001, -002, and -003), located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, San Bernardino County, California. These studies include current results for a habitat assessment and focused surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*, DSF), habitat assessment and surveys for breeding season Burrowing Owl (*Athene cunicularia*), and survey for nesting raptors. In addition to these current results, results previous biological investigations are referenced. The California Natural Diversity Database (CNDDDB) and California Native Plant Society database (CNPS) queries have been made in order to evaluate potential for any special-status species to occur on the subject site.

Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, 7.5' USGS quadrangle. Figure 2 shows the site at 200% scale on this quadrangle.

2.0 SITE DISPOSITION

The subject site is located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington. Specifically, the site is located on the Fontana U.S.G.S.-7.5' quadrangle, in the northwestern portion of Section 28, Township 1 S., Range 5 W.

3.0 METHODS

Over the years from 2003 to the present, the subject site has been visited at least 127 times in the course of biological studies. Although these studies focused mainly on Delhi Sands Flower-loving Fly and Burrowing Owl, wildlife and plant species have consistently been recorded while undertaking the studies. Biological studies on the subject site (in addition to this report) referenced here in support of biological conclusions are: Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014, 2015, 2015a, 2015b, 2016, and Kidd Biological 2017. These extensive studies have provided a deep understanding and familiarity with the environmental conditions on the site through the years.

Continued surveys for the federally endangered Delhi Sands Flower-loving Fly have concluded for the fourth consecutive year in September 2016, finding the DSF absent from the site. Methods for the current breeding season Burrowing Owl study are presented in Section 3.2 below. A survey for nesting raptors has been conducted in April, 2017, finding negative results.

The results of CNDDDB and CNPS database queries for special-status plant and wildlife species, and natural communities of concern within the vicinity of the subject site, as well as review of available reporting on Delhi Sands Flower-loving fly (DSF) in the immediate vicinity of the site, have been reviewed for this report.

Consideration was given to presence of any potential drainages, wetlands, riparian habitat, and vernal pools. Figures 3 – 14 are photographs representing various views of the study site and other objects of interest on the site. Figures 15 and 16 show the locations on the site from which photographs were taken.

3.1 Delhi Sands Flower-loving Fly

The larger 16.32-acre portion of the site has been surveyed for DSF over the last four consecutive years with negative results (Osborne 2016, Figure 15). The 1.02 acre southeastern corner of the site with a residential lot was evaluated for DSF potential (Osborne 2015xx) and determined to be unsuitable for DSF.

The DSF has been currently determined to be absent on the larger 16.32-acre portion of the site (Osborne 2016, Figure 15).

3.2 Burrowing Owl

Habitat evaluations and focused surveys for Burrowing Owl were previously conducted (Osborne 2015a).

A breeding season survey for Burrowing Owl has been conducted for the current season with methods presented here. Open fields on much of the subject site were systematically searched for ground squirrel burrows, or any other soil cavities or structures suitable for Burrowing Owl. This search was conducted by walking the perimeter of the site, walking the fence lines, and walking regular, parallel transects through the site (transects spaced approximately 15 meters).

To the extent necessary, methods for this burrowing owl study follow the survey protocol recommended by the California Department of Fish and Game (CDFG 2012) with further guidelines and habitat descriptions presented by the Burrowing Owl Consortium (www2.ucsc.edu/scpbrg/owls.htm) (in relevant part):

“Phase I: Habitat Assessment

The first step in the survey process is to assess the presence of Burrowing Owl habitat on the project site including a 150-meter (approx. 500 ft.) buffer zone around the project boundary (Thomsen 1971, Martin 1973).

Burrowing Owl Habitat Description

Burrowing Owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of Burrowing Owl habitat: both natural and artificial burrows provide protection, shelter, and nests for Burrowing Owls (Henny and Blus 1981). Burrowing Owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing Owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable Burrowing Owl habitat can be verified at a site by an observation of at least one Burrowing Owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing Owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be

assumed occupied if at least one Burrowing Owl has been observed occupying a burrow there within the last three years (Rich 1984).

The Phase II burrow survey is required if Burrowing Owl habitat occurs on the site. If Burrowing Owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary. A written report of the habitat assessment should be prepared (Phase IV), stating the reason(s) why the area is not Burrowing Owl habitat.

3.2.1 Phase I: Habitat Assessment

The site visit on March 8, 2017 found that habitat conditions remain suitable for Burrowing Owl, as observed in previous years (Osborne 2015xx) on the site. During this visit, potential Burrowing Owl habitat areas were assessed with respect to potential animal burrows or other soil cavities suitable for Burrowing Owl, the effort benefiting from previous familiarity with many of the old burrow locations. Habitat conditions on the southeastern, 1.02 acre residential lot were again (Osborne 2015a) determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures.

3.2.2 Phase II: Burrow Survey

A burrow survey (search for ground squirrel burrows or other structures suitable for Burrowing Owl) was carried out during the site investigation on March 8, 2017. The site was systematically searched for any animal burrows or natural soil cavities that might support Burrowing Owl. During this phase, any burrows found were carefully inspected for evidence of Burrowing Owl (such as pellets, plumage, insect parts, tracks, whitewash) or evidence of inactivity (such as undisturbed spider webs). Animal burrows and other structures suitable for Burrowing Owl were mapped using GPS. No Burrowing Owl was observed in the course of this site visit.

3.2.3 Phase III: Burrowing Owl Survey, Census and Mapping

Following identification of animal burrows or soil/rubble cavities suitable for Burrowing Owl, a focused survey (for non-nesting season Burrowing Owl) was undertaken on the site. These surveys were conducted by Kendall Osborne. Although the survey protocol recommended by the California Department of Fish and Game (CDFG 2012) suggests three to four surveys spaced by three weeks, in order to impart additional survey rigor, protocol was exceeded by use of five survey visits generally separated approximately two weeks between each visit. Surveys were undertaken on mornings within one hour before sunrise to two hours after sunrise, or on evenings between two hours before sunset and one hour after sunset. Table 1 provides a schedule and site weather conditions during surveys of the subject property. At least one hour of survey effort was applied on the site on each of five site visits from March 8 to May 4, 2017.

Table 1. Year 2017 Breeding Burrowing Owl Focused Survey Schedule and Site Weather Conditions.

Date and area	Hours	Weather Conditions
8 March	0632-0735	clear, 55-66° F, winds 5-10 mph
21 March	0705-0835	75% clouds, 56-59° F, calm
4 April	1857-2000	5% clouds, 74° F, winds 4-7 mph
19 April	0649-0750	25-50% clouds, 59-65° F, winds 0-2 mph
4 May	0183-1930	clear, 76° F, winds 0-9 mph

3.3 Nesting Raptors

A nesting raptor survey for the site was conducted on April 6, 2017 by raptor biologist Scott Thomas (Kidd Biological 2017). The site and surrounding areas were searched for raptors and raptor nesting activity. All bird species observed were noted.

3.4 CNDDDB and CNPS database

All special-status plant and wildlife species, and natural communities of concern within 1) a three mile radius of the subject site, 2) within a 5 mile radius of the subject site, and 3) as occurring on the Fontana, CA, USGS 7.5' quadrangle map, were considered for their potential to occur on the subject site. A table listing species occurring within these areas, as well as their disposition on the subject site is presented in Section 4.4 below.

3.5 General Biology

Throughout the course of the habitat assessment and focused surveys, general notes were taken on vegetation communities and structure, as well as plant and animal species (or their sign) observed on the site, along with photographs of the subject site. Previous biological reports have been reviewed in order to further augment the biological profile of the site (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014).

4.0 RESULTS

Figures 3 – 14 are photographs of representative of landscapes and general aspects of the subject property. Figures 15 and 16 provide aerial perspectives and keys as to where on the site these photographs were taken.

This investigation determined that the subject property with disked fields currently supports annual grassland/forbland vegetation dominated by exotic forbs and grasses. A 1.02 acre residential lot is present on the southeastern corner of the site with associated exotic landscaping and poultry farming facilities.

4.1 Delhi Sands Flower-loving Fly

Department of Agriculture, Soil Conservation Service map (Woodruff 1980) indicates Delhi sands soils on the entire site. The southeastern corner of the site (1.02 acre lot) consists of a

residential home with associated landscaping, driveways, with portions of the site used in long established poultry/egg production. The habitat evaluation for DSF involves this residential lot (Figures 15 and 16). The DSF has been determined to be absent on the remaining 16.32-acre portion of the site over the course of recent focused surveys for this species (Osborne 2014).

The eastern half of the residential lot has a residence and associated irrigated lawns, landscaping, paved walks and driveways (Figures 7 to 9). The western half of the lot is used for poultry farming and has large numbers of poultry cages with clear access areas between (Figures 10 and 11). Absence of annual vegetation is indicative of herbicidal use for weed control in this area – confirmed by my interview with the resident, Mr. Mehefco. Aerial imagery in GoogleEarth clearly shows the land use in poultry farming goes back for at least ten years (Figure 16). Casual observations made of this site (adjacent to survey areas for DSF, (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014) also had the site consistently used for poultry farming. Plant species normally associated with Delhi sands ecosystems do not occur on the site.

This lot is further set in the larger context of surrounding habitats developed and managed out of suitability for DSF, or recently documented not to support DSF (Osborne 2014). Adjacent land to the west and south of this lot are confirmed not to support the DSF. Lands east of this lot (east of Larurel Avenue) are developed. Developed residential lots and some undeveloped open lots are found south of the subject parcel. A site of one DSF observation (Osborne 2005), located north of the project area, has long since been developed to commercial/industrial use and can not support any DSF population. Figures 7 – 11 are photographs of representative conditions and general aspects of the residential lot being evaluated for DSF potential.

4.2 Burrowing Owl

Habitat conditions on the southeastern, approximately one-acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures. The remaining undeveloped portion of the site, considered as suitable habitat for Burrowing Owl, was formally surveyed. Figures 3-6 are photographs of representative of landscapes and general aspects of the area surveyed for Burrowing Owl.

Burrowing Owl was not observed on the site during the course of this survey. A soil mound on the western edge of the site was found with bird guano (Figure 12), however no owl pellets or other sign of Burrowing Owl were present. Other insectivorous birds likely to leave guano on this prominence (especially American Kestrel, Say's Phoebe, and Cassin's Kingbird) were seen on a regular basis during the course of the survey. Burrowing Owl was not observed on the site during the course of this survey. Locations of burrows and rubble piles examined for evidence of Burrowing Owl are presented in the Appendix, Table A3, and a map of these locations is presented in the Appendix as Figure A1.

4.3 Nesting Raptors

The nesting raptor survey for the site, and immediate vicinity, found nesting raptors to be absent (Kidd Biological 2017). A list bird species observed is presented in Appendix Table A2.

4.4 CNDDDB and CNPS database

The CNDDDB and CNPS database queries for special-status plant and wildlife species, and natural communities of concern within the vicinity of the subject site, as well as review of available reporting on Delhi Sands Flower-loving fly (DSF) in the immediate vicinity of the site, indicate several species in particular that are all generally wide spread and relatively common species in the vicinity of the subject site. These are the DSF, San Diego horned lizard, Burrowing owl, Black-tailed jackrabbit, Los Angeles Pocket mouse, and Crotch’s bumble bee. None of these species has ever been observed on the subject site in the course of biological studies over the years (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014, 2015, 2015a, 2015b, 2016, and Kidd Biological 2017), however, sign of Burrowing Owl observed (Osborne 2015a) demonstrated that this species has appeared on the site at least during the winter of 2014-15. In the course of the many site visits surveying for DSF, over 105 insect species (Osborne 2016) have been observed, and surely, Crotch’s bumble bee (a large and conspicuous insect) would have been noted had it been present on the site. No rodent burrows sufficiently small as to represent sign of Los Angeles Pocket mouse, have been observed on the site. The DSF (one male) was documented on adjacent land to the subject site, just north of Slover Avenue (Osborne 2004b). On the basis of this review of CNDDDB and CNPS database queries, and considering the results of recent biological studies on the study site, I conclude that none of these special species is present on the site.

Table 2 presents a list of special-status plant and wildlife species identified by the CNDDDB and CNPS database queries, provides the level of protected status, relative potential to occur on the subject site, and justification for these conclusions. Other than sign of Burrowing Owl (Osborne 2015a), none of these species has been observed on the subject site in the course of biological studies sited in this report. Riversidian Alluvial Fan Sage Scrub, a sensitive habitat type, does not occur on the subject site.

Table 2. special-status plant and wildlife species, protected status, potential for the subject site, and justification of conclusions. Asterisks (*) indicate species of special concern for this study.

Common Name (Scientific Name)	Species Status	Potential to Occur (by area)	Justification
PLANTS			
marsh sandwort (<i>Arenaria paludicola</i>)	FE, SE, CRPR: 1B.1	Does not occur	Coastal species which occurs in wetlands and freshwater marshes, usually in areas with high organic content in soils. No suitable habitat occurs within the action area.

Common Name (Scientific Name)	Species Status	Potential to Occur (by area)	Justification
Horn's Milk-vetch (<i>Astragalus hornii</i> var. <i>hornii</i>)	CRPR: 1B.1	Does not occur	Occurs in meadows, seeps, and playas. From 197 to 2,789 feet elevation. Assumed to be extirpated. Last observed in 1898.
Plummer's mariposa-lily (<i>Calochortus plummerae</i>)	CRPR: 4.2	Does not occur	Occurs in coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.
Bristly Sedge (<i>Carex comosa</i>)	CRPR: 2B.1	Does not occur	Found in marshes and swamps. From 0 to 2,051 feet in elevation. Known from only 1 observance in 1882. Possibly extirpated from area.
Smooth Tarplant (<i>Centromadia pungens</i> ssp. <i>Laevis</i>)	CRPR: 1B.1	Does not occur	Occurs in Alkali meadow or alkali scrub within valley and foothill grasslands, meadows, playas or riparian woodland. No suitable habitat or soils occurs within the action area.
Salt Marsh Bird's-beak (<i>Chloropyron maritimum</i> ssp. <i>Maritimum</i>)	FE, SE, CRPR: 1B.2	Does not occur	Site is outside range and no suitable habitat present. Upper terraces and higher edges of coastal salt marshes where tidal
Parry's Spineflower (<i>Chorizanthe parryi</i> var. <i>parryi</i>)	CRPR: 1B.1	Unlikely	Occurs in coastal sage scrub and chaparral. Found on dry slopes and flats within dry sandy soils. Action area is likely too disturbed to support.
Peruvian dodder (<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>)	CRPR: 2B.2	Does not occur	Grows on <i>Alternanthera</i> , <i>Dalea</i> , <i>Lythrum</i> , <i>Polygonum</i> and <i>Xanthium</i> . Appears to have been extirpated from region. Last collected in 1898.
Slender-horned Spineflower (<i>Dodecahema leptoceras</i>)	FE, SE, CRPR: 1B.1	Does not occur	Chaparral, alluvial fan sage scrub. Flood deposited terraces and washes. From 656 to 2,493 feet in elevation. Soils present but population in area has possibly been extirpated.
Santa Ana River Woollystar (<i>Eriastrum densifolium</i> ssp. <i>Sanctorum</i>)	FE, SE, CRPR: 1B.1	Unlikely	Coastal scrub, chaparral in sandy soils on river floodplains or terraces fluvial deposits. From 295 to 2,001 feet in elevation. Action area is likely too disturbed to support. The site was visited during this species' blooming period and therefore would have been observed if present.
Alvin meadow bedstraw (<i>Galium californicum</i> ssp. <i>Primum</i>)	CRPR: 1B.2	Does not occur	Chaparral, lower montane coniferous forest between 4,429 and 5,577 feet in elevation. Site is outside of elevation range.
Los Angeles Sunflower (<i>Helianthus nuttallii</i> ssp. <i>Parishii</i>)	CRPR: 1A	Does not occur	Occurs in marshes, swamps, and on damp river banks. From 16 to 5,495 feet in elevation. Possibly extirpated. Last observation was in 1917.

Common Name (Scientific Name)	Species Status	Potential to Occur (by area)	Justification
Mesa Horkelia (<i>Horkelia cuneata</i> var. <i>puberula</i>)	CRPR: 1B.1	Does not occur	Occurs in chaparral, cismontane woodland, and coastal scrub. Requires sandy or gravelly sites. Possibly extirpated. Last observation was in 1904.
Robinson's Pepper Grass (<i>Lepidium virginicum</i> var. <i>robinsonii</i>)	CRPR: 4.3	Unlikely	Chaparral, coastal scrub, dry soils. From 3 to 2,904 feet in elevation. Known from 5 observations in area. Action area is likely too disturbed to support.
Parish's desert thorn (<i>Lycium parishii</i>)	CRPR: 2B.3	Does not occur	Presumed to be extirpated from area. Last seen in 1885.
Parish's bush-mallow (<i>Malacothamnus parishii</i>)	CRPR: 1A	Does not occur	Chaparral, coastal sage scrub, habitat conditions not present within the action area.
Pringle's Monardella (<i>Monardella pringlei</i>)	CRPR: 1A	Does not occur	Sandy hills covered in coastal sage scrub from 984 to 1,312 feet in elevation. No suitable habitat within action area.
Gambel's Water Cress (<i>Nasturtium gambelii</i>)	FE, SE, CRPR: 1B.1	Does not occur	Brackish marsh, freshwater marsh, swamps, and wetlands. From 16 to 1,083 feet in elevation. No suitable habitat found within action area.
Parish's Gooseberry (<i>Ribes divaricatum</i> var. <i>parishii</i>)	CRPR: 1A	Does not occur	Possible extirpated. Last observed in 1917.
Chaparral ragwort (<i>Senecio aphanactis</i>)	CRPR: 2B.2	Does not occur	Occurs in chaparral, cismontane woodland, and coastal scrub. These habitats do not occur within the action area.
Salt Spring Checkerbloom (<i>Sidalcea neomexicana</i>)	CRPR: 2B.2	Does not occur	Occurs in alkali springs and marshes within chaparral, coastal scrub, lower montane coniferous forest, and desert scrub. From 49 to 5,020 feet in elevation. No suitable habitat in action area.
Prairie Wedge Grass (<i>Sphenopholis obtusata</i>)	CRPR: 2B.2	Does not occur	Last observed in area in 1907. Associated with wet meadows, stream banks and ponds. No suitable habitat in action area.
San Bernardino Aster (<i>Symphyotrichum defoliatum</i>)	CRPR: 1B.2	Does not occur	Found in vernal mesic grasslands or near ditches, streams, springs, and disturbed areas within 7- 6,693 feet. Species is considered Extirpated.
INVERTEBRATES			
Crotch bumble bee (<i>Bombus crotchii</i>)	SA	Unlikely	Inhabits open grassland and scrub habitats. Nesting occurs underground. Food plants include <i>Asclepias</i> , <i>Chaenactis</i> , <i>Lupinus</i> , <i>Medicago</i> , <i>Phacelia</i> , and <i>Salvia</i> . Known from 4 occurrences from 1936-1976.
Busck's Gallmoth (<i>Carolella busckana</i>)	SA	Does not occur	Occurs in coastal dunes and coastal scrub habitat. Larvae feed on <i>Larix</i> species. No suitable host plants found within action area.

Common Name (Scientific Name)	Species Status	Potential to Occur (by area)	Justification
Greenest tiger beetle (<i>Carolella busckana</i>)	SA	Does not occur	Occurs on sandy, open areas within riparian woodland. Such habitat does not occur within the action area.
Delhi Sands Flower-loving Fly (<i>Rhaphiomidas terminatus abdominalis</i>)	FE	Does not occur	Found only in areas of the Delhi Sands formation in southwestern San Bernardino and northwestern Riverside Counties. Requires fine, sandy soils, often with wholly or partly consolidated dunes and sparse vegetation. Focused survey determined negative.
FISH			
Santa Ana Sucker (<i>Catostomus santaanae</i>)	FT, SSC	Does not occur	Inhabits perennial streams in southern California with water ranging in depth from a few inches to several feet and with currents ranging from slight to swift. No riverine habitat occurs within the action areas.
Arroyo Chub (<i>Gila orcuttii</i>)	SSC	Does not occur	Found within the Los Angeles Basin South Coastal Streams. Require slow water stream sections with mud or sand bottoms. No riverine habitat occurs within the action areas.
REPTILES			
California glossy snake (<i>Arizona elegans occidentalis</i>)	SSC	Unlikely	Occurs in a range of scrub and grassland habitats, often with loose or sandy soils.
Orange-throated Whiptail (<i>Aspidoscelis hyperythra</i>)	SSC	Does not occur	Associated with coarse soils in open coastal sage scrub and chaparral vegetation. Requires termites for food. No suitable habitat in action area.
Coastal Whiptail (<i>Aspidoscelis tigris stejnegeri</i>)	SSC	Unlikely	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage - chaparral, woodland, and riparian areas.
Coast Horned Lizard (<i>Phrynosoma blainvillii</i>)	SSC	Unlikely	Associated in areas with abundant, open vegetation, such as chaparral or coastal sage scrub. Prefers friable, rocky or shallow sandy soils. Requires ants for food.
BIRDS			
Tricolored blackbird (<i>Agelaius tricolor</i>)	SSC	Does not occur	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony. Wetland habitat does not occur within the action area.
Burrowing Owl (<i>Athene unicularia</i>)	SSC	Likely	Occurs in open, dry, low growing annual or perennial grasslands. Dependent upon fossorial animals, most notably, the California ground squirrel. Suitable burrows found within action area and known occurrences within 1 mile.

Common Name (Scientific Name)	Species Status	Potential to Occur (by area)	Justification
Swainson's Hawk (<i>Buteo swainsoni</i>)	ST	Does not occur	Typically found in grasslands, but also use sage flats and even swaths of agriculture intermixed with native habitat. Nests are placed in trees, often in the only tree visible for miles. It is presumed that this species no longer nests in the region.
Western Yellow-billed Cuckoo (<i>Coccyzus americanus occidentalis</i>)	FT, SE	Does not occur	Nests in riparian jungles of willow often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape. Often associated with lower flood-bottoms of larger river systems. No suitable habitat within proposed action area.
Coastal California Gnatcatcher (<i>Poliophtila californica californica</i>)	FT, SSC	Does not occur	Associated with low coastal sage scrub in arid washes, on mesas, and slopes. Habitat is dominated or co-dominated by California sagebrush. The action area does not support suitable habitat.
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	FE, SE	Does not occur	Summer resident of southern California in low early to mid-successional riparian habitat in vicinity of water or in dry river bottoms. No suitable habitat within action area.
MAMMALS			
Northwestern San Diego Pocket Mouse (<i>Chaetodipus fallax fallax</i>)	SSC	Does not occur	Occurs in sandy, herbaceous areas, usually in association with rocks or coarse gravel within coastal scrub, chaparral, grasslands and sagebrush habitats. No suitable habitat is present within action area.
San Bernardino Kangaroo Rat (<i>Dipodomys merriami parvus</i>)	FE, SSC	Does not occur	Occurs in alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Requires early to intermediate seral stages. Indicative burrows found within action area.
Western Mastiff Bat (<i>Eumops perotis californicus</i>)	SSC	Does not occur	Roosts in crevices in cliff faces, high buildings, trees, and tunnels within many open arid to semi-arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. No suitable roosting habitat available.
Western Yellow Bat (<i>Lasiurus xanthinus</i>)	SSC	Does not occur	Occurs in valley/foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. No suitable roosting habitat available.

Common Name (Scientific Name)	Species Status	Potential to Occur (by area)	Justification
San Diego Black-tailed Jackrabbit (<i>Lepus californicus bennettii</i>)	SSC	Does not occur	Occurs in coastal sage scrub habitats in Southern California. Prefers intermediate canopy stages of shrub habitats and open shrub/herbaceous and tree/herbaceous edge vegetation communities. No suitable burrows observed within action areas.
Pocketed Free Tail Bat (<i>Nyctinomops femorosaccus</i>)	SSC	Unlikely	Occur in a variety of arid areas within Southern California, pine-juniper woodlands, desert scrub, palm oasis, desert washes, and desert riparian. Prefer rocky areas with high cliffs, but will use buildings.
Southern Grasshopper Mouse (<i>Onychomys torridus ramona</i>)	SSC	Does not occur	Inhabits prairies and the southwestern desert. No suitable habitat in action area.
Los Angeles Pocket Mouse (<i>Perognathus longimembris brevinasus</i>)	SSC	Unlikely	Lower elevation grasslands and coastal sage communities in and around the Los Angeles basin. Prefers open ground with fine sandy soils. Suitable soils found in action area, however no suitable burrows were observed.
American Badger (<i>Taxidea taxus</i>)	SSC	Does not occur	Most abundant in drier open stages of most shrub, forest, and herbaceous woodland habitats. Needs sufficient food, friable soils, and open uncultivated ground. Has not been reported in area since 1908.
Key: FT = Federally Listed Threatened SE = State listed as Endangered ST = State listed as Threatened SSC = CDFW species of concern SA = CDFW Special Animal WBWG:H = Western Bat Working Group – High Priority		CNPS California Rare Plant Ranks (CRPR) 1A Plants presumed extinct in California. 1B Plants rare, threatened, or endangered in California and elsewhere. 2B Plants rare, threatened, or endangered in California, but more common elsewhere. 4 Plants of limited distribution. .1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat) .2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat) .3 Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)	

4.5 General Biology

Lists of plant and animal species encountered in the course of the current studies (including Kidd 2017) are presented in the appendix. No rare, endangered or endemic plant species has been found on the site in the course this study, or in the course of previous biological investigations (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014, 2015, 2015a, 2015b, 2016, and Kidd Biological 2017). No rare, threatened, endangered, or special animal species was found in the course of this study. There are no riparian or

riverine habitats on the site. There are no potential jurisdictional waters. No vernal pool exists on the site.

5.0 EXISTING ENVIRONMENT

5.1. Adjacent lands

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project).

5.2 Topography

The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet.

5.3 Soils

Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

5.4 Plant Communities

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Figures 3 - 12 present representative views of the survey site and habitats. Figures 15 and 16 provide keys as to where on the site these (Figures 3-6, and Figures 7-12 respectively) photographs were taken. Table A1 (Appendix A) provides a list of plant species encountered on the survey site during the course of this and previous studies. No special status plant species (species of concern) were encountered in the course of this survey.

5.4.1 Annual grass/forbland

Dominant plants are rancher's fiddleneck (*Amsinkia intermedia*), puncture vine (*Tribulus terrestris*), cheeseweed (*Malva parviflora*), summer mustard (*Hirschfeldia incana*), and Spanish clover (*Lotus purshianus*). Annual vegetation cover is much reduced as compared to previous studies a decade ago (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014). Woolly buckwheat (*Eriogonum gracile*), a dominant in previous studies is now absent, and western ragweed (*Ambrosia acanthicarpa*) formerly abundant was largely restricted to a strip of undisked habitat adjacent to Locust Avenue in summer of 2014 (Osborne 2014).

5.4.2 Exotic woods/landscaped

Eucalyptus windbreaks, previously along the northern edge of the site, were recently eliminated by the widening of Slover Avenue (Osborne 2014). Remnant trees such as olive and Peruvian pepper are found on the southern site boundary, additional *Eucalyptus* adjacent to the residential lot on the

southeastern corner of the site. The residential lot itself supports several various exotic shade trees.

5.5 Vertebrates

No special status animal species (species of concern) were encountered in the course of this survey or previous studies (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014, 2015, 2015a, 2015b, 2016, and Kidd Biological 2017).

5.6 Insect Community

During site visits for 2013, 2014, 2015, 2016 (Osborne 2016), at least 105 insect species (counting only large and conspicuous insects) were either casually observed or collected. The insect community encountered on the subject site has been relatively species depauperate as compared to undisturbed ecological communities occurring on Delhi sands, but included Mydidae (*Nemomydas*), Apioceridae, Asilidae, Mutilidae, Chrysididae, Mymerliontidae, and Sphecidae. Indicators of potential high quality of DSF habitat found on the subject site during the course of the current survey include flies *Apiocera crysolasia*, *Apiocera convergens*, *Nemomydas pantherinus*, and the Mutilid (*Dasymutilla sackeni*). Full lists of insect species previously encountered on the site may be found in previous reports on surveys for DSF (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014, 2015, 2016).

6.0 DISCUSSION

6.1 Delhi Sands Flower-loving Fly

With respect to the approximately one acre residential lot at the southeastern corner of the site, not previously surveyed for DSF: The eastern half of this lot consisting of the residential home and associated landscaping, and driveway, is rated as *Unsuitable* for DSF. The eastern half of this lot, long in use for poultry farming has exposed soil substrates, and might have been rated according to our established rating system (methods) as *Very Low Quality* due to long presence of manure, or organic debris; and the severe and frequent foot traffic disturbance resulting from daily management, feeding, watering, and egg harvesting activities associated with such poultry farming. Given the largely developed surroundings for the site, and the adjacent context with lands repeatedly, and recently documented not to support any DSF population, I downgrade the status of this western portion of the subject one-acre lot to *Unsuitable* for DSF.

A single male DSF was located 250 meters north of the subject site (Osborne 2004b) but that area was promptly graded and paved, and during the course of summer 2013, graded again for a new commercial project. An additional small population of DSF was documented 1.4 km west of the subject site (Osborne 2000) on a sandy area associated with *Eucalyptus* windbreaks (on conditions similar to windbreaks formerly on the subject site) and the habitat for that population was subsequently developed to commercial use. The prospects of DSF population occurrence on the subject site have been reduced over the last decade in the course of further habitat degradation, and extirpation of local DSF populations through the succession of recent commercial developments.

An approximately 1.8 acres (northern and northwestern portion) of the subject site have been rendered *Unsuitable* for DSF by asphalt and gravel paving, associated with the widening of Slover Avenue during the winter of 2013 – 2014.

6.2 Burrowing Owl

Burrowing Owl was found to be absent during the course of the focused breeding season survey effort reported here. Abundant guano at one of the soil mounds on the southwestern site are likely accumulated from other common, insectivorous birds on the site such as Say's Pheobe, Black Phoebe, American Kestrel, Western Kingbird, and Cassin's Kingbird. Old burrowing Owl pellets, and an insect leg, found on a soil mound on the southwestern site in spring of 2015 (Osborne 2015a) were indicative of wintering Burrowing Owl on the site for winter 2014-2015.

7.0 CONCLUSIONS and RECOMMENDATIONS

It is my conclusion that Delhi Sands Flower-loving is absent from the site.

On the basis of my experience, conditions on the subject site are *Unsuitable* for DSF. Interim General Survey Guidelines for the DSF, suggested by the USFWS (1996) typically recommend protocol surveys for DSF where undeveloped Delhi sands occur. Although undeveloped Delhi sands are present on the subject property, I conclude onsite habitat conditions to be *Unsuitable* for DSF. I recommend that prior to any ground disturbance on this site, that the U. S. Fish and Wildlife Service (Carlsbad field office) be consulted with the findings of this site evaluation, and their concurrence with my findings be acknowledged. These considerations may be facilitated by a review of *Rhaphiomidas* biology presented in a recent listing petition (Osborne and Ballmer 2014) for another fly species.

It is my conclusion that Burrowing Owl is currently absent from the site. It is recommended that Take Avoidance Surveys comply with the protocol listed in the most recent CDFW Staff Report (2012 CDFW Staff Report on Burrowing Owl Mitigation) and occur no less than 14 days prior to ground disturbance, including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Although nesting raptors are currently absent from the site, prior to any demolition, tree removal, or grading, it is recommended that a pre-work clearance survey for nesting birds be conducted within seven days before construction activity. If active nests are found during the clearance survey, appropriate buffers will be required to avoid violating state and federal laws protecting nesting birds.

Due to a long history of heavy ground disturbance on the site, and a dominance of competitive exotic annual weed species, here is no potential for rare, narrow endemic or endangered plant species on the subject site. There are no potential jurisdictional waters on-site, and no vernal pool conditions on the site.

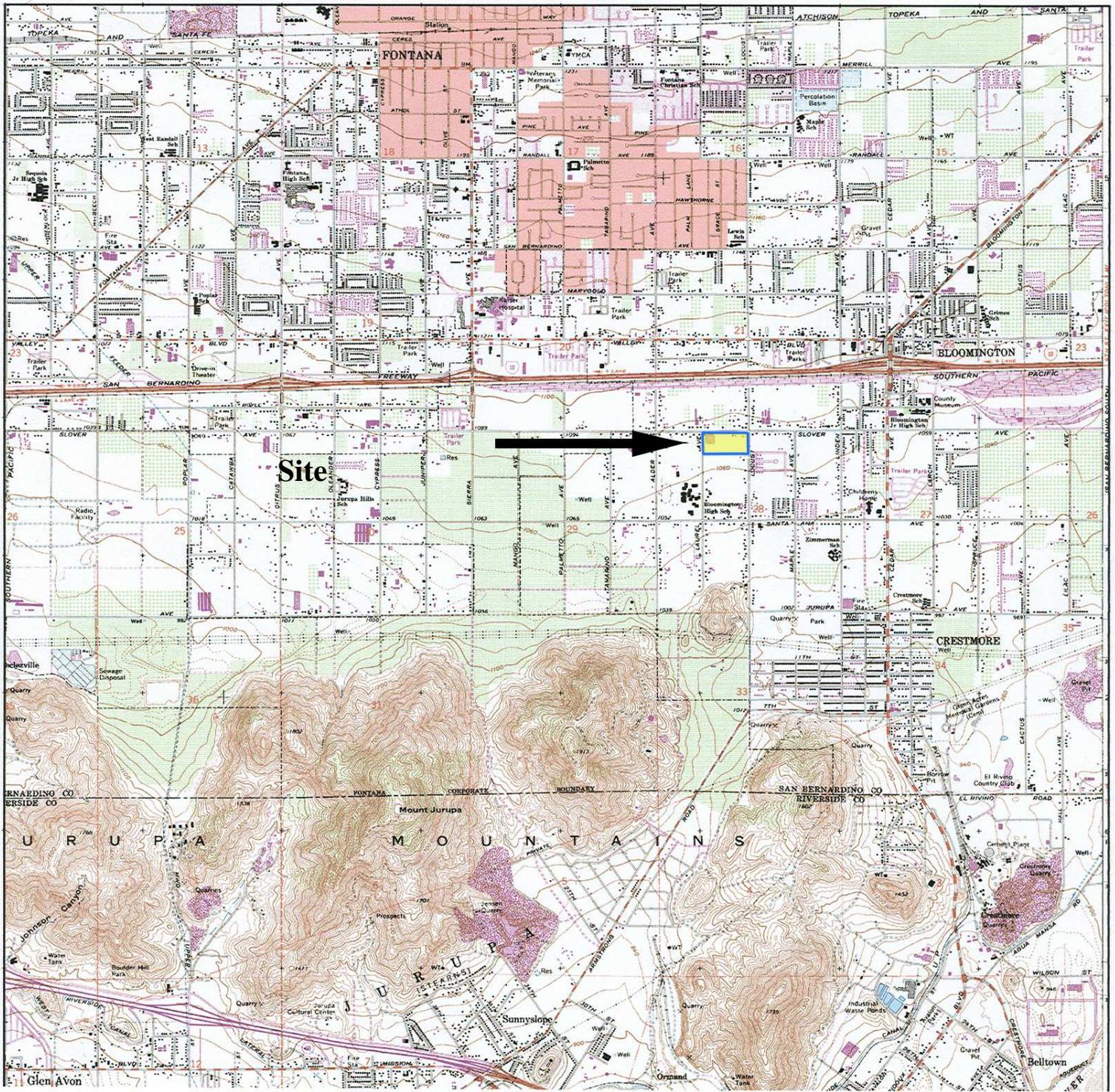
8.0 REFERENCES

- Beauchamp M. R. 1986. A flora of San Diego County, California. Sweetwater River Press. National City, CA
- Haug E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl (*Spcoyto cunicularia*), In The Birds of North America, No. 61 (A Poole and F. Gill Eds.). Philadelphia: The Academy of Natural Sciences, Washington, D. C.: The American Ornithologists' Union.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Cazier, M.A. 1985. A revision of the North American flies belonging to the genus *Rhaphiomidas* (Diptera: Apioceridae). Bulletin of the American Museum of Natural History 182(2):181-263.
- CDFG (California Department of Fish and Game). 2012. Staff Report on Burrowing Owl Mitigation. Sacramento, California.
- CNDDDB (<http://www.dfg.ca.gov/biogeodata/cnddb/>), Sacramento, California.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Kidd Biological , Inc.. 2017. Results of a Nesting Raptor Survey on an approximately 17-acre site in Bloomington, California.
- Kingsley, Kenneth J. 1996. Behavior of the Delhi Sands Flower-Loving Fly (Diptera: Mydidae), a Little Known Endangered Species. Ann. Entomol. Soc. Am. 89(6): 883-891.
- Kiyani Environmental Consultants. 1995. Principal Investigator's Annual Report, Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*) Studies at Colton, California. Prepared for San Bernardino County and U.S. Fish and Wildlife Service, Carlsbad, CA. 25+ pp.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, California.
- Osborne, K. H. 2000. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 125-acre portion of the Fontana Empire Business Center Site. Prepared for the City of Fontana. Submitted to USFWS, Carlsbad, October 2000.
- Osborne, K. H. 2003. *Delhi Sands Flower-loving fly Habitat Assessment for the Hermosa Cemetery, Colton*. Prepared for Inland Memorial Cremations and Burial. Submitted to the U.S. Fish and Wildlife Service, CA.

- Osborne, K. H. 2003a. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2003b. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2004. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004a. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004b. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 17-acre site in Bloomington, San Bernardino County, California. Prepared for Boruchin Enterprises. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2013. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2013.
- Osborne, K. H. 2014. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2014.
- Osborne, K. H. 2015. Third Year Focused Survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2015.
- Osborne, K. H. 2015a. General Biology; Including Habitat Assessments and Surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California. Submitted to San Bernardino County Planning, April 2015.
- Osborne, K. H. 2015b. Nesting Season Burrowing Owl Survey on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California.
- Osborne, K. H. 2016. Fourth Year Focused Survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for America United Development, LLC. Submitted to USFWS, Carlsbad, October 2016.

- Osborne, K. H., G. R. Ballmer, and T. McGill. 2003. *DSF Habitat Assessment for the Proposed Mary Vagle Conservation Area*. Prepared for the City of Fontana. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. and G. R. Ballmer. 2014. A Petition to the United States Department of the Interior, Fish and Wildlife Service, for emergency action to list an endangered species pursuant to the conditions and regulations of the Federal Endangered Species Act: For the San Joaquin Valley Giant Flower-loving Fly (*Rhaphiomidas trochilus*). Submitted June, 2014.
- Rogers, R. and M. Mattoni. 1993. Observations on the natural history and conservation biology of the giant flower-loving flies, *Rhaphiomidas* (Diptera:Apioceridae). *Dipterological Research* 4(1-2):21-34.
- U.S. Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Delhi Sands Flower-loving Fly.
- U.S. Department of Interior. Federal Register, 58 (183): 49881-49887.
- U.S. Fish and Wildlife Service. 1996. Delhi Sands Flower-loving Fly Draft Presence/Absence Survey Guidelines. December 30.
- U.S. Fish and Wildlife Service. 1997. Delhi sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 51 pp.
- Woodruff, G. A. 1980. Soil survey of San Bernardino County, southwestern part, California. U.S. Department of Agriculture, Soil Conservation Service.

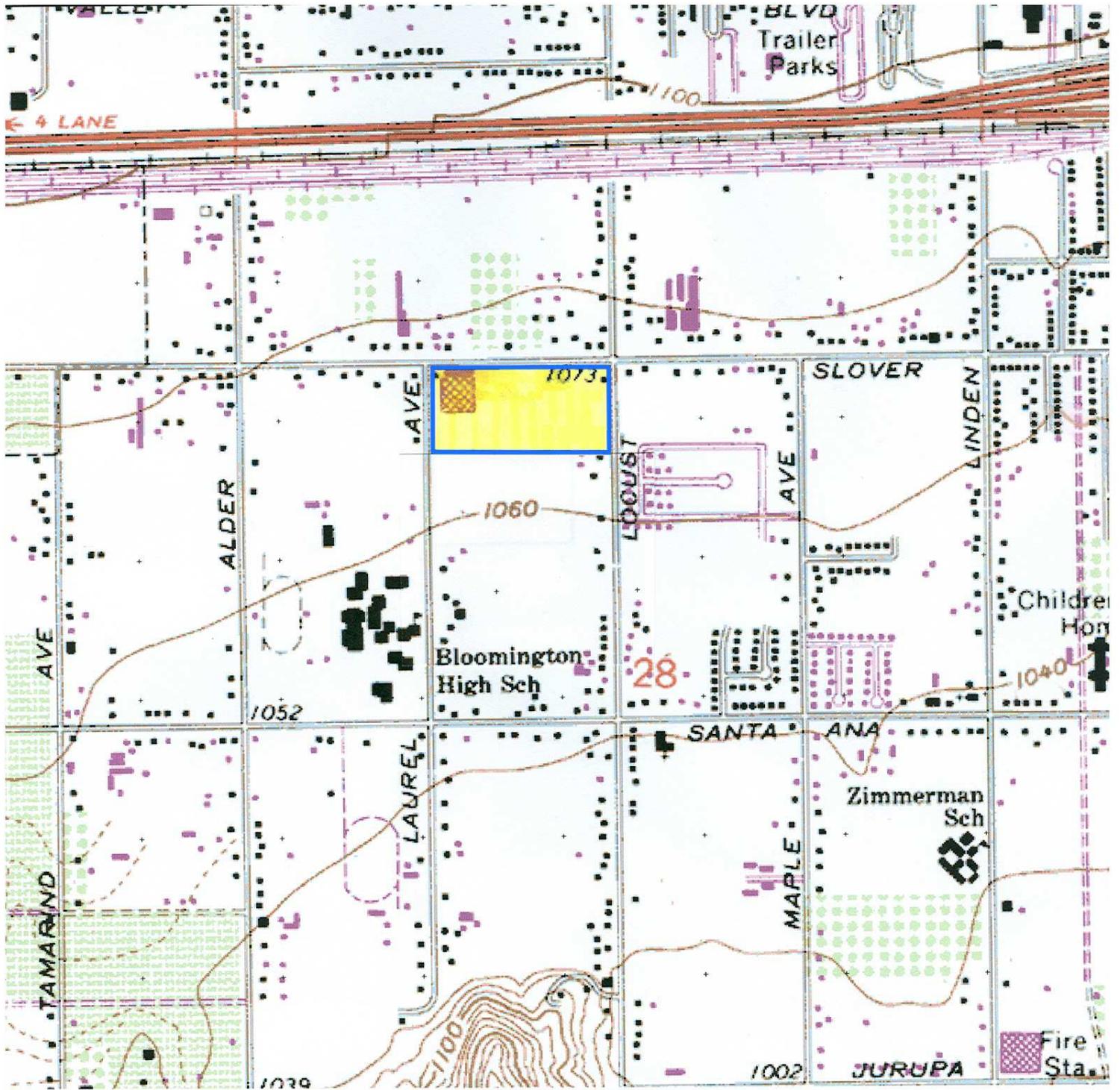
9.0 FIGURES



= 1 mile

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Figure 1. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 50%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



= 100 meters

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Figure 2. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 200%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



Figure 3. Photograph (March 2017) of the eastern end of the study area as viewed (looking south) from near the northeastern corner of the site. House (background) is on the 1.02 acre residential parcel, also a portion of the study site.



Figure 4. Photograph (May 2017) of the southern edge of the site (fence at right is the site boundary) as viewed from near the southwestern corner of the site. Note the dense annual vegetation not yet disked this season.



Figure 5. Photograph (March 2017) of view across open fields on the study site looking toward the east northeast from near the southwestern corner of the site.

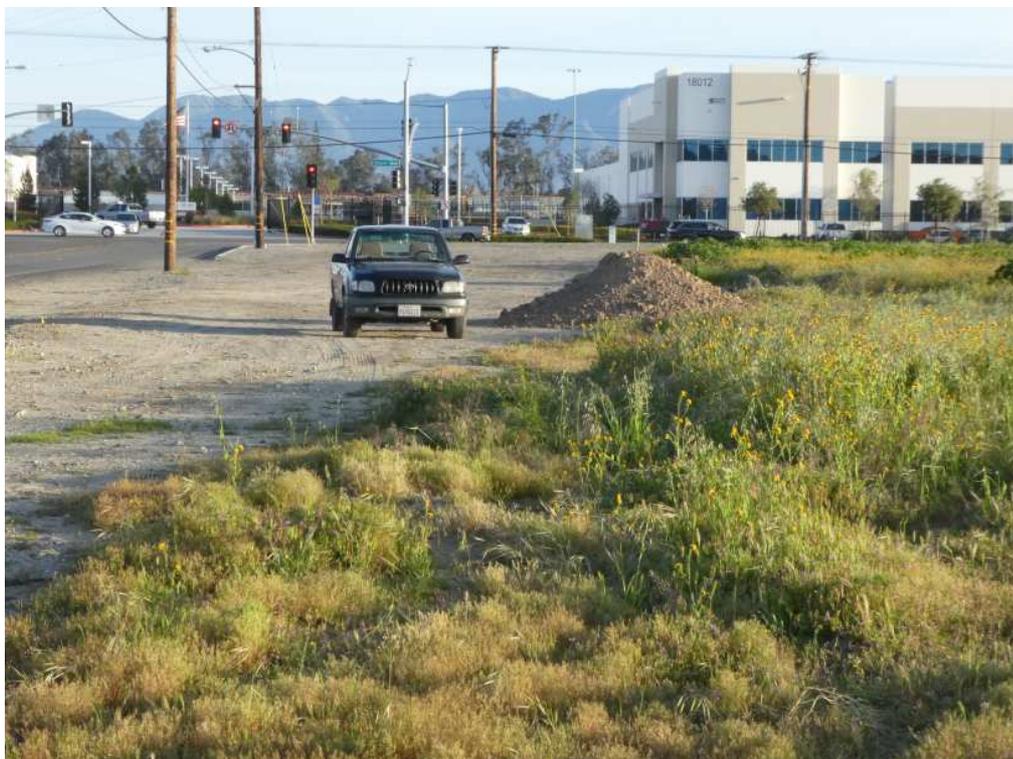


Figure 6. Photograph (March 2017) of the western portion of the site (Laurel Avenue on the left) as viewed looking north from near the southwestern corner of the site.



Figure 7. Photograph (May 2017) of the 1.02 acre residential lot. View looks west northwest at the front of the existing residence and landscaping from near the southeastern corner of the site.



Figure 8. Photograph (May 2017) of the 1.02 acre residential lot. View looks west from the front of the existing residence and landscaping from the northeastern corner of this residential lot.



Figure 9. Photograph (May 2017) of a portion (immediately adjacent to the existing home) of the back yard of the 1.02 acre residential lot, and dogs. View looks southeast from a fence line on the northern edge of this lot. Note the landscaping and irrigated lawn.



Figure 10. Photograph (2017) of a western portion of the 1.02 acre residential lot as viewed from the western edge of the lot. This view is representative of site conditions with extensive organic (mulch) cover over the soil surface on an area formerly used in poultry farming.



Figure 11. Photograph (March 2017) of a western portion of the 1.02 acre residential lot as viewed from the western edge of the lot. This view is also representative of site conditions with extensive organic material covering the soil surface.



Figure 12. Photograph (April 2017) of a soil pile with a post on the western edge of the site. This post is used by many perching birds as evidenced by guano (white material) on the post and at its base.



Figure 13. Photograph of a pile of concrete rubble on the site with old ground squirrel burrows – representing potential nesting site for Burrowing Owl.



Figure 14. Close (April 2017) photograph of a poison bait trap for rodents (Ground squirrels) along a fence line on the eastern portion of the site. This trap has been present here for years, and helps to explain low numbers of ground squirrels on the site,.

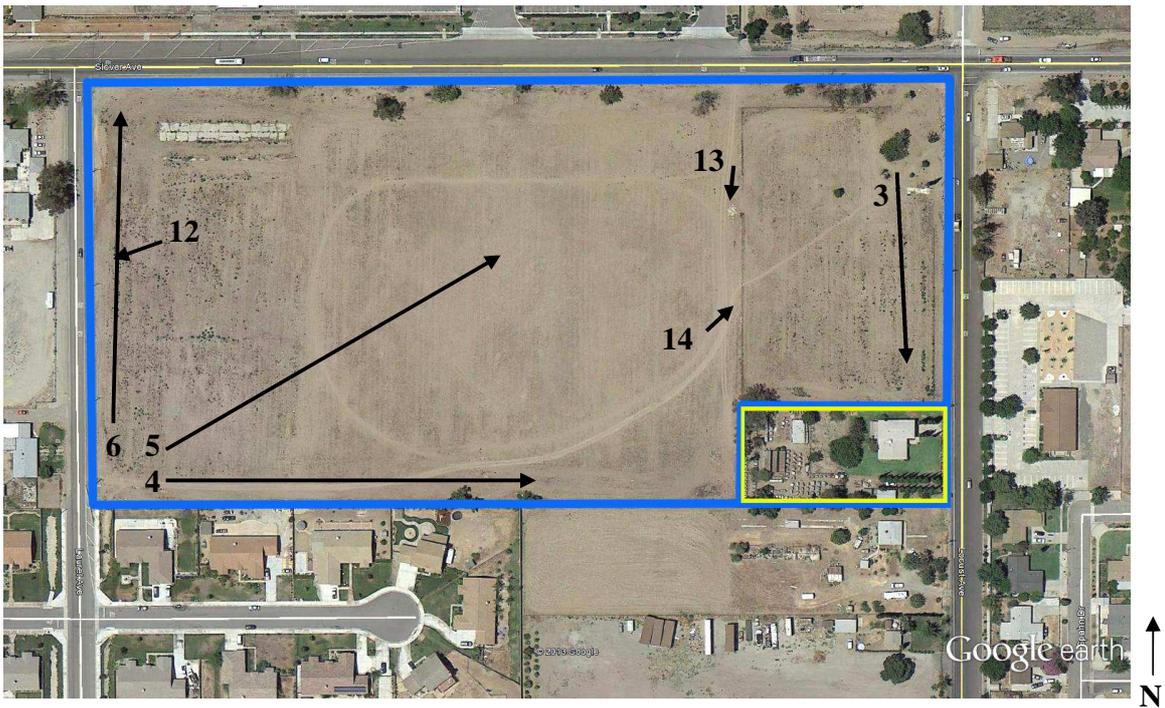


Figure 15. Approximate locations around study site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-6 and 11-14). One-acre residential lot on the southeastern portion of the site is outlined in Yellow.

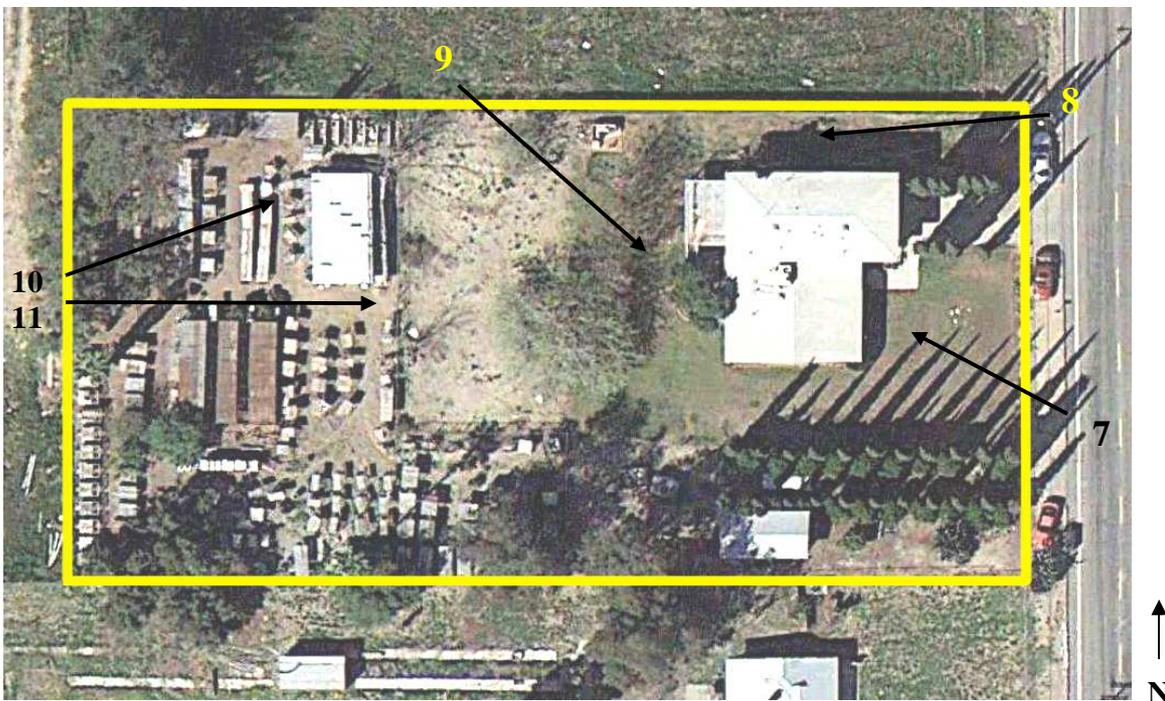


Figure 16. Approximate locations around southeastern (residential lot) site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 7-11).

10.0 APPENDIX

Plant species encountered on the site.

Vertebrate species encountered on the site.

Distribution (coordinates) of rubble piles and/or ground squirrels examined for Burrowing Owl.

Distribution (map) of rubble piles and/or ground squirrels examined for Burrowing Owl: Appendix Figure 1

Table A1. Plant species encountered on the survey site (Osborne 2004, 2004a, 2013, 2014, 2015, 2016 and current).

FAMILY and COMMON NAME	Species
AMERANTHACEAE	
tumbling pigweed	<i>Amaranthus albus</i>
Palmer's pigweed	<i>Amaranthus palmeri</i>
ASTERACEAE	
annual bur ragweed	<i>Ambrosia acanthicarpa</i>
common pineapple weed	<i>Chamomilla suaveolens</i>
blessed thistle	<i>Cnicus benedictus</i>
flax-leaved horseweed	<i>Conyza bonariensis</i>
horseweed	<i>Conyza canadensis</i>
sunflower	<i>Helianthus annua</i>
telegraphweed	<i>Heterotheca grandiflora</i>
stink-net	<i>Oncosiphon piluliferum</i>
prickly lettuce	<i>Lactuca serriola</i>
common groundsel	<i>Senecio vulgaris</i>
common sow-thistle	<i>Sonchus oleraceus</i>
golden crownbeard	<i>Verbesina encelioides</i>
BORAGINACEAE	
Rancher's fiddleneck	<i>Amsinkia intermedia</i>
BRASSICACEAE	
Sahara mustard	<i>Brassica tournefortii</i>
shortpod mustard	<i>Hirschfeldia incana</i>
London rocket	<i>Sisymbrium irio</i>
Oriental sisymbrium	<i>Sisymbrium orientale</i>
CHENOPODIACEAE	
red saltbush	<i>Atriplex rosea</i>
lamb's quarters	<i>Chenopodium album</i>
Kochia	<i>Kochia scoparia</i>
russion thistle	<i>Salsola tragus</i>
FABACEAE	
miniature lupine	<i>Lupinus bicolor</i>
alfalfa	<i>Medicago sativa</i>
GERANIACEAE	
filaree	<i>Erodium cicutarium</i>
MALVACEAE	
cheeseweed	<i>Malva parviflora</i>
ONAGRACEAE	
suncups	<i>Camissonia bistorta</i>

cut-leaved evening primrose	<i>Oenothera laciniata</i>
California evening primrose	<i>Oenothera californica</i>
OLEACEAE	
Olive	<i>Olea europa</i>
POACEAE	
slender oat	<i>Avena barbata</i>
rescue grass	<i>Bromus catharticus</i>
ripgut brome	<i>Bromus diandrus</i>
foxtail chess/red brome	<i>Bromus madritensis</i>
Bermuda grass	<i>Cynodon dactylon</i>
Mediterranean barley	<i>Hordeum murinum</i>
Shismus	<i>Schismus barbatus</i>
bur bristlegrass	<i>Setaria verticillata</i>
SOLANACEAE	
Jimson weed	<i>Datura wrightii</i>
tree tobacco	<i>Nicotiana glouca</i>
nightshade	<i>Solanum duglasi</i>
ZYGOPHYLLACEAE	
puncture vine	<i>Tribulus terrestris</i>

Table A2. Vertebrate species (or sign) encountered on the survey site (2017).

Common name	Species
Reptiles	
Side-blotched lizard	<i>Uta stansburiana</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
Gopher snake	<i>Pituophis catenifer</i>
Birds	
American crow	<i>Corvus brachyrhynchos</i>
American kestrel	<i>Falco sparverius</i>
Anna's hummingbird	<i>Calypte anna</i>
Black phoebe	<i>Sayornis nigricans</i>
California gull	<i>Larus californicus</i>
Cassin's kingbird	<i>Tyrannus vociferans</i>
European starling	<i>Sturnus vulgaris</i>
Eurasian Collared-dove	<i>Streptopelis decaocto</i>
Great-tailed grackle	<i>Quiscalus mexicanus</i>
Hooded oriole	<i>Icterus cucullatus</i>
House finch	<i>Carpodacus mexicanus</i>

House sparrow	<i>Passer domesticus</i>
Killdeer	<i>Charadrius vociferus</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
Morning dove	<i>Zenaida macroura</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Rock dove	<i>Columbia livia</i>
Say's phoebe	<i>Sayornis saya</i>
Song sparrow	<i>Melospiza melodia</i>
Western kingbird	<i>Tyrannus verticalis</i>
Western meadowlark	<i>Sturnella neglecta</i>
White-crowned sparrow	<i>Zonotrichia atricapilla</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>

Mammals

Botta's pocket gopher	<i>Thomomys bottae</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Desert cottontail	<i>Sylvilagus audubonii</i>
domestic dog	<i>Canis familiaris</i>
horse	<i>Equus caballus</i>

Table A3. Location of Ground Squirrel burrows, soil cavities, and wood/refuse piles found on the subject site. Latitude and Longitude for selected burrows is indicated decimal degrees. These location estimates are approximate, usually with at least 16 foot error in each dimension.

Description	Latitude N	Longitude W
Soil pile with old burrow	34.06164°	117.41344°
Rubble pile	34.06256°	117.41063°
fence line	34.06219°	117.41061°
fence line	34.06209°	117.41059°

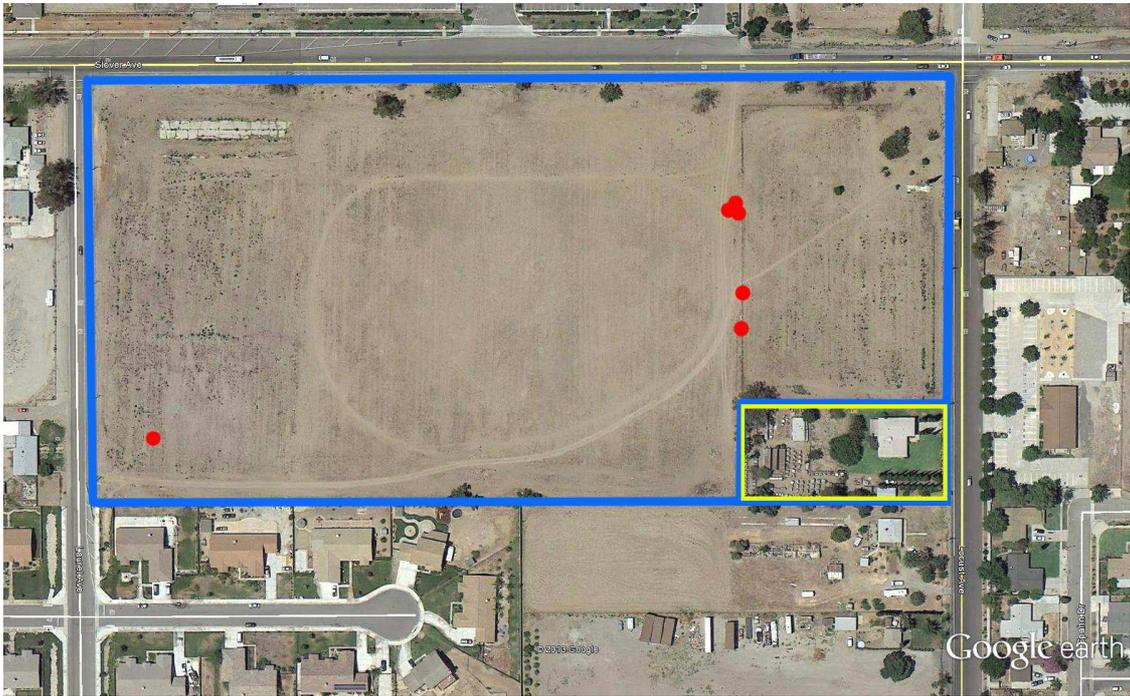


Figure A1. Approximate locations around survey site of ground squirrel burrows and other structures (rubble or refuse piles) with potential to harbor Burrowing Owl (red dots).

Information Summary

Report preparation date: April 1, 2015: Revised May 3, 2017.

Fieldwork performed: March 11, 22, 23, and 25, 2015 (non-breeding survey for Burrowing Owl; May 2, 24, and June 18, 2015 (breeding season burrowing Owl Survey)

Title: General Biology; Including Habitat Assessments and Surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California.

Project site location: South of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, CA - Fontana, U.S.G.S.-75.' Quadrangle, Township 1 S., Range 5 W., Section 28.

Assessor's Parcel Numbers: 256-041-001, -002, -003, -047, and -048

Case Number: P201400241

Owner/Applicant: JM Realty Group, Inc., 3535 Inland Empire Blvd., Ontario, CA 91764

Principle Investigator: Ken H. Osborne, Osborne Biological Consulting
6675 Avenue Juan Diaz, Riverside, CA 92509.

Report Summary

(Delhi Sands Flower-loving Fly): A portion of the study site consists of a 1.02 acre residential parcel with associated home, landscaping, driveways, with portions of the site used in long established poultry/egg production. Lands so developed, managed or landscaped are *Unsuitable* for DSF. I conclude the subject property has no potential to support a population of DSF. The DSF has been determined to be absent on the remaining 16.32-acre portion of the study site over the course of recent focused surveys for this species (Osborne 2014).

(Burrowing Owl): A 16.32-acre portion of the study site presents open fields of disturbed annual grassland and forbs, and the presence of a ground squirrel population with burrows. Piles of refuse and soil dumpings present on the site provide either burrows or other soil cavities suitable for Burrowing Owl. Burrowing Owl pellets, guano, and an insect part were found on one of the soil piles. Burrowing Owl was not observed on the site during the course of this investigation. I conclude that Burrowing Owl has recently been present on the site, likely as over wintering individuals, but is not currently present on the site. The 1.02 acre residential lot on the site, with its trees, home, and numerous dogs, is not suitable habitat for Burrowing Owl

General biology: The history of disturbance (annual disking) on the site, and disturbed condition of the site likely eliminate potential for narrow endemic, rare, or endangered plant species. No rare plant species has been found on the site in the course of years of studies.

There are no riparian or riverine habitats on the site. There are no potential jurisdictional waters. No vernal pool exists on the site.

Name and contact of Report Preparer: Ken H. Osborne (951) 360-6461

Burrowing Owl: Habitat for Burrowing Owl, as well as evidence of recent Burrowing Owl presence, were found on a 16.32 acre portion of the site. Burrowing Owl was not found in the course of the study and is presumed to be currently absent from the site.

Focused survey for Burrowing Owl: Results of the Burrowing Owl Survey are negative.

Rare, Endangered, or Narrow Endemic Plants: As highly disturbed (annually disked) and occupied predominantly by exotic grasses and forbs, there is little potential for occurrence of rare plant species such as rare, endangered, or narrow endemic species. There are no species of rare, endangered, or narrow endemic plants on the site.

Oak Woodland and Coastal Sage Scrub: Oak Woodland and Coastal Sage Scrub communities do not occur on the site.

Riparian, Wetland, and Vernal Pool: There are no riparian, riverine, wetland, or vernal pool habitats on the site. There are no potential jurisdictional waters/wetlands on-site.

General Biology; Including Habitat Assessments and Surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California

Prepared for:

**JM Realty Group, Inc.
3535 Inland Empire Blvd.
Ontario, CA 91764**

I hereby certify that the statements furnished above and in the attached exhibits present that data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



**Kendall H. Osborne
6675 Avenue Juan Diaz
Riverside, CA 92509**

revised
5/5/2017
Date

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SUMMARY

JM Realty Group, Inc. has requested my preparation of a general Biological Study, including both Habitat assessments and surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel No., indicated by the client to be 256-041-001, -002, -003, -047, and -048, at Bloomington, San Bernardino County, California.

In order to assess the subject site for potential as habitat for these species, a field investigation was conducted on March 1, 22, 23, and 25, 2015. Notes were taken on vegetation communities and structure, as well as plant and animal species observed on the site, along with photographs of the subject site.

Delhi Sands Flower-loving Fly: The 1.02 acre residential parcel on the site was determined to represent unsuitable habitat conditions for the DSF. The DSF has been determined to be absent on the remaining 16.32-acre portion of the site over the course of recent focused surveys for this species (Osborne 2014).

Burrowing Owl: The site evaluation concluded positive for Burrowing Owl habitat. Ground squirrel and their burrows appear on the site. A 1.02 acre residential parcel on the site is unsuitable for Burrowing Owl. The 16.32 acre portion of the site with open fields was surveyed for Burrowing Owl. Evidence (Burrowing Owl pellets) of recent Burrowing Owl habitation of the site was found. As Burrowing Owl was not observed in the course of a non breeding season survey, it is concluded that Burrowing Owl is currently absent from the site.

This investigation found no potential for narrow endemic, rare, or endangered plant species. In addition, riparian or riverine habitats, vernal pools, or any other potential jurisdictional waters or wetlands have been found to be absent from the site. The investigation found small, partially developed parcels on land with abundant, disked annual vegetation, set in the larger context surrounding residential development.

1.0 INTRODUCTION

This report presents the methods and results of a general biological evaluation, and specifically a Habitat Assessment for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*, DSF) and Habitat Assessments and Surveys for Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-020, -001, -002, and -003), located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, San Bernardino County, California.

Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, 7.5' USGS quadrangle. Figure 2 shows the site at 200% scale on this quadrangle.

2.0 SITE DISPOSITION

The subject site is located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington. Specifically, the site is located on the Fontana U.S.G.S.-7.5' quadrangle, in the northwestern portion of Section 28, Township 1 S., Range 5 W.

3.0 METHODS

The initial field investigation of the site was conducted on March 11, 2015. Habitat conditions for the federally endangered Delhi Sands Flower-loving Fly were evaluated on a 1.02 acre southeastern portion of the site corresponding to a residence and associated parcel. Habitat conditions were evaluated for Burrowing Owl on the entire 17.34 acres of the site, and an owl survey initiated on 16.32 acres of suitable owl habitat. All non-cultivated plant species and animals were recorded. Consideration was given to presence of any potential drainages, wetlands, riparian habitat, and vernal pools. Additional site visits were undertaken March 22, 23, and 25 in order to complete the focused survey for Burrowing Owl. Figures 3 – 14 are photographs representing various views of the study site and other objects of interest on the site. Figures 15 and 16 show the locations on the site from which photographs were taken.

3.1 Delhi Sands Flower-loving Fly

The DSF has been determined to be absent on the larger 16.32-acre portion of the site (Figure 15). A 1.02 acre portion of the site remained to be evaluated for DSF potential. On March 11, 2015, I visited this southeastern parcel of the study site in order to investigate habitat suitability for the DSF. I have reviewed soil maps covering the subject site, prepared by the California Department of Agriculture (Woodruff 1980). Satellite imagery covering the site, dating from 1993 to 2014 (Google Earth) was reviewed in order to gain an understanding of land use regimens in recent years. Photographs were taken of this approximately one acre portion of the site (Figures 7 – 11), along with field notes on vegetation and soil conditions. Reports of previous focused surveys for DSF (conducted on lands adjacent to the subject parcel) were reviewed (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014).

I examined the subject site to rate its potential to support DSF, the rating based on the following scale of 1 to 5, with 5 being the best quality and most suitable habitat in my judgment. The numerical rating was originally developed as a provision for fair, objective, mathematical derivation of mitigation rates.

1. Developed areas, non-Delhi sands soils with high clay, silt, and/or gravel content. Delhi sands extensively and deeply covered by dumping of exotic soils, rubble, trash, manure, or organic debris. *Unsuitable*.
2. Delhi sands are present but the soil characteristics include a predominance of exotic soils such as alluvial materials, or predominance of other foreign contamination as gravels, manure, or organic debris. Severe and frequent disturbance (such as a maintenance yard or high use roadbed). *Very Low Quality*.

3. Moderately contaminated Delhi sands. Delhi sands with moderate to high disturbance (such as annual disking). Sufficient Delhi Sands are present to prevent soil compaction (related to contamination by foreign soils). Some sandy soils exposed on the surface due to fossorial animal activity. *Low Quality*.
4. Abundant clean Delhi Sands with little or no foreign soils (such as alluvial material) present. Moderate abundance of exposed sands on the soil surface. Low vegetative cover. Evidence of moderate degree of fossorial animal activity by vertebrates and invertebrates. May represent high quality habitat with mild or superficial disturbance. *Moderate Quality*
5. Sand dune habitat with clean Delhi Sands. High abundance of exposed sands on the soil surface. Low vegetative cover. Evidence (soil surface often gives under foot) of high degree of fossorial animal activity by vertebrates and invertebrates. Sand associated plant and arthropod species may be abundant and vegetation species composition is often indicative of low disturbance. *High Quality*

It should be noted that habitat qualities often vary spatially within a site so that conditions on a site fall within a range of qualities. Further, overall habitat quality is affected by the overall habitat area on a site, such that very small areas diminish the overall habitat value of a site. Habitat conditions rated from *Very Low Quality* up to *High Quality*, are formally considered as representing *Suitable* conditions for the DSF. Use of this habitat rating system is somewhat subjective and best undertaken by a biologist who has extensive experience with *Rhaphiomidas* species and understanding of their biology and ecology. It must be noted that these ratings do not infer or imply actual occupancy by DSF, only relative potential to harbor the species, and relative conservation value of the land should DSF be found.

3.2 Burrowing Owl

Open fields on much of the subject site were systematically searched for ground squirrel burrows, or any other soil cavities or structures suitable for Burrowing Owl. This search was conducted by walking the perimeter of the site, walking the fence lines, and walking regular, parallel transects through the site (transects spaced approximately 15 meters).

To the extent necessary, methods for this burrowing owl study follow the survey protocol recommended by the Burrowing Owl Consortium (www2.ucsc.edu/scpborg/owls.htm) (in relevant part):

“Phase I: Habitat Assessment

The first step in the survey process is to assess the presence of Burrowing Owl habitat on the project site including a 150-meter (approx. 500 ft.) buffer zone around the project boundary (Thomsen 1971, Martin 1973).

Burrowing Owl Habitat Description

Burrowing Owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of Burrowing Owl habitat: both natural and artificial burrows provide protection, shelter, and nests for Burrowing Owls (Henny and Blus 1981). Burrowing Owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing Owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable Burrowing Owl habitat can be verified at a site by an observation of at least one Burrowing Owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing Owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one Burrowing Owl has been observed occupying a burrow there within the last three years (Rich 1984).

The Phase II burrow survey is required if Burrowing Owl habitat occurs on the site. If Burrowing Owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary. A written report of the habitat assessment should be prepared (Phase IV), stating the reason(s) why the area is not Burrowing Owl habitat.

3.2.1 Phase I: Habitat Assessment

The preliminary site visit on March 11, 2015 was conducted to determine the need for an owl survey and to gain an understanding of the scope of any required survey. During this visit, potential Burrowing Owl habitat areas were assessed with respect to potential animal burrows or other soil cavities suitable for Burrowing Owl. Habitat conditions on the southeastern, 1.02 acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures.

3.2.2 Phase II: Burrow Survey

A burrow survey (search for ground squirrel burrows or other structures suitable for Burrowing Owl) was carried out during the site investigation on March 11, 2015. The site was systematically searched for any animal burrows or natural soil cavities that might support Burrowing Owl. During this phase, any burrows found were carefully inspected for evidence of Burrowing Owl (such as pellets, plumage, insect parts, tracks, whitewash) or evidence of inactivity (such as undisturbed spider webs). Animal burrows and other

structures suitable for Burrowing Owl were mapped using GPS. No Burrowing Owl was observed in the course of this site visit.

3.2.3 Phase III: Burrowing Owl Survey, Census and Mapping

Following identification of animal burrows or soil/rubble cavities suitable for Burrowing Owl, a focused survey (for non-nesting season Burrowing Owl) was undertaken on the site. These surveys were conducted by Kendall Osborne. For the purposes of these survey efforts, sunrise was considered to occur at approximately 0700 hours and sunset at approximately 1900 hours. Table 1 provides a schedule and site weather conditions during surveys of the subject property. At least one hour of survey effort was applied on the site on each of four site visits between March 11 and 25, 2015.

Table 1. Burrowing Owl Focused Survey Schedule and Site Weather Conditions.

Date and area	Hours	Weather Conditions
11 March	1730-1930	100% clouds, 70° F, calm
22 March	0700-0815	clear, 67° F, winds 2-4 mph
23 March	0710-0810	clear, 54° F, calm
25 March	0700-0800	clear, 59° F, calm

3.3 General Biology

Throughout the course of the habitat assessment and focused surveys, general notes were taken on vegetation communities and structure, as well as plant and animal species (or their sign) observed on the site, along with photographs of the subject site. Previous biological reports have been reviewed in order to further augment the biological profile of the site (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014).

4.0 RESULTS

Figures 3 – 14 are photographs of representative of landscapes and general aspects of the subject property. Figures 15 and 16 provide aerial perspectives and keys as to where on the site these photographs were taken.

This investigation determined that the subject property with disked fields currently supports annual grassland/forbland vegetation dominated by exotic forbs and grasses. A 1.02 acre residential lot is present on the southeastern corner of the site with associated exotic landscaping and poultry farming facilities.

4.1 Delhi Sands Flower-loving Fly

Department of Agriculture, Soil Conservation Service map (Woodruff 1980) indicates Delhi sands soils on the entire site. The southeastern corner of the site (1.02 acre lot) consists of a residential home with associated landscaping, driveways, with portions of the site used in long established poultry/egg production. The habitat evaluation for DSF involves this residential lot (Figures 15 and 16). The DSF has been determined to be absent on the remaining 16.32-

acre portion of the site over the course of recent focused surveys for this species (Osborne 2014).

The eastern half of the residential lot has a residence and associated irrigated lawns, landscaping, paved walks and driveways (Figures 7 to 9). The western half of the lot is used for poultry farming and has large numbers of poultry cages with clear access areas between (Figures 10 and 11). Absence of annual vegetation is indicative of herbicidal use for weed control in this area – confirmed by my interview with the resident, Mr. Mehefco. Aerial imagery in GoogleEarth clearly shows the land use in poultry farming goes back for at least ten years (Figure 16). Casual observations made of this site (adjacent to survey areas for DSF, (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014) also had the site consistently used for poultry farming. Plant species normally associated with Delhi sands ecosystems do not occur on the site.

This lot is further set in the larger context of surrounding habitats developed and managed out of suitability for DSF, or recently documented not to support DSF (Osborne 2014). Adjacent land to the west and south of this lot are confirmed not to support the DSF. Lands east of this lot (east of Larurel Avenue) are developed. Developed residential lots and some undeveloped open lots are found south of the subject parcel. A site of one DSF observation (Osborne 2005), located north of the project area, has long since been developed to commercial/industrial use and can not support any DSF population. Figures 7 – 11 are photographs of representative conditions and general aspects of the residential lot being evaluated for DSF potential.

4.2 Burrowing Owl

Habitat conditions on the southeastern, approximately one-acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures. The remaining undeveloped portion of the site, considered as suitable habitat for Burrowing Owl, was formally surveyed. Figures 3-6 are photographs of representative of landscapes and general aspects of the area surveyed for Burrowing Owl.

Sign of Burrowing Owl (pellets, guano, and one large leg of a tenebrionid beetle, Figures 13 and 14) were found on the top of one soil mound (previously dumped) on the southwestern portion of the site. The Owl pellets appeared to be old and bleached. No Ground squirrel burrows or soil cavities were found on this particular soil mound, however, a ground squirrel burrow was located on another nearby soil mound – yet that burrow entrance had spider webs which remained undisturbed through the course of the survey.

Other insectivorous birds likely to leave guano on this prominence (especially American Kestrel, Say's Pheobe, and Cassin's Kingbird) were seen on a regular basis during the course of the survey. Burrowing Owl was not observed on the site during the course of this survey.

4.3 General Biology

Lists of plant and animal species encountered are presented in the appendix. No rare, endangered or endemic plant species has been found on the site in the course this study. No rare, threatened, endangered, or special animal species was found in the course of this study. There are no riparian or riverine habitats on the site. There are no potential jurisdictional waters. No vernal pool exists on the site.

5.0 EXISTING ENVIRONMENT

5.1. Adjacent lands

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project).

5.2 Topography

The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet.

5.3 Soils

Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

5.4 Plant Communities

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Figures 3 - 12 present representative views of the survey site and habitats. Figures 15 and 16 provide keys as to where on the site these (Figures 3-6, and Figures 7-12 respectively) photographs were taken. Table A1 (Appendix A) provides a list of plant species encountered on the survey site during the course of this and previous studies. No special status plant species (species of concern) were encountered in the course of this survey.

5.4.1 Annual grass/forbland

Dominant plants are rancher's fiddleneck (*Amsinkia intermedia*), puncture vine (*Tribulus terrestris*), cheeseweed (*Malva parviflora*), summer mustard (*Hirschfeldia incana*), and Spanish clover (*Lotus purshianus*). Annual vegetation cover is much reduced as compared to previous studies a decade ago (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014). Woolly buckwheat (*Eriogonum gracile*), a dominant in previous studies is now absent, and western ragweed (*Ambrosia acanthicarpa*) formerly abundant was largely restricted to a strip of undisked habitat adjacent to Locust Avenue in summer of 2014 (Osborne 2014).

5.4.2 Exotic woods/landscaped

Eucalyptus windbreaks, previously along the northern edge of the site, were recently eliminated by the widening of Slover Avenue (Osborne 2014). Remnant trees such as olive and Peruvian pepper are found on the southern site boundary, additional *Eucalyptus* adjacent to the residential lot on the southeastern corner of the site. The residential lot itself supports several various exotic shade trees.

5.5 Vertebrates

No special status animal species (species of concern) were encountered in the course of this survey or previous studies (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014).

5.6 Insect Community

During site visits for 2013 and 2014 (Osborne 2014), at least 51 insect species (counting only large and conspicuous insects) were either casually observed or collected. A list of most insect species observed is presented in the appendix (Table A2, Appendix A). The insect community encountered on the subject site was relatively species depauperate as compared to undisturbed ecological communities occurring on Delhi sands, but included Mydidae (*Nemomydas*), Apiceridae, Asilidae, Mutilidae, Chrysididae, Mymeliontidae, and Sphecidae. Indicators of potential high quality of DSF habitat found on the subject site during the course of the current survey include flies *Apicera crysolasia*, *Apicera convergens*, *Nemomydas pantherinus*, and the Mutilid (*Dasymutilla sackeni*). Full lists of insect species previously encountered on the site may be found in previous reports on surveys for DSF (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014).

6.0 DISCUSSION

6.1 Delhi Sands Flower-loving Fly

With respect to the approximately one acre residential lot at the southeastern corner of the site, not previously surveyed for DSF: The eastern half of this lot consisting of the residential home and associated landscaping, and driveway, is rated as *Unsuitable* for DSF. The eastern half of this lot, long in use for poultry farming has exposed soil substrates, and might have been rated according to our established rating system (methods) as *Very Low Quality* due to long presence of manure, or organic debris; and the severe and frequent foot traffic disturbance resulting from daily management, feeding, watering, and egg harvesting activities associated with such poultry farming. Given the largely developed surroundings for the site, and the adjacent context with lands repeatedly, and recently documented not to support any DSF population, I downgrade the status of this western portion of the subject one-acre lot to *Unsuitable* for DSF.

A single male DSF was located 250 meters north of the subject site (Osborne 2004b) but that area was promptly graded and paved, and during the course of summer 2013, graded again for a new commercial project. An additional small population of DSF was documented 1.4 km west of the

subject site (Osborne 2000) on a sandy area associated with *Eucalyptus* windbreaks (on conditions similar to windbreaks formerly on the subject site) and the habitat for that population was subsequently developed to commercial use. The prospects of DSF population occurrence on the subject site have been reduced over the last decade in the course of further habitat degradation, and extirpation of local DSF populations through the succession of recent commercial developments. An approximately 1.8 acres (northern and northwestern portion) of the subject site have been rendered *Unsuitable* for DSF by asphalt and gravel paving, associated with the widening of Slover Avenue during the winter of 2013 – 2014.

6.2 Burrowing Owl

Abundant guano at one of the soil mounds on the southwestern site are likely accumulated from other common, insectivorous birds on the site such as Say's Pheobe, American Kestrel, and Cassin's Kingbird. Old burrowing Owl pellets, and an insect leg, found on a soil mound on the southwestern site are indicative of recent, wintering, Burrowing Owl presence on the site. Although Burrowing Owl was found to be absent during the course of focused survey effort, due to the fact that this effort was conducted just prior to the Burrowing Owl nesting season, it is recommended that the site be examined prior (within thirty days) to initiation of project grading activities.

7.0 CONCLUSIONS and RECOMMENDATIONS

It is my conclusion that Delhi Sands Flower-loving is absent from the site.

On the basis of my experience, conditions on the subject site are *Unsuitable* for DSF. Interim General Survey Guidelines for the DSF, suggested by the USFWS (1996) typically recommend protocol surveys for DSF where undeveloped Delhi sands occur. Although undeveloped Delhi sands are present on the subject property, I conclude onsite habitat conditions to be *Unsuitable* for DSF. I recommend that prior to any ground disturbance on this site, that the U. S. Fish and Wildlife Service (Carlsbad field office) be consulted with the findings of this site evaluation, and their concurrence with my findings be acknowledged. These considerations may be facilitated by a review of *Rhaphiomidas* biology presented in a recent listing petition (Osborne and Ballmer 2014) for another fly species.

It is my conclusion that Burrowing Owl is currently absent from the site. Although Burrowing Owl was found to be absent during the course of focused survey effort, it must be noted that this effort was conducted just prior to the Burrowing Owl nesting season. It is recommended that Take Avoidance Surveys comply with the protocol listed in the most recent CDFW Staff Report (2012 CDFW Staff Report on Burrowing Owl Mitigation) and occur no less than 14 days prior to ground disturbance, including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Due to a long history of heavy ground disturbance on the site, and a dominance of competitive exotic annual weed species, there is no potential for rare, narrow endemic or endangered plant species on the subject site. There are no potential jurisdictional waters on-site, and no vernal pool conditions on the site.

8.0 REFERENCES

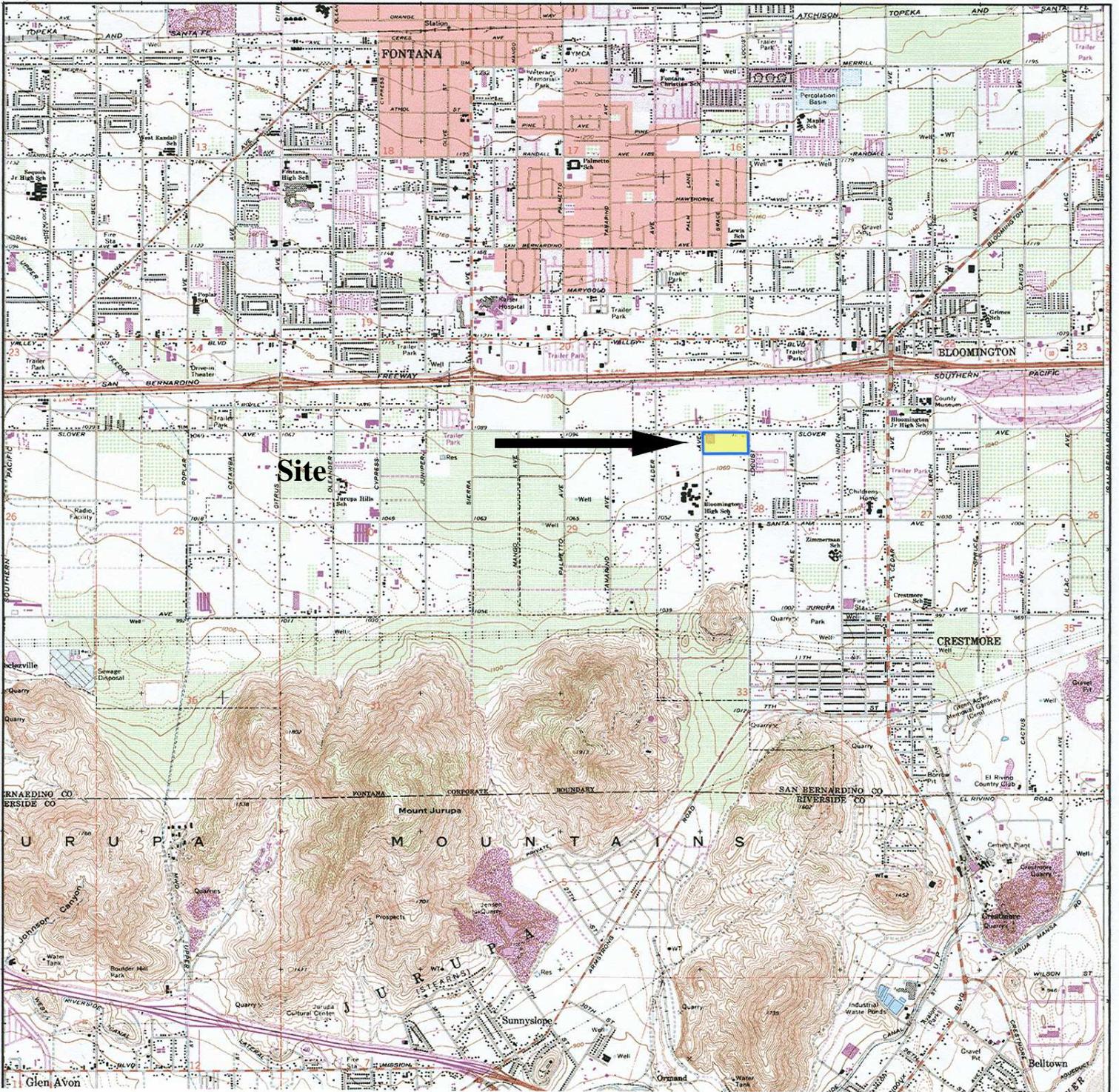
- Beauchamp M. R. 1986. A flora of San Diego County, California. Sweetwater River Press. National City, CA
- Haug E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl (*Spcoyto cunicularia*), In The Birds of North America, No. 61 (A Poole and F. Gill Eds.). Philadelphia: The Academy of Natural Sciences, Washington, D. C.: The American Ornithologists' Union.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Cazier, M.A. 1985. A revision of the North American flies belonging to the genus *Rhaphiomidas* (Diptera: Apioceridae). Bulletin of the American Museum of Natural History 182(2):181-263.
- CDFG (California Department of Fish and Game). 2012. Staff Report on Burrowing Owl Mitigation. Sacramento, California.
- CNDDDB (<http://www.dfg.ca.gov/biogeodata/cnddb/>), Sacramento, California.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Kingsley, Kenneth J. 1996. Behavior of the Delhi Sands Flower-Loving Fly (Diptera: Mydidae), a Little Known Endangered Species. Ann. Entomol. Soc. Am. 89(6): 883-891.
- Kiyani Environmental Consultants. 1995. Principal Investigator's Annual Report, Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*) Studies at Colton, California. Prepared for San Bernardino County and U.S. Fish and Wildlife Service, Carlsbad, CA. 25+ pp.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, California.
- Osborne, K. H. 2000. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 125-acre portion of the Fontana Empire Business Center Site. Prepared for the City of Fontana. Submitted to USFWS, Carlsbad, October 2000.
- Osborne, K. H. 2003. *Delhi Sands Flower-loving fly Habitat Assessment for the Hermosa Cemetery, Colton*. Prepared for Inland Memorial Cremations and Burial. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. 2003a. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.

- Osborne, K. H. 2003b. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2004. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004a. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004b. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 17-acre site in Bloomington, San Bernardino County, California. Prepared for Boruchin Enterprises. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2013. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2013.
- Osborne, K. H. 2014. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2014.
- Osborne, K. H., G. R. Ballmer, and T. McGill. 2003. *DSF Habitat Assessment for the Proposed Mary Vagle Conservation Area*. Prepared for the City of Fontana. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. and G. R. Ballmer. 2014. A Petition to the United States Department of the Interior, Fish and Wildlife Service, for emergency action to list an endangered species pursuant to the conditions and regulations of the Federal Endangered Species Act: For the San Joaquin Valley Giant Flower-loving Fly (*Rhaphiomidas trochilus*). Submitted June, 2014.
- Rogers, R. and M. Mattoni. 1993. Observations on the natural history and conservation biology of the giant flower-loving flies, *Rhaphiomidas* (Diptera: Apioceridae). *Dipterological Research* 4(1-2):21-34.
- U.S. Fish and Wildlife Service. 1993. *Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Delhi Sands Flower-loving Fly*.
- U.S. Department of Interior. *Federal Register*, 58 (183): 49881-49887.
- U.S. Fish and Wildlife Service. 1996. *Delhi Sands Flower-loving Fly Draft Presence/Absence Survey Guidelines*. December 30.

U.S. Fish and Wildlife Service. 1997. Delhi sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 51 pp.

Woodruff, G. A. 1980. Soil survey of San Bernardino County, southwestern part, California. U.S. Department of Agriculture, Soil Conservation Service.

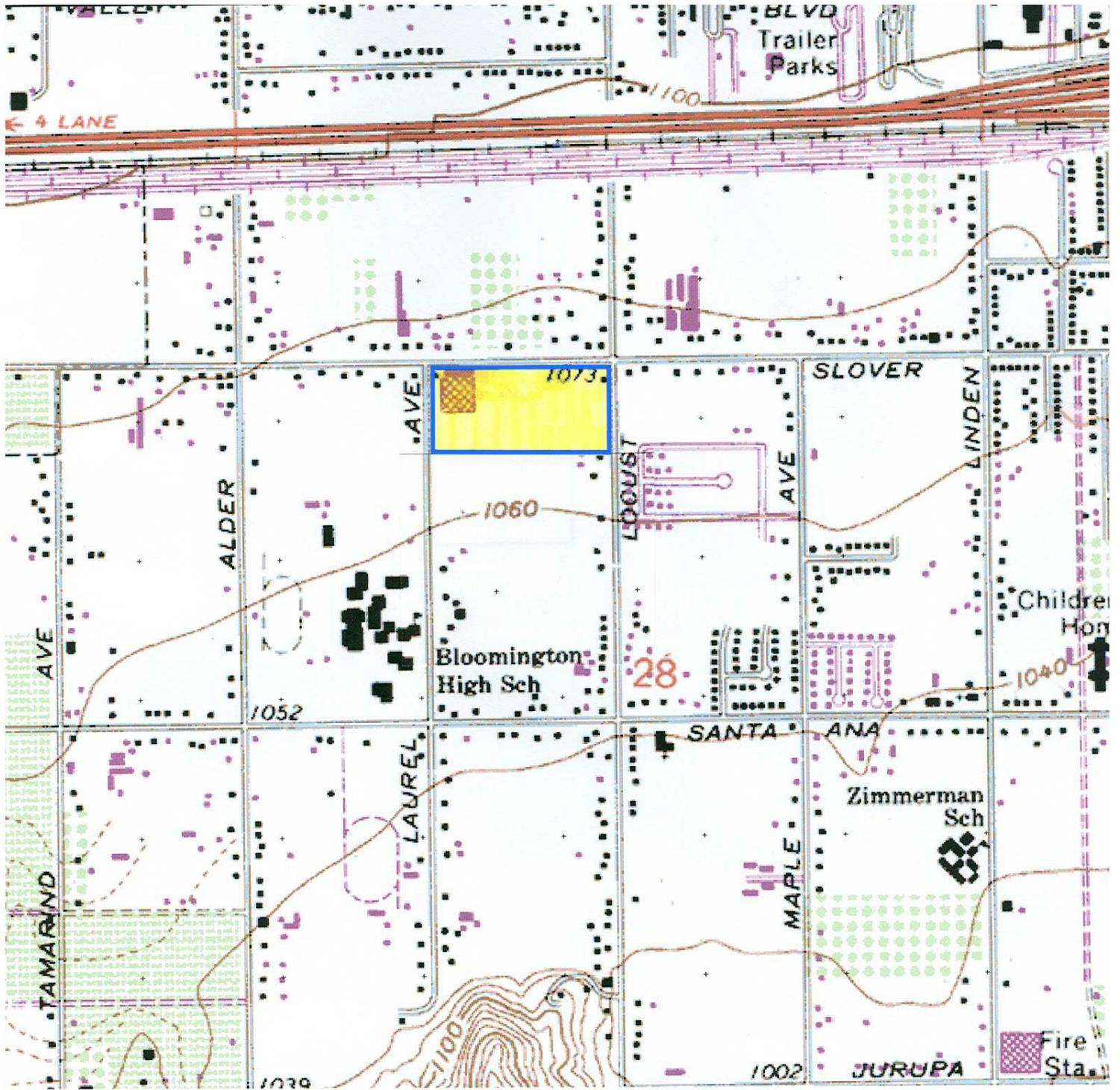
9.0 FIGURES



= 1 mile

 ↑
N

Figure 1. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 50%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



= 100 meters

 ↑
N

Figure 2. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 200%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



Figure 3. Photograph of the eastern end of the study area as viewed (looking south) from near the northeastern corner of the site. House (background) is on the 1.02 acre residential parcel, also a portion of the study site.



Figure 4. Photograph of the southern edge of the site (wall at right is the site boundary) as viewed from near the southwestern corner of the site. Various trees and structures can be seen in the background center – part of the study site on the 1.02 acre residential parcel.



Figure 5. Photograph of view across open fields on the study site looking toward the east northeast from near the southwestern corner of the site.



Figure 6. Photograph of the western portion of the site (Laurel Avenue on the left) as viewed looking north from near the southwestern corner of the site.



Figure 7. Photograph of the 1.02 acre residential lot. View looks west northwest at the front of the existing residence and landscaping from near the southeastern corner of the site.



Figure 8. Photograph of the 1.02 acre residential lot. View looks west from the front of the existing residence and landscaping from the northeastern corner of this residential lot.



Figure 9. Photograph of a portion (immediately adjacent to the existing home) of the back yard of the 1.02 acre residential lot. View looks southeast from a fence line on the northern edge of this lot. Note the landscaping and irrigated lawn.



Figure 10. Photograph of a western portion of the 1.02 acre residential lot as viewed from the western edge of the lot. This view is representative of site conditions with numerous cages and facilities used in this poultry farming operation.



Figure 11. Photograph of a western portion of the 1.02 acre residential lot as viewed from the western edge of the lot. This view is also representative of site conditions with numerous cages and facilities used in this poultry farming operation.



Figure 12. Photograph of a discarded couch on the central southern portion of the site. This object may not only protect ground squirrels and their burrows below, but can also be used as a potential perch for Burrowing Owl. Such structures were regularly checked during survey.



Figure 13. Photograph of a dumped soil mound on the southwestern site. This particular mound featured bird guano (white splotches) and two older and bleached Burrowing Owl pellets (arrow). The soil mound, elevated above the site, presents a perch for many predatory birds.



Figure 14. Close photograph of Burrowing Owl pellets (arrows) seen in Figure 13 with a coin (US quarter dollar) for scale.

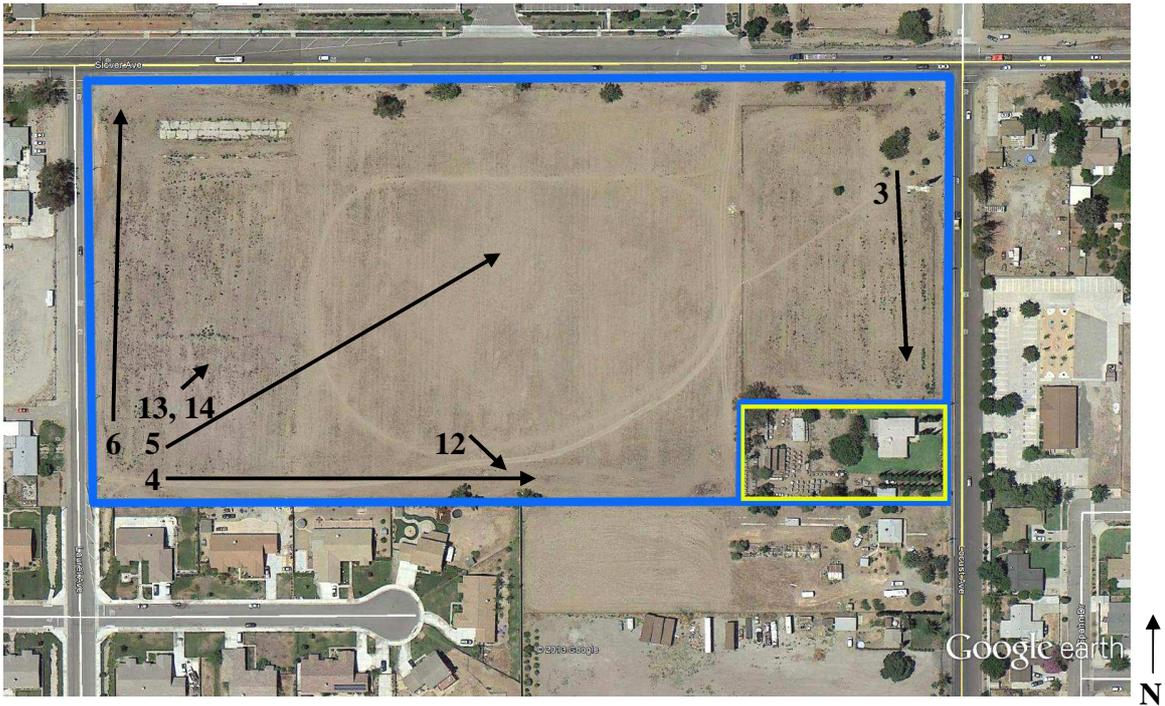


Figure 15. Approximate locations around study site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-6 and 11-14). One-acre residential lot on the southeastern portion of the site is outlined in Yellow.

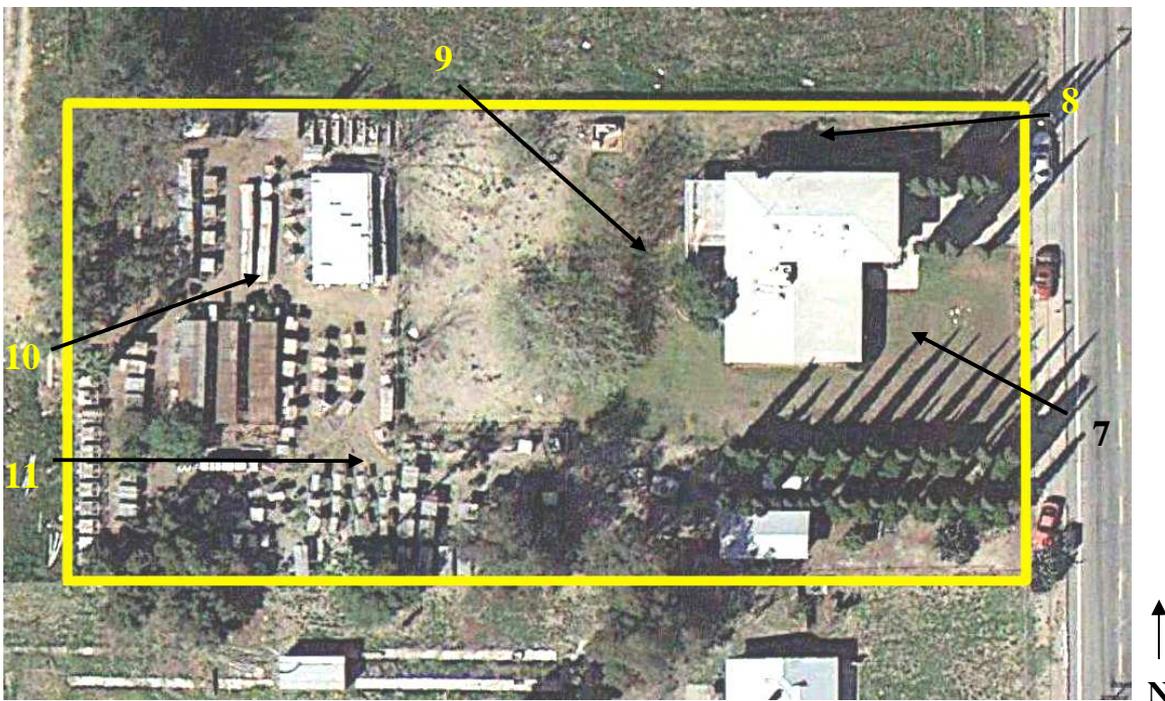


Figure 16. Approximate locations around southeastern (residential lot) site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 7-11).

10.0 APPENDIX

Plant species encountered

Vertebrate species encountered

Distribution (coordinates) of rubble piles and/or ground squirrels examined for Burrowing Owl

Distribution (map) of rubble piles and/or ground squirrels examined for Burrowing Owl: Appendix Figure 1

Site Plan provided by client

Field notes

Table A1. Plant species encountered on the survey site (Osborne 2004, 2004a, 2013, 2014 and current).

FAMILY and COMMON NAME	Species
AMERANTHACEAE	
tumbleweed	<i>Amaranthus albus</i>
ASTERACEAE	
annual bur ragweed	<i>Ambrosia acanthicarpa</i>
common pineapple weed	<i>Chamomilla suaveolens</i>
flax-leaved horseweed	<i>Conyza bonariensis</i>
horseweed	<i>Conyza canadensis</i>
sunflower	<i>Helianthus annua</i>
telegraphweed	<i>Heterotheca grandiflora</i>
prickly lettuce	<i>Lactuca serriola</i>
common groundsel	<i>Senecio vulgaris</i>
common sow-thistle	<i>Sonchus oleraceus</i>
golden crownbeard	<i>Verbesina encelioides</i>
BORAGINACEAE	
Rancher's fiddleneck	<i>Amsinkia intermedia</i>
BRASSICACEAE	
shortpod mustard	<i>Hirschfeldia incana</i>
London rocket	<i>Sisymbrium irio</i>
CHENOPODIACEAE	
red saltbush	<i>Atriplex rosea</i>
lamb's quarters	<i>Chenopodium album</i>
Kochia	<i>Kochia scoparia</i>
russion thistle	<i>Salsola tragus</i>
FABACEAE	
miniature lupine	<i>Lupinus bicolor</i>
alfalfa	<i>Medicago sativa</i>
GERANIACEAE	
filaree	<i>Erodium cicutarium</i>
MALVACEAE	
cheeseweed	<i>Malva parviflora</i>
OLEACEAE	
Olive	<i>Olea europa</i>
POACEAE	
foxtail chess/red brome	<i>Bromus madritensis</i>
Bermuda grass	<i>Cynodon dactylon</i>
Mediterranean barley	<i>Hordeum murinum</i>
Shismus	<i>Schismus barbatus</i>

bur bristlegrass	<i>Setaria verticillata</i>
SOLANACEAE	
Jimson weed	<i>Datura wrightii</i>
tree tobacco	<i>Nicotiana glouca</i>
nightshade	<i>Solanum duglasi</i>
ZYGOPHYLLACEAE	
puncture vine	<i>Tribulus terrestris</i>

Table A2. Vertebrate species (or sign) encountered on the survey site.

Common name	Species
Birds	
*Burrowing owl	<i>Athene cunicularia</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Anna's hummingbird	<i>Calypte anna</i>
House finch	<i>Carpodacus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Rock dove	<i>Columbia livia</i>
American crow	<i>Corvus brachyrhynchos</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
American Kestrel	<i>Falco sparverius</i>
Song sparrow	<i>Melospiza melodia</i>
Northern mockingbird	<i>Mimus polyglottos</i>
House sparrow	<i>Passer domesticus</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Black phoebe	<i>Sayornis nigricans</i>
Say's phoebe	<i>Sayornis saya</i>
Eurasian Collared-dove	<i>Streptopelia decaocto</i>
Western meadowlark	<i>Sturnella neglecta</i>
European starling	<i>Sturnus vulgaris</i>
Western kingbird	<i>Tyrannus verticalis</i>
Cassin's kingbird	<i>Tyrannus vociferans</i>
Morning dove	<i>Zenaida macroura</i>
White-crowned sparrow	<i>Zonotrichia atricapilla</i>
Mammals	
domestic dog	<i>Canis familiaris</i>
horse	<i>Equus caballus</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Botta's pocket gopher	<i>Thomomys bottae</i>

Reptiles

Gopher snake	<i>Pituolphis catenifer</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
Side-blotched lizard	<i>Uta stansburiana</i>

* Presence in previous winter indicated by old sign.

Table A3. Location of Ground Squirrel burrows, soil cavities, and wood/refuse piles found on the subject site. Latitude and Longitude for selected burrows is indicated decimal degrees. These location estimates are approximate, usually with at least 16 foot error in each dimension.

Description	Latitude N	Longitude W
Rubble pile	34.06264°	117.41016°
Rubble pile	34.06188°	117.41058°
Rubble pile	34.06141°	117.41071°
Rubble pile	34.06146°	117.41193°
Rubble pile	34.06146°	117.41210°
Soil pile with burrow	34.06164°	117.41344°
Soil pile with pellets and guano	34.06174°	117.41321°
Rubble pile	34.06256°	117.41063°



Appendix Figure 1. Approximate locations around survey site of ground squirrel burrows and other structures (rubble or refuse piles) with potential to harbor Burrowing Owl (red dots).



April 12, 2017

JM Realty Group, Inc.
3535 Inland Empire Blvd.
Ontario, CA 91764
C/O Ken Osborne
Via e-mail: euproserpinus@msn.com

Subject: Results of a Nesting Raptor Survey on an approximately 17-acre Site in Bloomington, California

Dear Ken,

As requested, a nesting raptor survey was conducted on the proposed development site in Bloomington, California to determine if the site is currently being used by nesting raptors or if the site has the potential to support nesting raptors. This report will also discuss the suitability of the site as raptor foraging habitat and general nesting bird habitat. This survey was conducted to ensure that development of the site will not violate any federal laws (Migratory Bird Treaty Act) or Department of Fish and Wildlife codes (3500, 3503) that protect nesting birds and that any loss of raptor nesting habitat is adequately addressed during the CEQA process.

Site location

The site is located in the City of Bloomington in San Bernardino County. Generally the site is located east of Interstate 15, South of Interstate 10 and north of Highway 60 in the southwestern area of San Bernardino County (Figure 1). More specifically, it is located at the southwest corner of the intersection of Slover Avenue and Locust Avenue (Figure 2). Surrounding land use includes a commercial/light industrial warehouse complex to the north and residential to the south, west and east.

Methods

The site was surveyed by raptor biologist Scott Thomas on April 6, 2017 between the hours of 0930 and 1100. Temperatures were mild (73°F) with partially cloudy skies and winds from 1-3 mph. The entire site was surveyed by walking 50-foot transects from the northwest corner to the southeastern corner. The biologist searched the site and surrounding areas for use by raptors and all nests observed were monitored for bird activity. All birds detected during the survey were noted and photos were taken for reference (Attachment 1). Access to a portion of the 17 acre site was limited by a residence with dogs. This area was surveyed only with binoculars from outside the fence. Visibility was somewhat limited, however this did not prevent detection of raptor nests.

Figure 1. Survey Area on the Fontana, CA USGS Topographic Map

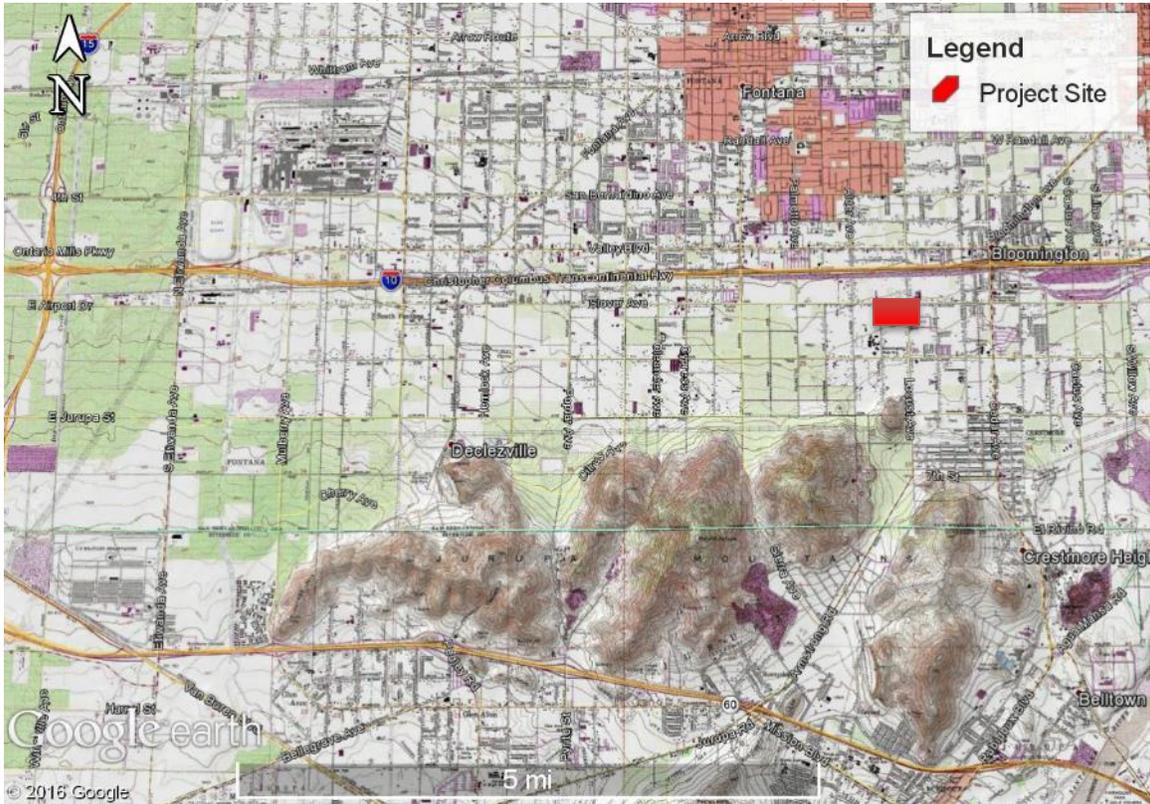


Figure 2. Survey Area (Google Earth 2016)



Results

Until recently, Bloomington was a fairly rural community with a patch work of fallow fields, agricultural fields and open lands interspersed with large-lot residences. In the past decade, there has been an increase in both residential and commercial/light industrial developments in this area as well as the region as a whole. This increase in development has decreased available foraging habitat for many raptors, however some more common species are still able to thrive in a more urbanized environment including red-tailed hawks (*Buteo jamaicensis*), Cooper's hawks (*Accipiter cooperi*), American kestrels (*Falco sparverius*) and barn owls (*Tyto alba*). In many cases, the remaining vacant lots and fields in areas such as Bloomington can support these species; however, no raptors were seen on or immediately adjacent to the property. Small mammal burrows were observed on the property however, they were sparse. It is likely that the repeated disking of the field has impacted the rodent population on this site significantly as well as use of rodenticides by neighboring housing and commercial development.

The majority of the parcel is comprised of non-native grassland that has been heavily disturbed annually for weed abatement and fuel reduction. Dominant species include various non-native grasses including wild oats (*Avena barbata*)*, chess grass (*Bromus* sp.)*, foxtail (*Hordeum* sp.)* as well as hedge mustard (*Sisymbrium orientale*)* and cheeseweed (*Malva parviflora*)*.

One American crow (*Corvus brachyrhynchos*) nest was observed along the southern boundary within the fenced residential area (Figure 2). The nest had young nestlings and is expected to fledge in approximately 1 month (mid-May). During good years, crows may produce two broods.

Bird activity during the survey was high and courting displays were observed. Other birds observed on the site included house finch (*Haemorphous mexicanus*), western kingbird (*Tyrannus verticalis*), lesser goldfinch (*Spinus psaltria*), hooded oriole (*Icterus cucullatus*) Anna's hummingbird (*Calypte anna*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), house sparrow (*Passer domesticus*)*, and European starling (*Sternus vulgaris*)*. It is likely that several of these birds will nest within the landscaping within the residential portion of the project site. As this site is not expected to be graded or demolished in the immediate future, little effort was made to identify the location of passerine nests as they build nests and fledge young quickly, making the validity of the survey very short.

Conclusion

No raptors were found to be nesting within the subject property and no raptors were observed in the immediate area. It is likely that common resident raptors such as red-tailed hawks, kestrels and barn owls use this site for foraging along with other vacant lots in the area, however it is unlikely this is a primary hunting area for resident adults. It is more likely that this site will be used by juveniles dispersing from their nests as well as winter migrants as they pass through the area.

* Non-native species

The lack of raptors observed on the site and little evidence of prey makes it is unlikely this parcel is a significant raptor foraging area.

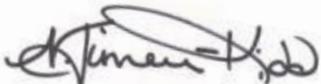
RECOMMENDATIONS

No raptors were observed nesting within this site. An active crow nest is present and is expected to fledge in mid-May. Prior to any demolition, tree removal, or grading it is recommended that a pre-work clearance survey for nesting birds be conducted within 7 days of the construction activity. If active nests are found during the clearance survey, appropriate buffers will be required to avoid violating state and federal laws protecting nesting birds.

Birds are known to nest year round in southern California, particularly during mild years, however the peak breeding season is generally February-August.

Should you have any questions regarding this report, please do not hesitate to contact me at (949) 632-2756.

Sincerely,

A handwritten signature in black ink, appearing to read "Nina Jimerson-Kidd". The signature is fluid and cursive, with a large initial "N" and "J".

Nina Jimerson-Kidd
Wildlife biologist

Site Photos

Photo 1. Facing west from eastern boundary



Photo 2. Looking northeast from southern boundary



Photo 3. Looking south from northeast corner of parcel at residence



Photo 4. Looking south at Crow nest tree



Information Summary

Report preparation date: June 18, 2015; Revised May 3, 2017.

Fieldwork performed: March 11, 22, 23, 25, May 2, 24, June 18, 2015

Title: Nesting Season Burrowing Owl Survey on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California.

Project site location: South of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, CA - Fontana, U.S.G.S.-75.' Quadrangle, Township 1 S., Range 5 W., Section 28.

Assessor's Parcel Numbers: 256-041-001, -002, -003, -047, and -048

Case Number: P201400241

Owner/Applicant: JM Realty Group, Inc., 3535 Inland Empire Blvd., Ontario, CA 91764

Principle Investigator: Ken H. Osborne, Osborne Biological Consulting
6675 Avenue Juan Diaz, Riverside, CA 92509.

Report Summary

(Burrowing Owl): Burrowing Owl is absent from the site. A 16.32-acre portion of the study site presents open fields of disturbed annual grassland and forbs, and the presence of a ground squirrel population with burrows. Piles of refuse and soil present on the site provide either burrows or other soil cavities suitable for Burrowing Owl. Burrowing Owl was not observed on the site during the course of this Nesting Season Survey. I conclude that Burrowing Owl has is not present on the site. The 1.02 acre residential lot on the site, with its trees, home, and numerous dogs, is not suitable habitat for Burrowing Owl

General biology: General biology for the site, including surveys for Delhi sands Flower-loving Fly, has been presented earlier this year (Osborne 2015).

Name and contact of Report Preparer: Ken H. Osborne (951) 360-6461

**Nesting Season Survey for Burrowing Owl on a 17.34-acre site
(Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048,
Bloomington, San Bernardino County, California**

Prepared for:

**JM Realty Group, Inc.
3535 Inland Empire Blvd.
Ontario, CA 91764**

I hereby certify that the statements furnished above and in the attached exhibits present that data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



**Kendall H. Osborne
6675 Avenue Juan Diaz
Riverside, CA 92509**

revised
5/5/2017
Date

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SUMMARY

JM Realty Group, Inc., has requested a Nesting Season survey for Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel No., indicated by the client to be 256-041-001, -002, -003, -047, and -048, at Bloomington, San Bernardino County, California. This survey was undertaken on March 11, 22, 23, 25, May 2, 24, June 18, 2015. A comprehensive Biological study of the site was prepared earlier this year (Osborne 2015).

Burrowing Owl: Burrowing Owl was not observed in the course of this nesting (breeding) season survey. It is concluded that Burrowing Owl is absent from the site. Site conditions were previously determined to be suitable for Burrowing Owl. Ground squirrels and their burrows appear on the site. A 1.02 acre residential parcel on the site is unsuitable for Burrowing Owl (Osborne 2015). The 16.32 acre portion of the site with open fields was surveyed for Burrowing Owl during the nesting season for this species.

1.0 INTRODUCTION

This report presents the methods and results of a nesting season Burrowing Owl (*Athene cunicularia*) survey, on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, San Bernardino County, California.

Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, 7.5' USGS quadrangle. Figure 2 shows the site at 200% scale on this quadrangle.

2.0 SITE DISPOSITION

The subject site is located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington. Specifically, the site is located on the Fontana U.S.G.S.-7.5' quadrangle, in the northwestern portion of Section 28, Township 1 S., Range 5 W.

3.0 METHODS

Habitat conditions were previously evaluated for Burrowing Owl on the entire 17.34 acres of the site (Osborne 2015). The nesting season Burrowing Owl survey was conducted on 16.32 acres of suitable owl habitat, with the remaining 1.02 areas determined as unsuitable for Burrowing Owl (Osborne 2015). Surveys were conducted on March 11, 22, 23, 25, May 2, 24, and June 18, 2015. Figures 3 – 8 are photographs representing various views of the study site and other objects of interest on the site. Figure 9 shows the locations on the site from which photographs were taken.

Methods for this burrowing owl study follow the survey protocol recommended by the California Department of Fish and Game (CDFG 2012). In the course of previous studies (Osborne 2015) and at the outset of this investigation, open fields on the subject site were

systematically searched for ground squirrel burrows, or any other soil cavities or structures suitable for Burrowing Owl. This search was conducted by walking the perimeter of the site, walking the fence lines, and walking regular, parallel transects through the site (transects spaced approximately 15 meters). During this phase, any burrows found were carefully inspected for evidence of Burrowing Owl (such as pellets, plumage, insect parts, tracks, whitewash) or evidence of inactivity (such as undisturbed spider webs). Animal burrows and other structures suitable for Burrowing Owl were mapped using GPS. No Burrowing Owl was observed in the course of this burrow survey.

Following identification of animal burrows or soil/rubble cavities suitable for Burrowing Owl, a focused survey (nesting season Burrowing Owl) was undertaken on the site. These surveys were conducted by Kendall Osborne. These survey efforts were generally conducted within two hours of sunrise. Table 1 provides a schedule and site weather conditions during surveys of the subject property. At least one hour of survey effort was applied on the site on each of three site visits, May 2, 24, June 18, 2015.

Table 1. Nesting Season Burrowing Owl Focused Survey Schedule and Site Weather Conditions (2015).

Date and area	Hours	Weather Conditions
11 March	1730-1930	100% clouds, 70° F, calm
22 March	0700-0815	clear, 67° F, winds 2-4 mph
23 March	0710-0810	clear, 54° F, calm
25 March	0700-0800	clear, 59° F, calm
2 May	0630-0747	clear, 64-70° F, calm: Sunrise 0603 hrs
24 May	0645-0745	overcast, 61-63° F, calm: Sunrise 0546 hrs
18 June	0544-0644	clear, 62-67° F, calm: Sunrise 0542 hrs

4.0 RESULTS

Figures 3 – 8 are photographs representing landscapes and general aspects of the subject property. Figure 9 provides an aerial perspective and key as to where on the site these photographs were taken.

Burrowing Owl was not observed on the site in the course of this nesting season survey. Furthermore, no sign of Burrowing Owl, such as pellets, plumage, insect parts, tracks, whitewash was observed on the site during the breeding season, but was observed before the breeding season on March 11, 2015.

Habitat conditions on the southeastern, approximately one-acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures.

No special status animal species (species of concern) were encountered in the course of this survey or previous studies (Osborne 2015). Animals previously observed on the subject site are listed in the general biological report (Osborne 2015). Animals observed in the course of this nesting season Burrowing Owl survey are listed in the appendix.

5.0 EXISTING ENVIRONMENT

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project). The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet. Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Dominant plants are rancher's fiddleneck (*Amsinkia intermedia*), puncture vine (*Tribulus terrestris*), cheeseweed (*Malva parviflora*), summer mustard (*Hirschfeldia incana*), and Spanish clover (*Lotus purshianus*). *Eucalyptus* windbreaks, previously along the northern edge of the site, were recently eliminated by the widening of Slover Avenue. Remnant trees such as olive and Peruvian pepper are found on the southern site boundary, additional *Eucalyptus* adjacent to the residential lot on the southeastern corner of the site. The residential lot itself supports several various exotic shade trees.

6.0 DISCUSSION

Although no Burrowing Owl pellets, guano attributable to Burrowing Owl, or other Burrowing Owl sign (such as feathers) was found on the site, abundant guano at one of the soil mounds on the southwestern portion of the site appeared to be likely accumulated from other common, insectivorous birds that were frequently observed to perch on these mounds. These birds included Say's Pheobe, American Kestrel, and Cassin's Kingbird.

It is my conclusion that Burrowing Owl is currently absent from the site. Burrowing Owl continues to be absent from this site during the course of both winter (Osborne 2015) and nesting season surveys.

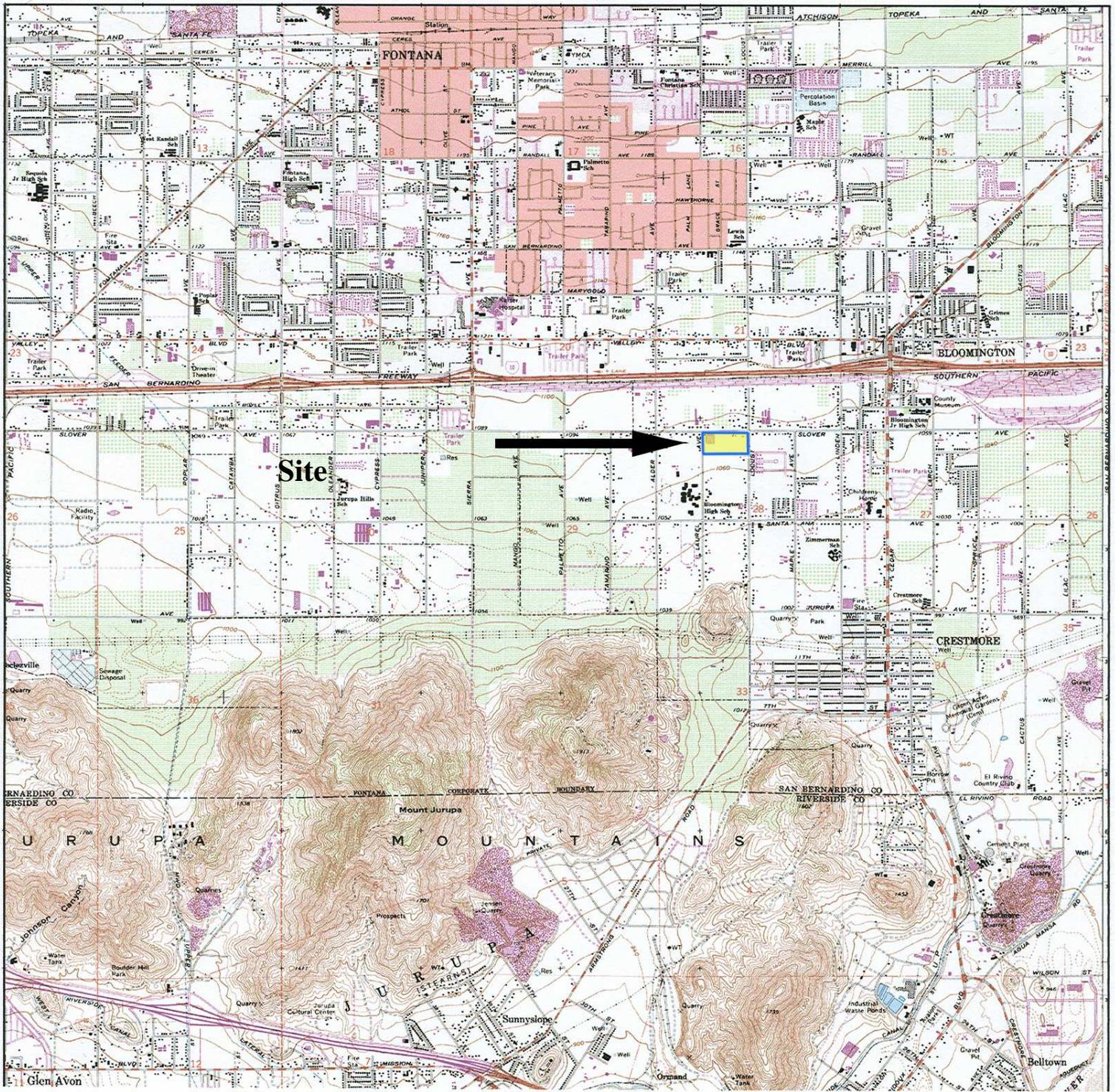
7.0 REFERENCES

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

Haug E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl (*Spcoyto cucularia*), In The Birds of North America, No. 61 (A Poole and F. Gill Eds.). Philadelphia: The Academy of Natural Sciences, Washington, D. C.: The American Ornithologists' Union.

Osborne, K. H. 2015. General Biology; Including Habitat Assessments and Surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cucularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California. Submitted to San Bernardino County Planning, April 2015.

8.0 FIGURES



_____ = 1 mile ↑ N

Figure 1. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 50%. 17.34-acre subject site is outlined in blue and highlighted in yellow.

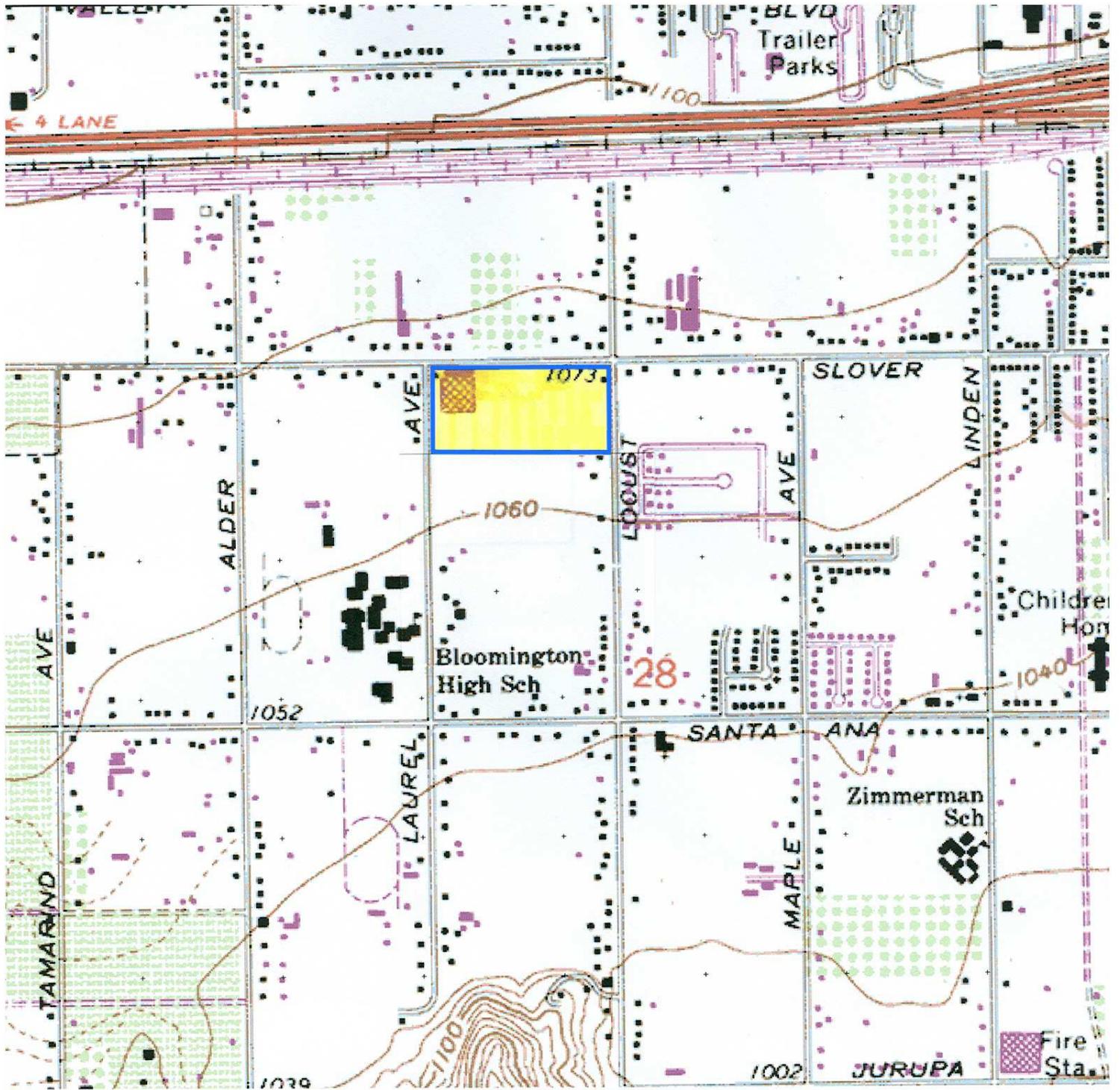


Figure 2. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 200%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



Figure 3. Photograph of the southwestern portion of open fields on the study area as viewed (looking east) from near the western edge of the site. Wall on the background (right) represents the southern edge of the site.



Figure 4. Photograph of open fields across the site as viewed (looking to the northeast) from near the southwestern corner of the site.



Figure 5. Photograph of view across open fields on the northeastern study site looking toward the southwest from a northeastern portion of the site.



Figure 6. Photograph of the northern portions of the site (Slover Avenue on the right) as viewed looking west northwest across the site from a northeastern portion of the site.



Figure 7. Photograph of a portion (immediately adjacent to the existing home) of the back yard of the 1.02 acre residential lot (a portion of the site not suitable for Burrowing Owl. View looks southeast from a fence line on the northern edge of this lot.



Figure 8. Photograph of the 1.02 acre residential lot. View looks west from the front of the existing residence and landscaping from the northeastern corner of this residential lot. This area is not suitable habitat for Burrowing Owl and was not surveyed.

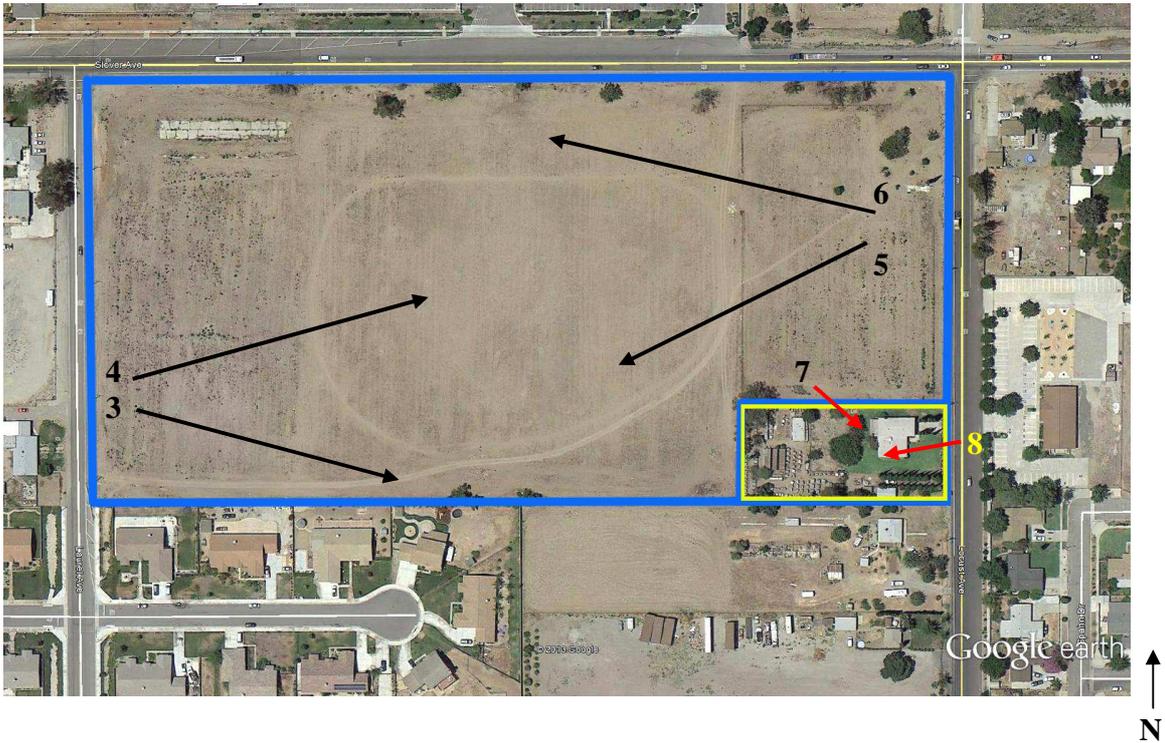


Figure 9. Approximate locations around study site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-8). One-acre residential lot on the southeastern portion of the site is outlined in Yellow (and not surveyed for Burrowing Owl).

9.0 APPENDIX

Vertebrate species encountered

Distribution (coordinates) of rubble piles and/or ground squirrels examined for Burrowing Owl

Distribution (map) of rubble piles and/or ground squirrels examined for Burrowing Owl: Appendix Figure 1

Field notes

Table A1. Vertebrate species (or sign) encountered on the survey site (summer 2015).

Common name	<i>Species</i>
Birds	
Red-tailed hawk	<i>Buteo jamaicensis</i>
Anna's hummingbird	<i>Calypte anna</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
House finch	<i>Carpodacus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Rock dove	<i>Columbia livia</i>
American crow	<i>Corvus brachyrhynchos</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
American Kestrel	<i>Falco sparverius</i>
Northern mockingbird	<i>Mimus polyglottos</i>
House sparrow	<i>Passer domesticus</i>
Say's phoebe	<i>Sayornis saya</i>
Eurasian Collared-dove	<i>Streptopelis decaocto</i>
Cassin's kingbird	<i>Tyrannus vociferans</i>
Morning dove	<i>Zenaida macroura</i>
Mammals	
horse	<i>Equus caballus</i>
Domestic cat	<i>Felis felis</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
Unidentified Bat	

Table A2. Location of Ground Squirrel burrows, soil cavities, and wood/refuse piles found on the subject site. Latitude and Longitude for selected burrows is indicated decimal degrees. These location estimates are approximate, usually with at least 16 foot error in each dimension.

Description	Latitude N	Longitude W
Rubble pile	34.06264°	-117.41016°
Rubble pile	34.06188°	-117.41058°
Rubble pile	34.06141°	-117.41071°
Rubble pile	34.06146°	-117.41193°
Rubble pile	34.06146°	-117.41210°
Soil pile with burrow	34.06164°	-117.41344°
Soil pile	34.06174°	-117.41321°
burrows concrete rubble complex	34.06255°	-117.41064°
burrow fence line	34.06208°	-117.41060°
burrow fence line with webs	34.06202°	-117.41059°
burrow fence line	34.06252°	-117.41061°
burrow fence line	34.06246°	-117.41061°
burrow with webs	34.06158°	-117.41074°
burrow	34.06153°	-117.41071°
wood refuse	34.06138°	-117.41073°
burrow	34.06172°	-117.41261°
burrow	34.06171°	-117.41259°
burrows	34.06181°	-117.41256°
mattress (no burrow)	34.06611°	-117.41210°



Appendix Figure 1. Approximate locations around survey site of ground squirrel burrows and other structures (rubble or refuse piles) with potential to harbor Burrowing Owl (red dots). Burrows and structures in close proximity may appear under one dot.

Information Summary

Report preparation date: April 1, 2015

Fieldwork performed: March 11-25, 2015

Title: General Biology; Including Habitat Assessments and Surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California.

Project site location: South of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, CA - Fontana, U.S.G.S.-75.' Quadrangle, Township 1 S., Range 5 W., Section 28.

Assessor's Parcel Numbers: 256-041-001, -002, -003, -047, and -048

Case Number: P201400241

Owner/Applicant: JM Realty Group, Inc., 3535 Inland Empire Blvd., Ontario, CA 91764

Principle Investigator: Ken H. Osborne, Osborne Biological Consulting
6675 Avenue Juan Diaz, Riverside, CA 92509.

Report Summary

(Delhi Sands Flower-loving Fly): A portion of the study site consists of a 1.02 acre residential parcel with associated home, landscaping, driveways, with portions of the site used in long established poultry/egg production. Lands so developed, managed or landscaped are *Unsuitable* for DSF. I conclude the subject property has no potential to support a population of DSF. The DSF has been determined to be absent on the remaining 16.32-acre portion of the study site over the course of recent focused surveys for this species (Osborne 2014).

(Burrowing Owl): A 16.32-acre portion of the study site presents open fields of disturbed annual grassland and forbs, and the presence of a ground squirrel population with burrows. Piles of refuse and soil dumpings present on the site provide either burrows or other soil cavities suitable for Burrowing Owl. Burrowing Owl pellets, quano, and an insect part were found on one of the soil piles. Burrowing Owl was not observed on the site during the course of this investigation. I conclude that Burrowing Owl has recently been present on the site, likely as over wintering individuals, but is not currently present on the site. The 1.02 acre residential lot on the site, with its trees, home, and numerous dogs, is not suitable habitat for Burrowing Owl

General biology: The history of disturbance (annual disking) on the site, and disturbed condition of the site likely eliminate potential for narrow endemic, rare, or

endangered plant species. No rare plant species has been found on the site in the course of years of studies.

There are no riparian or riverine habitats on the site. There are no potential jurisdictional waters. No vernal pool exists on the site.

Name and contact of Report Preparer: Ken H. Osborne (951) 360-6461

Burrowing Owl: Habitat for Burrowing Owl, as well as evidence of recent Burrowing Owl presence, were found on a 16.32 acre portion of the site. Burrowing Owl was not found in the course of the study and is presumed to be currently absent from the site.

Focused survey for Burrowing Owl: Results of the Burrowing Owl Survey are negative.

Rare, Endangered, or Narrow Endemic Plants: As highly disturbed (annually disked) and occupied predominantly by exotic grasses and forbs, there is little potential for occurrence of rare plant species such as rare, endangered, or narrow endemic species. There are no species of rare, endangered, or narrow endemic plants on the site.

Oak Woodland and Coastal Sage Scrub: Oak Woodland and Coastal Sage Scrub communities do not occur on the site.

Riparian, Wetland, and Vernal Pool: There are no riparian, riverine, wetland, or vernal pool habitats on the site. There are no potential jurisdictional waters/wetlands on-site.

**General Biology; Including Habitat Assessments and Surveys for Delhi
Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and
Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's
Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San
Bernardino County, California**

Prepared for:

**JM Realty Group, Inc.
3535 Inland Empire Blvd.
Ontario, CA 91764**

I hereby certify that the statements furnished above and in the attached exhibits present that data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



**Kendall H. Osborne
6675 Avenue Juan Diaz
Riverside, CA 92509**

4/20/2015
Date

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SUMMARY

JM Realty Group, Inc. has requested my preparation of a general Biological Study, including both Habitat assessments and surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel No., indicated by the client to be 256-041-001, -002, -003, -047, and -048, at Bloomington, San Bernardino County, California.

In order to assess the subject site for potential as habitat for these species, a field investigation was conducted on March 11-25, 2015. Notes were taken on vegetation communities and structure, as well as plant and animal species observed on the site, along with photographs of the subject site.

Delhi Sands Flower-loving Fly: The 1.02 acre residential parcel on the site was determined to represent unsuitable habitat conditions for the DSF. The DSF has been determined to be absent on the remaining 16.32-acre portion of the site over the course of recent focused surveys for this species (Osborne 2014).

Burrowing Owl: The site evaluation concluded positive for Burrowing Owl habitat. Ground squirrel and their burrows appear on the site. A 1.02 acre residential parcel on the site is unsuitable for Burrowing Owl. The 16.32 acre portion of the site with open fields was surveyed for Burrowing Owl. Evidence (Burrowing Owl pellets) of recent Burrowing Owl habitation of the site was found. As Burrowing Owl was not observed in the course of a non breeding season survey, it is concluded that Burrowing Owl is currently absent from the site.

This investigation found no potential for narrow endemic, rare, or endangered plant species. In addition, riparian or riverine habitats, vernal pools, or any other potential jurisdictional waters or wetlands have been found to be absent from the site. The investigation found small, partially developed parcels on land with abundant, disked annual vegetation, set in the larger context surrounding residential development.

1.0 INTRODUCTION

This report presents the methods and results of a general biological evaluation, and specifically a Habitat Assessment for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*, DSF) and Habitat Assessments and Surveys for Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-020, -001, -002, and -003), located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, San Bernardino County, California.

Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, 7.5' USGS quadrangle. Figure 2 shows the site at 200% scale on this quadrangle.

2.0 SITE DISPOSITION

The subject site is located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington. Specifically, the site is located on the Fontana U.S.G.S.-7.5' quadrangle, in the northwestern portion of Section 28, Township 1 S., Range 5 W.

3.0 METHODS

The initial field investigation of the site was conducted on March 11, 2015. Habitat conditions for the federally endangered Delhi Sands Flower-loving Fly were evaluated on a 1.02 acre southeastern portion of the site corresponding to a residence and associated parcel. Habitat conditions were evaluated for Burrowing Owl on the entire 17.34 acres of the site, and an owl survey initiated on 16.32 acres of suitable owl habitat. All non-cultivated plant species and animals were recorded. Consideration was given to presence of any potential drainages, wetlands, riparian habitat, and vernal pools. Additional site visits were undertaken March 22 – 25 in order to complete the focused survey for Burrowing Owl. Figures 3 – 14 are photographs representing various views of the study site and other objects of interest on the site. Figures 15 and 16 show the locations on the site from which photographs were taken.

3.1 Delhi Sands Flower-loving Fly

The DSF has been determined to be absent on the larger 16.32-acre portion of the site (Figure 15). A 1.02 acre portion of the site remained to be evaluated for DSF potential. On March 11, 2015, I visited this southeastern parcel of the study site in order to investigate habitat suitability for the DSF. I have reviewed soil maps covering the subject site, prepared by the California Department of Agriculture (Woodruff 1980). Satellite imagery covering the site, dating from 1993 to 2014 (Google Earth) was reviewed in order to gain an understanding of land use regimens in recent years. Photographs were taken of this approximately one acre portion of the site (Figures 7 – 11), along with field notes on vegetation and soil conditions. Reports of previous focused surveys for DSF (conducted on lands adjacent to the subject parcel) were reviewed (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014).

I examined the subject site to rate its potential to support DSF, the rating based on the following scale of 1 to 5, with 5 being the best quality and most suitable habitat in my judgment. The numerical rating was originally developed as a provision for fair, objective, mathematical derivation of mitigation rates.

1. Developed areas, non-Delhi sands soils with high clay, silt, and/or gravel content. Delhi sands extensively and deeply covered by dumping of exotic soils, rubble, trash, manure, or organic debris. *Unsuitable*.
2. Delhi sands are present but the soil characteristics include a predominance of exotic soils such as alluvial materials, or predominance of other foreign contamination as gravels, manure, or organic debris. Severe and frequent disturbance (such as a maintenance yard or high use roadbed). *Very Low Quality*.

3. Moderately contaminated Delhi sands. Delhi sands with moderate to high disturbance (such as annual disking). Sufficient Delhi Sands are present to prevent soil compaction (related to contamination by foreign soils). Some sandy soils exposed on the surface due to fossorial animal activity. *Low Quality*.
4. Abundant clean Delhi Sands with little or no foreign soils (such as alluvial material) present. Moderate abundance of exposed sands on the soil surface. Low vegetative cover. Evidence of moderate degree of fossorial animal activity by vertebrates and invertebrates. May represent high quality habitat with mild or superficial disturbance. *Moderate Quality*
5. Sand dune habitat with clean Delhi Sands. High abundance of exposed sands on the soil surface. Low vegetative cover. Evidence (soil surface often gives under foot) of high degree of fossorial animal activity by vertebrates and invertebrates. Sand associated plant and arthropod species may be abundant and vegetation species composition is often indicative of low disturbance. *High Quality*

It should be noted that habitat qualities often vary spatially within a site so that conditions on a site fall within a range of qualities. Further, overall habitat quality is affected by the overall habitat area on a site, such that very small areas diminish the overall habitat value of a site. Habitat conditions rated from *Very Low Quality* up to *High Quality*, are formally considered as representing *Suitable* conditions for the DSF. Use of this habitat rating system is somewhat subjective and best undertaken by a biologist who has extensive experience with *Rhaphiomidas* species and understanding of their biology and ecology. It must be noted that these ratings do not infer or imply actual occupancy by DSF, only relative potential to harbor the species, and relative conservation value of the land should DSF be found.

3.2 Burrowing Owl

Open fields on much of the subject site were systematically searched for ground squirrel burrows, or any other soil cavities or structures suitable for Burrowing Owl. This search was conducted by walking the perimeter of the site, walking the fence lines, and walking regular, parallel transects through the site (transects spaced approximately 15 meters).

To the extent necessary, methods for this burrowing owl study follow the survey protocol recommended by the Burrowing Owl Consortium (www2.ucsc.edu/scpbrg/owls.htm) (in relevant part):

“Phase I: Habitat Assessment

The first step in the survey process is to assess the presence of Burrowing Owl habitat on the project site including a 150-meter (approx. 500 ft.) buffer zone around the project boundary (Thomsen 1971, Martin 1973).

Burrowing Owl Habitat Description

Burrowing Owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of Burrowing Owl habitat: both natural and artificial burrows provide protection, shelter, and nests for Burrowing Owls (Henny and Blus 1981). Burrowing Owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing Owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable Burrowing Owl habitat can be verified at a site by an observation of at least one Burrowing Owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing Owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one Burrowing Owl has been observed occupying a burrow there within the last three years (Rich 1984).

The Phase II burrow survey is required if Burrowing Owl habitat occurs on the site. If Burrowing Owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary. A written report of the habitat assessment should be prepared (Phase IV), stating the reason(s) why the area is not Burrowing Owl habitat.

3.2.1 Phase I: Habitat Assessment

The preliminary site visit on March 11, 2015 was conducted to determine the need for an owl survey and to gain an understanding of the scope of any required survey. During this visit, potential Burrowing Owl habitat areas were assessed with respect to potential animal burrows or other soil cavities suitable for Burrowing Owl. Habitat conditions on the southeastern, 1.02 acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures.

3.2.2 Phase II: Burrow Survey

A burrow survey (search for ground squirrel burrows or other structures suitable for Burrowing Owl) was carried out during the site investigation on March 11, 2015. The site was systematically searched for any animal burrows or natural soil cavities that might support Burrowing Owl. During this phase, any burrows found were carefully inspected for evidence of Burrowing Owl (such as pellets, plumage, insect parts, tracks, whitewash) or evidence of inactivity (such as undisturbed spider webs). Animal burrows and other

structures suitable for Burrowing Owl were mapped using GPS. No Burrowing Owl was observed in the course of this site visit.

3.2.3 Phase III: Burrowing Owl Survey, Census and Mapping

Following identification of animal burrows or soil/rubble cavities suitable for Burrowing Owl, a focused survey (for non-nesting season Burrowing Owl) was undertaken on the site. These surveys were conducted by Kendall Osborne. For the purposes of these survey efforts, sunrise was considered to occur at approximately 0700 hours and sunset at approximately 1900 hours. Table 1 provides a schedule and site weather conditions during surveys of the subject property. At least one hour of survey effort was applied on the site on each of four site visits between March 11 and 25, 2015.

Table 1. Burrowing Owl Focused Survey Schedule and Site Weather Conditions.

Date and area	Hours	Weather Conditions
11 March	1730-1930	100% clouds, 70° F, calm
22 March	0700-0815	clear, 67° F, winds 2-4 mph
23 March	0710-0810	clear, 54° F, calm
25 March	0700-0800	clear, 59° F, calm

3.3 General Biology

Throughout the course of the habitat assessment and focused surveys, general notes were taken on vegetation communities and structure, as well as plant and animal species (or their sign) observed on the site, along with photographs of the subject site. Previous biological reports have been reviewed in order to further augment the biological profile of the site (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014).

4.0 RESULTS

Figures 3 – 14 are photographs of representative of landscapes and general aspects of the subject property. Figures 15 and 16 provide aerial perspectives and keys as to where on the site these photographs were taken.

This investigation determined that the subject property with disked fields currently supports annual grassland/forbland vegetation dominated by exotic forbs and grasses. A 1.02 acre residential lot is present on the southeastern corner of the site with associated exotic landscaping and poultry farming facilities.

4.1 Delhi Sands Flower-loving Fly

Department of Agriculture, Soil Conservation Service map (Woodruff 1980) indicates Delhi sands soils on the entire site. The southeastern corner of the site (1.02 acre lot) consists of a residential home with associated landscaping, driveways, with portions of the site used in long established poultry/egg production. The habitat evaluation for DSF involves this residential lot (Figures 15 and 16). The DSF has been determined to be absent on the remaining 16.32-

acre portion of the site over the course of recent focused surveys for this species (Osborne 2014).

The eastern half of the residential lot has a residence and associated irrigated lawns, landscaping, paved walks and driveways (Figures 7 to 9). The western half of the lot is used for poultry farming and has large numbers of poultry cages with clear access areas between (Figures 10 and 11). Absence of annual vegetation is indicative of herbicidal use for weed control in this area – confirmed by my interview with the resident, Mr. Mehefco. Aerial imagery in GoogleEarth clearly shows the land use in poultry farming goes back for at least ten years (Figure 16). Casual observations made of this site (adjacent to survey areas for DSF, (Osborne 2003a, 2003b, 2004, 2004a, 2013, and 2014) also had the site consistently used for poultry farming. Plant species normally associated with Delhi sands ecosystems do not occur on the site.

This lot is further set in the larger context of surrounding habitats developed and managed out of suitability for DSF, or recently documented not to support DSF (Osborne 2014). Adjacent land to the west and south of this lot are confirmed not to support the DSF. Lands east of this lot (east of Larurel Avenue) are developed. Developed residential lots and some undeveloped open lots are found south of the subject parcel. A site of one DSF observation (Osborne 2005), located north of the project area, has long since been developed to commercial/industrial use and can not support any DSF population. Figures 7 – 11 are photographs of representative conditions and general aspects of the residential lot being evaluated for DSF potential.

4.2 Burrowing Owl

Habitat conditions on the southeastern, approximately one-acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures. The remaining undeveloped portion of the site, considered as suitable habitat for Burrowing Owl, was formally surveyed. Figures 3-6 are photographs of representative of landscapes and general aspects of the area surveyed for Burrowing Owl.

Sign of Burrowing Owl (pellets, guano, and one large leg of a tenebrionid beetle, Figures 13 and 14) were found on the top of one soil mound (previously dumped) on the southwestern portion of the site. The Owl pellets appeared to be old and bleached. No Ground squirrel burrows or soil cavities were found on this particular soil mound, however, a ground squirrel burrow was located on another nearby soil mound – yet that burrow entrance had spider webs which remained undisturbed through the course of the survey.

Other insectivorous birds likely to leave guano on this prominence (especially American Kestrel, Say's Pheobe, and Cassin's Kingbird) were seen on a regular basis during the course of the survey. Burrowing Owl was not observed on the site during the course of this survey.

4.3 General Biology

Lists of plant and animal species encountered are presented in the appendix. No rare, endangered or endemic plant species has been found on the site in the course this study. No rare, threatened, endangered, or special animal species was found in the course of this study. There are no riparian or riverine habitats on the site. There are no potential jurisdictional waters. No vernal pool exists on the site.

5.0 EXISTING ENVIRONMENT

5.1. Adjacent lands

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project).

5.2 Topography

The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet.

5.3 Soils

Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

5.4 Plant Communities

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Figures 3 - 12 present representative views of the survey site and habitats. Figures 15 and 16 provide keys as to where on the site these (Figures 3-6, and Figures 7-12 respectively) photographs were taken. Table 1 (Appendix A) provides a list of plant species encountered on the survey site during the course of this and previous studies. No special status plant species (species of concern) were encountered in the course of this survey.

5.4.1 Annual grass/forbland

Dominant plants are rancher's fiddleneck (*Amsinkia intermedia*), puncture vine (*Tribulus terrestris*), cheeseweed (*Malva parviflora*), summer mustard (*Hirschfeldia incana*), and Spanish clover (*Lotus purshianus*). Annual vegetation cover is much reduced as compared to previous studies a decade ago (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014). Woolly buckwheat (*Eriogonum gracile*), a dominant in previous studies is now absent, and western ragweed (*Ambrosia acanthicarpa*) formerly abundant was largely restricted to a strip of undisked habitat adjacent to Locust Avenue in summer of 2014 (Osborne 2014).

5.4.2 Exotic woods/landscaped

Eucalyptus windbreaks, previously along the northern edge of the site, were recently eliminated by the widening of Slover Avenue (Osborne 2014). Remnant trees such as olive and Peruvian pepper are found on the southern site boundary, additional *Eucalyptus* adjacent to the residential lot on the southeastern corner of the site. The residential lot itself supports several various exotic shade trees.

5.5 Vertebrates

No special status animal species (species of concern) were encountered in the course of this survey or previous studies (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014).

5.6 Insect Community

During site visits for 2013 and 2014 (Osborne 2014), at least 51 insect species (counting only large and conspicuous insects) were either casually observed or collected. A list of most insect species observed is presented in the appendix (Table 2, Appendix A). The insect community encountered on the subject site was relatively species depauperate as compared to undisturbed ecological communities occurring on Delhi sands, but included Mydidae (*Nemomydas*), Apioceridae, Asilidae, Mutilidae, Chrysididae, Mymeliontidae, and Sphecidae. Indicators of potential high quality of DSF habitat found on the subject site during the course of the current survey include flies *Apiocera crysolasia*, *Apiocera convergens*, *Nemomydas pantherinus*, and the Mutilid (*Dasymutilla sackeni*). Full lists of insect species previously encountered on the site may be found in previous reports on surveys for DSF (Osborne 2003a, 2003b, 2004, 2004a, 2013, 2014).

6.0 DISCUSSION

6.1 Delhi Sands Flower-loving Fly

With respect to the approximately one acre residential lot at the southeastern corner of the site, not previously surveyed for DSF: The eastern half of this lot consisting of the residential home and associated landscaping, and driveway, is rated as *Unsuitable* for DSF. The eastern half of this lot, long in use for poultry farming has exposed soil substrates, and might have been rated according to our established rating system (methods) as *Very Low Quality* due to long presence of manure, or organic debris; and the severe and frequent foot traffic disturbance resulting from daily management, feeding, watering, and egg harvesting activities associated with such poultry farming. Given the largely developed surroundings for the site, and the adjacent context with lands repeatedly, and recently documented not to support any DSF population, I downgrade the status of this western portion of the subject one-acre lot to *Unsuitable* for DSF.

A single male DSF was located 250 meters north of the subject site (Osborne 2004b) but that area was promptly graded and paved, and during the course of summer 2013, graded again for a new commercial project. An additional small population of DSF was documented 1.4 km west of the subject site (Osborne 2000) on a sandy area associated with *Eucalyptus* windbreaks (on conditions

similar to windbreaks formerly on the subject site) and the habitat for that population was subsequently developed to commercial use. The prospects of DSF population occurrence on the subject site have been reduced over the last decade in the course of further habitat degradation, and extirpation of local DSF populations through the succession of recent commercial developments. An approximately 1.8 acres (northern and northwestern portion) of the subject site have been rendered *Unsuitable* for DSF by asphalt and gravel paving, associated with the widening of Slover Avenue during the winter of 2013 – 2014.

6.2 Burrowing Owl

Abundant quano at one of the soil mounds on the southwestern site are likely accumulated from other common, insectivorous birds on the site such as Say's Pheobe, American Kestrel, and Cassin's Kingbird. Old burrowing Owl pellets, and an insect leg, found on a soil mound on the southwestern site are indicative of recent, wintering, Burrowing Owl presence on the site. Although Burrowing Owl was found to be absent during the course of focused survey effort, due to the fact that this effort was conducted just prior to the Burrowing Owl nesting season, it is recommended that the site be examined prior (within thirty days) to initiation of project grading activities.

7.0 CONCLUSIONS and RECOMMENDATIONS

It is my conclusion that Delhi Sands Flower-loving is absent from the site. On the basis of my experience, conditions on the subject site are *Unsuitable* for DSF. Interim General Survey Guidelines for the DSF, suggested by the USFWS (1996) typically recommend protocol surveys for DSF where undeveloped Delhi sands occur. Although undeveloped Delhi sands are present on the subject property, I conclude onsite habitat conditions to be *Unsuitable* for DSF. I recommend that prior to any ground disturbance on this site, that the U. S. Fish and Wildlife Service (Carlsbad field office) be consulted with the findings of this site evaluation, and their concurrence with my findings be acknowledged. These considerations may be facilitated by a review of *Rhaphiomidas* biology presented in a recent listing petition (Osborne and Ballmer 2014) for another fly species.

It is my conclusion that Burrowing Owl is currently absent from the site. Although Burrowing Owl was found to be absent during the course of focused survey effort, it must be noted that this effort was conducted just prior to the Burrowing Owl nesting season. It is recommended that the site be examined prior (within thirty days) to initiation of project grading activities.

There is no potential for rare, narrow endemic or endangered plant species on the subject site. There are no potential jurisdictional waters on-site, and no vernal pool conditions on the site.

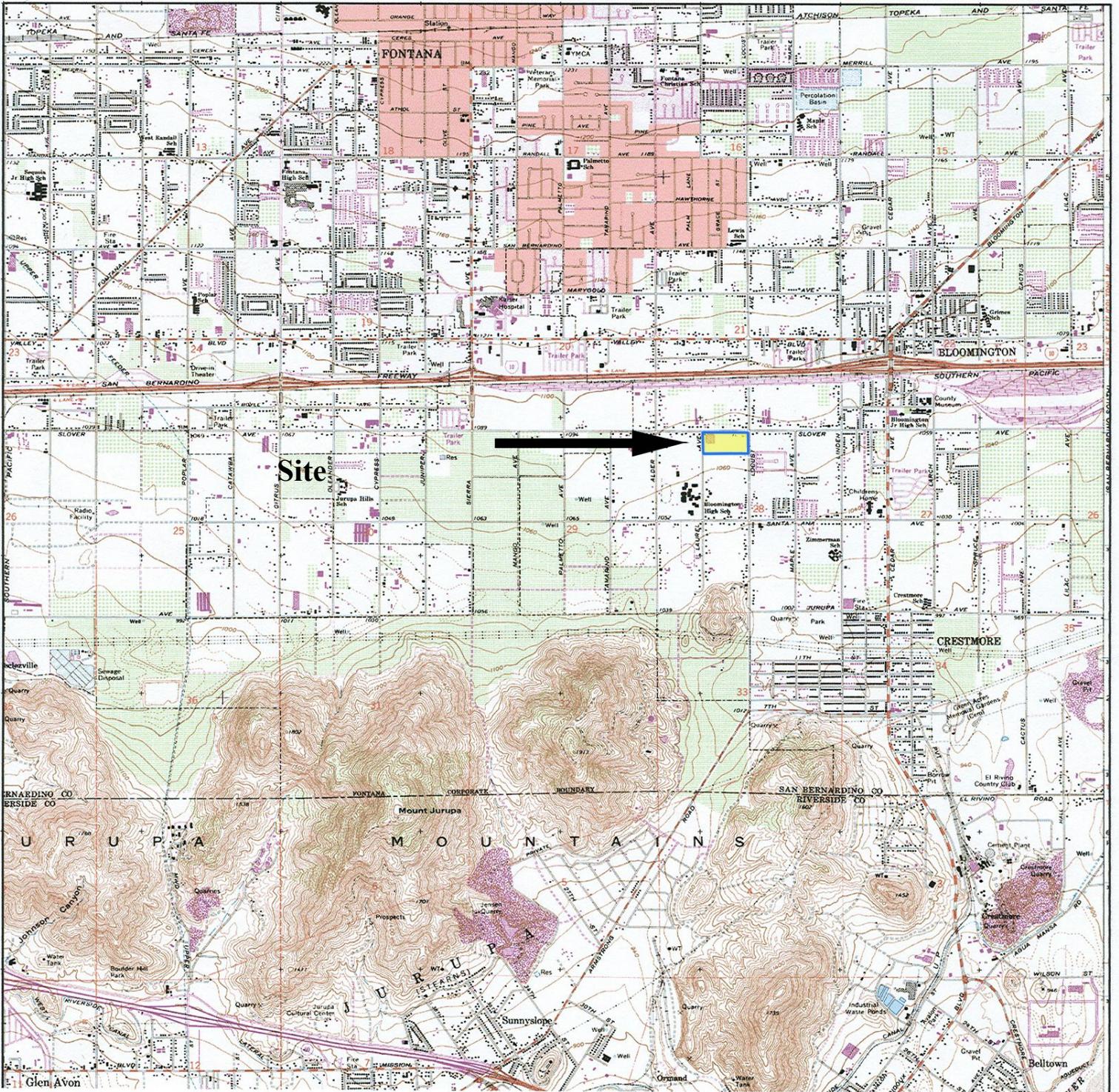
8.0 REFERENCES

Beauchamp M. R. 1986. A flora of San Diego County, California. Sweetwater River Press. National City, CA

- Haug E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl (*Spcoyto cunicularia*), In The Birds of North America, No. 61 (A Poole and F. Gill Eds.). Philadelphia: The Academy of Natural Sciences, Washington, D. C.: The American Ornithologists' Union.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Cazier, M.A. 1985. A revision of the North American flies belonging to the genus *Rhaphiomidas* (Diptera: Apioceridae). Bulletin of the American Museum of Natural History 182(2):181-263.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Kingsley, Kenneth J. 1996. Behavior of the Delhi Sands Flower-Loving Fly (Diptera: Mydidae), a Little Known Endangered Species. Ann. Entomol. Soc. Am. 89(6): 883-891.
- Kiyani Environmental Consultants. 1995. Principal Investigator's Annual Report, Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*) Studies at Colton, California. Prepared for San Bernardino County and U.S. Fish and Wildlife Service, Carlsbad, CA. 25+ pp.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, California.
- Osborne, K. H. 2000. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 125-acre portion of the Fontana Empire Business Center Site. Prepared for the City of Fontana. Submitted to USFWS, Carlsbad, October 2000.
- Osborne, K. H. 2003. *Delhi Sands Flower-loving fly Habitat Assessment for the Hermosa Cemetery, Colton*. Prepared for Inland Memorial Cremations and Burial. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. 2003a. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2003b. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2004. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.

- Osborne, K. H. 2004a. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004b. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 17-acre site in Bloomington, San Bernardino County, California. Prepared for Boruchin Enterprises. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2013. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2013.
- Osborne, K. H. 2014. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2014.
- Osborne, K. H., G. R. Ballmer, and T. McGill. 2003. *DSF Habitat Assessment for the Proposed Mary Vagle Conservation Area*. Prepared for the City of Fontana. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. and G. R. Ballmer. 2014. A Petition to the United States Department of the Interior, Fish and Wildlife Service, for emergency action to list an endangered species pursuant to the conditions and regulations of the Federal Endangered Species Act: For the San Joaquin Valley Giant Flower-loving Fly (*Rhaphiomidas trochilus*). Submitted June, 2014.
- Rogers, R. and M. Mattoni. 1993. Observations on the natural history and conservation biology of the giant flower-loving flies, *Rhaphiomidas* (Diptera: Apioceridae). *Dipterological Research* 4(1-2):21-34.
- U.S. Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Delhi Sands Flower-loving Fly.
- U.S. Department of Interior. Federal Register, 58 (183): 49881-49887.
- U.S. Fish and Wildlife Service. 1996. Delhi Sands Flower-loving Fly Draft Presence/Absence Survey Guidelines. December 30.
- U.S. Fish and Wildlife Service. 1997. Delhi sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 51 pp.
- Woodruff, G. A. 1980. Soil survey of San Bernardino County, southwestern part, California. U.S. Department of Agriculture, Soil Conservation Service.

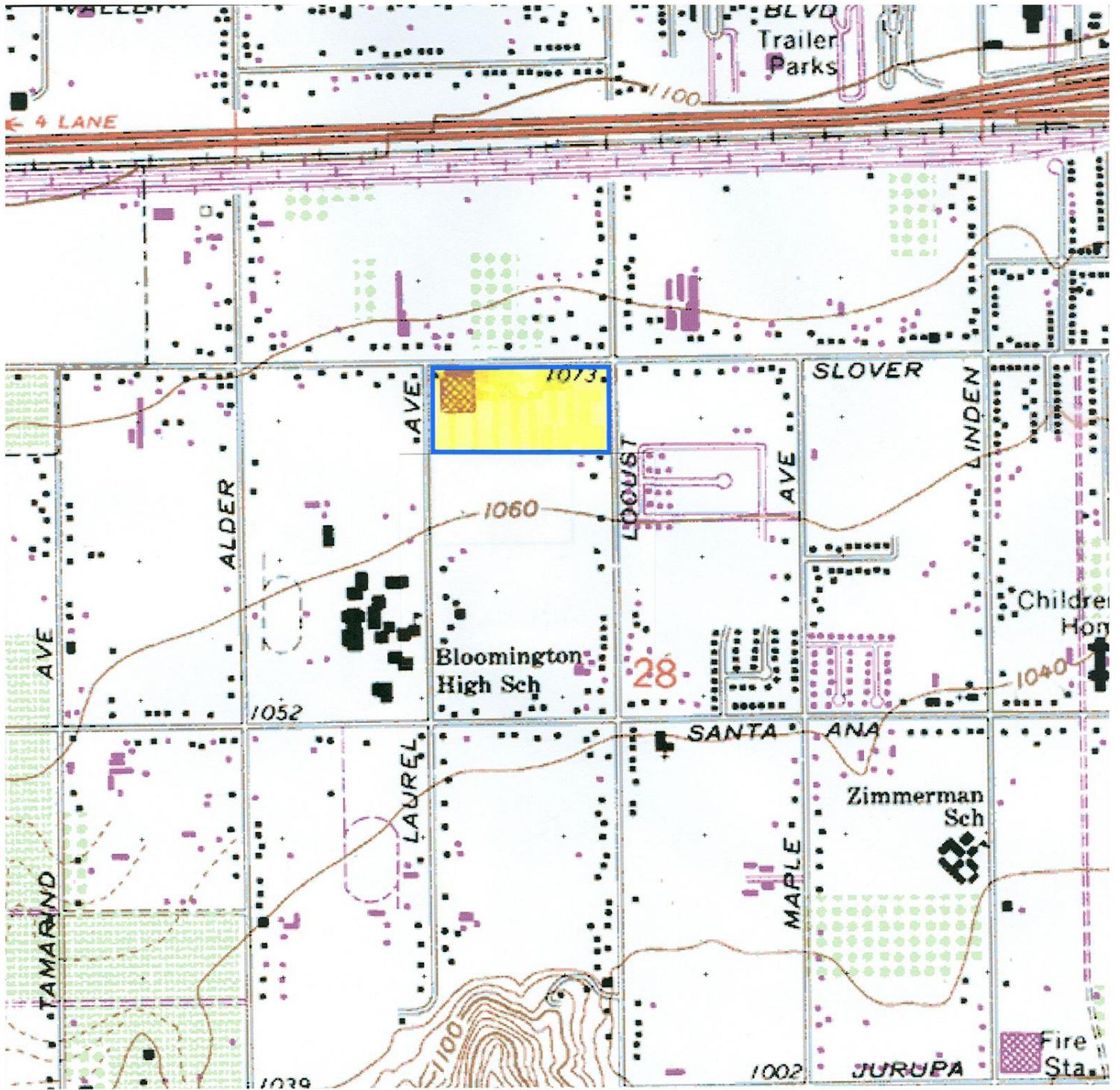
9.0 FIGURES



= 1 mile

 ↑
 N

Figure 1. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 50%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



= 100 meters

 ↑
N

Figure 2. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 200%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



Figure 3. Photograph of the eastern end of the study area as viewed (looking south) from near the northeastern corner of the site. House (background) is on the 1.02 acre residential parcel, also a portion of the study site.



Figure 4. Photograph of the southern edge of the site (wall at right is the site boundary) as viewed from near the southwestern corner of the site. Various trees and structures can be seen in the background center – part of the study site on the 1.02 acre residential parcel.



Figure 5. Photograph of view across open fields on the study site looking toward the east northeast from near the southwestern corner of the site.



Figure 6. Photograph of the western portion of the site (Laurel Avenue on the left) as viewed looking north from near the southwestern corner of the site.



Figure 7. Photograph of the 1.02 acre residential lot. View looks west northwest at the front of the existing residence and landscaping from near the southeastern corner of the site.



Figure 8. Photograph of the 1.02 acre residential lot. View looks west from the front of the existing residence and landscaping from the northeastern corner of this residential lot.



Figure 9. Photograph of a portion (immediately adjacent to the existing home) of the back yard of the 1.02 acre residential lot. View looks southeast from a fence line on the northern edge of this lot. Note the landscaping and irrigated lawn.



Figure 10. Photograph of a western portion of the 1.02 acre residential lot as viewed from the western edge of the lot. This view is representative of site conditions with numerous cages and facilities used in this poultry farming operation.



Figure 11. Photograph of a western portion of the 1.02 acre residential lot as viewed from the western edge of the lot. This view is also representative of site conditions with numerous cages and facilities used in this poultry farming operation.



Figure 12. Photograph of a discarded couch on the central southern portion of the site. This object may not only protect ground squirrels and their burrows below, but can also be used as a potential perch for Burrowing Owl. Such structures were regularly checked during survey.



Figure 13. Photograph of a dumped soil mound on the southwestern site. This particular mound featured bird guano (white splotches) and two older and bleached Burrowing Owl pellets (arrow). The soil mound, elevated above the site, presents a perch for many predatory birds.



Figure 14. Close photograph of Burrowing Owl pellets (arrows) seen in Figure 13 with a coin (US quarter dollar) for scale.

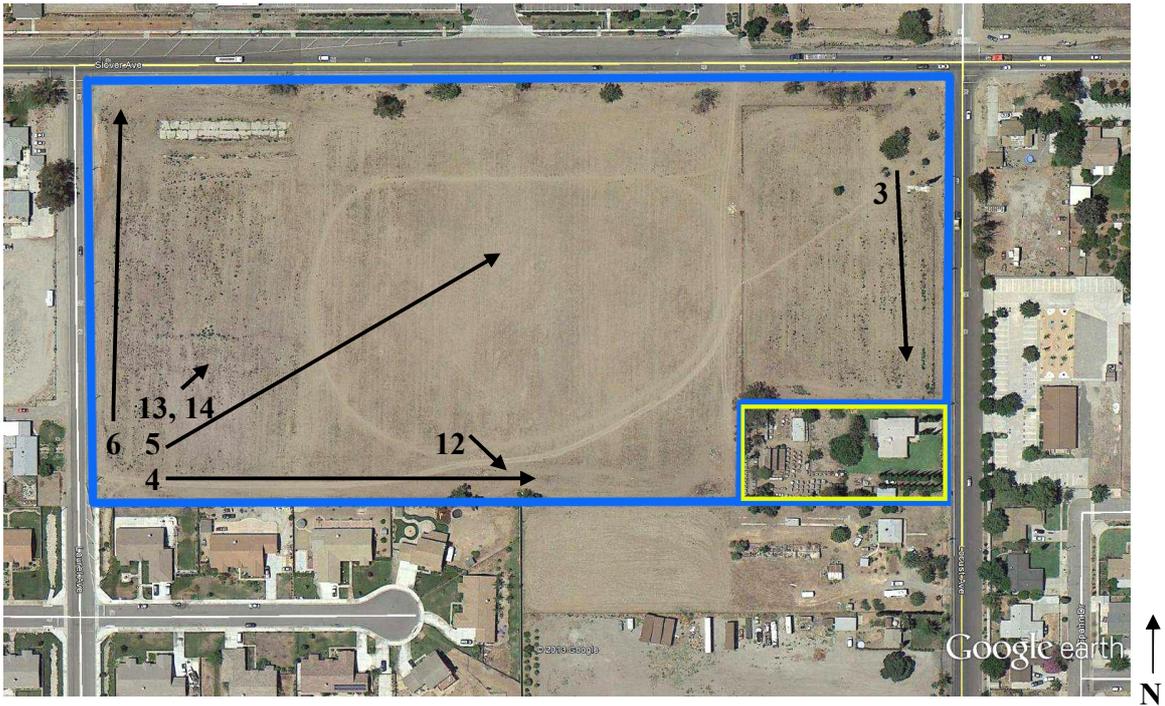


Figure 15. Approximate locations around study site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-6 and 11-14). One-acre residential lot on the southeastern portion of the site is outlined in Yellow.



Figure 16. Approximate locations around southeastern (residential lot) site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 7-11).

10.0 APPENDIX

Plant species encountered

Vertebrate species encountered

Distribution (coordinates) of rubble piles and/or ground squirrels examined for Burrowing Owl

Distribution (map) of rubble piles and/or ground squirrels examined for Burrowing Owl: Appendix Figure 1

Site Plan provided by client

Field notes

Table A1. Plant species encountered on the survey site (Osborne 2004, 2004a, 2013, 2014 and current).

FAMILY and COMMON NAME	Species
AMERANTHACEAE	
tumbleweed	<i>Amaranthus albus</i>
ASTERACEAE	
annual bur ragweed	<i>Ambrosia acanthicarpa</i>
common pineapple weed	<i>Chamomilla suaveolens</i>
flax-leaved horseweed	<i>Conyza bonariensis</i>
horseweed	<i>Conyza canadensis</i>
sunflower	<i>Helianthus annua</i>
telegraphweed	<i>Heterotheca grandiflora</i>
prickly lettuce	<i>Lactuca serriola</i>
common groundsel	<i>Senecio vulgaris</i>
common sow-thistle	<i>Sonchus oleraceus</i>
golden crownbeard	<i>Verbesina encelioides</i>
BORAGINACEAE	
Rancher's fiddleneck	<i>Amsinkia intermedia</i>
BRASSICACEAE	
shortpod mustard	<i>Hirschfeldia incana</i>
London rocket	<i>Sisymbrium irio</i>
CHENOPODIACEAE	
red saltbush	<i>Atriplex rosea</i>
lamb's quarters	<i>Chenopodium album</i>
Kochia	<i>Kochia scoparia</i>
russian thistle	<i>Salsola tragus</i>
FABACEAE	
miniature lupine	<i>Lupinus bicolor</i>
alfalfa	<i>Medicago sativa</i>
GERANIACEAE	
filaree	<i>Erodium cicutarium</i>
MALVACEAE	
cheeseweed	<i>Malva parviflora</i>
OLEACEAE	
Olive	<i>Olea europa</i>
POACEAE	
foxtail chess/red brome	<i>Bromus madritensis</i>
Bermuda grass	<i>Cynodon dactylon</i>
Mediterranean barley	<i>Hordeum murinum</i>
Shismus	<i>Schismus barbatus</i>

bur bristlegrass	<i>Setaria verticillata</i>
SOLANACEAE	
Jimson weed	<i>Datura wrightii</i>
tree tobacco	<i>Nicotiana glouca</i>
nightshade	<i>Solanum duglasi</i>
ZYGOPHYLLACEAE	
puncture vine	<i>Tribulus terrestris</i>

Table A2. Vertebrate species (or sign) encountered on the survey site.

Common name	Species
Birds	
*Burrowing owl	<i>Athene cunicularia</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Anna's hummingbird	<i>Calypte anna</i>
House finch	<i>Carpodacus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Rock dove	<i>Columbia livia</i>
American crow	<i>Corvus brachyrhynchos</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
American Kestrel	<i>Falco sparverius</i>
Song sparrow	<i>Melospiza melodia</i>
Northern mockingbird	<i>Mimus polyglottos</i>
House sparrow	<i>Passer domesticus</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Black phoebe	<i>Sayornis nigricans</i>
Say's phoebe	<i>Sayornis saya</i>
Eurasian Collared-dove	<i>Streptopelia decaocto</i>
Western meadowlark	<i>Sturnella neglecta</i>
European starling	<i>Sturnus vulgaris</i>
Western kingbird	<i>Tyrannus verticalis</i>
Cassin's kingbird	<i>Tyrannus vociferans</i>
Morning dove	<i>Zenaida macroura</i>
White-crowned sparrow	<i>Zonotrichia atricapilla</i>
Mammals	
domestic dog	<i>Canis familiaris</i>
horse	<i>Equus caballus</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Botta's pocket gopher	<i>Thomomys bottae</i>

Reptiles

Gopher snake	<i>Pituophis catenifer</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
Side-blotched lizard	<i>Uta stansburiana</i>

* Presence in previous winter indicated by old sign.

Table A3. Location of Ground Squirrel burrows, soil cavities, and wood/refuse piles found on the subject site. Latitude and Longitude for selected burrows is indicated decimal degrees. These location estimates are approximate, usually with at least 16 foot error in each dimension.

Description	Latitude N	Longitude W
Rubble pile	34.06264°	117.41016°
Rubble pile	34.06188°	117.41058°
Rubble pile	34.06141°	117.41071°
Rubble pile	34.06146°	117.41193°
Rubble pile	34.06146°	117.41210°
Soil pile with burrow	34.06164°	117.41344°
Soil pile with pellets and quano	34.06174°	117.41321°
Rubble pile	34.06256°	117.41063°



Appendix Figure 1. Approximate locations around survey site of ground squirrel burrows and other structures (rubble or refuse piles) with potential to harbor Burrowing Owl (red dots).

Date 3/11/2015 Time 5:30 to 7:30 pm Job Blooming fern

Miles 2.1557 on state Location _____

Biologists KHO

Survey for: Burrowing Owl 6:30-7:30 pm

Habitat Assessment for: Burrowing Owl (16.32 acres); DSP 1.02 acres residential lot

Weather: Temp 70 Wind calm Cloud cover 100 Rain 0

Biological elements:

Vegetative communities:

Annual veg disturbed on 16+ acres.

Residential lot with landscaping and chicken cultivation on ~1 acre lot

Soil type Rain Sands

Plant species:

See lists

Vertebrates

AMKE NOMO HOHI MODO

Arthropods

Oak Woodlands Riparian Veg type _____

Vernal Pools

Comments:

~16 acres previously surveyed for DSP



Laurel Ave

Sovereign Ave

© 2015 Google

Google

Locust Ave

soil pile w/ pellets of guano
soil pile w/ burrows

KIM's waste line?

refuse
concrete rubble
refuse

All checked with
1-2' depth animal
vegetation

concrete rubble

refuse

Raccoon but
no burrows

Not
suitable for
BUOW

Horses
this
area

Date 3/22/15 Time 7⁰⁰ pm to 8¹⁵ pm Job J M Realty
Miles 2583 @ site Location Bloomington
Biologists KHO
Survey for: Burrowing Owl: SE of Slower & Laurel Ave
Habitat Assessment for: _____

Weather: Temp 76⁰ Wind 2-4 Cloud cover 0 Rain 0
7 pm

Biological elements:

Vegetative communities:

Soil type _____

Plant species:

Vertebrates

BLMM AMCR. NOMO. MODO. HORI ANHU

Arthropods

Oak Woodlands _____ Riparian Veg _____ type _____

Vernal Pools _____

Comments:

Sunset @ ~ 7¹⁰ pm

Date 3/23/2015 Time 7:00 to 8:10 AM Job JM Realty
Miles 22601 @ site Location Bloomington: SW of Slouan & Laurel
Biologists KH Osborne
Survey for: Burrowing Owl
Habitat Assessment for: _____

Weather: Temp 54° Wind 1-2 mph Cloud cover 25% Rain 0

Biological elements:

Vegetative communities:

Annual Veg

Soil type _____

Plant species:

Vertebrates

AMKE AMCR NOMO MODO KIDI HOFI WCSA
BNSP BUST BUDO ANAU RUDO SAPA MBLA SASP

Arthropods

Oak Woodlands _____ Riparian Veg _____ type _____

Vernal Pools _____

Comments:

Date 3/25/15 Time 7:00 to 8:00 AM Job JM Realty
Miles 3.012 @ ETE Location Blossomsburg town
Biologists K.A. Osborne
Survey for: Burrowing Owl + last survey date
Habitat Assessment for: _____

Weather: Temp 59° Wind calm Cloud cover clear Rain _____

Biological elements:

Vegetative communities:

Soil type _____

Plant species:

Vertebrates

MODO HOFI NOMO HOSP AMRTS AMCR EUNO
EUST RUDO WCSA CAKI SAPH

Horses or cows @ IVE corner
Pocket Gopher.

Arthropods

Oak Woodlands _____ Riparian Veg _____ type _____

Vernal Pools _____

Comments:

Information Summary

Report preparation date: June 18, 2015

Fieldwork performed: May 2, 24, June 18, 2015

Title: Nesting Season Burrowing Owl Survey on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California.

Project site location: South of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, CA - Fontana, U.S.G.S.-75.' Quadrangle, Township 1 S., Range 5 W., Section 28.

Assessor's Parcel Numbers: 256-041-001, -002, -003, -047, and -048

Case Number: P201400241

Owner/Applicant: JM Realty Group, Inc., 3535 Inland Empire Blvd., Ontario, CA 91764

Principle Investigator: Ken H. Osborne, Osborne Biological Consulting
6675 Avenue Juan Diaz, Riverside, CA 92509.

Report Summary

(Burrowing Owl): Burrowing Owl is absent from the site. A 16.32-acre portion of the study site presents open fields of disturbed annual grassland and forbs, and the presence of a ground squirrel population with burrows. Piles of refuse and soil present on the site provide either burrows or other soil cavities suitable for Burrowing Owl. Burrowing Owl was not observed on the site during the course of this Nesting Season Survey. I conclude that Burrowing Owl has is not present on the site. The 1.02 acre residential lot on the site, with its trees, home, and numerous dogs, is not suitable habitat for Burrowing Owl

General biology: General biology for the site, including surveys for Delhi sands Flower-loving Fly, has been presented earlier this year (Osborne 2015).

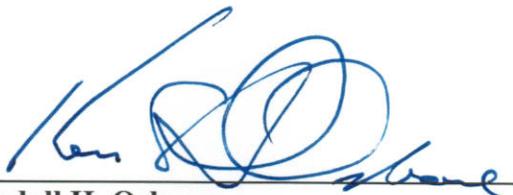
Name and contact of Report Preparer: Ken H. Osborne (951) 360-6461

**Nesting Season Survey for Burrowing Owl on a 17.34-acre site
(Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048,
Bloomington, San Bernardino County, California**

Prepared for:

**JM Realty Group, Inc.
3535 Inland Empire Blvd.
Ontario, CA 91764**

I hereby certify that the statements furnished above and in the attached exhibits present that data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



**Kendall H. Osborne
6675 Avenue Juan Diaz
Riverside, CA 92509**

6/18/2015
Date

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SUMMARY

JM Realty Group, Inc., has requested a Nesting Season survey for Burrowing Owl (*Athene cunicularia*) on a 17.34-acre site (Assessor's Parcel No., indicated by the client to be 256-041-001, -002, -003, -047, and -048, at Bloomington, San Bernardino County, California. This survey was undertaken on May 2, 24, June 18, 2015. A comprehensive Biological study of the site was prepared earlier this year (Osborne 2015).

Burrowing Owl: Burrowing Owl was not observed in the course of this nesting (breeding) season survey. It is concluded that Burrowing Owl is absent from the site. Site conditions were previously determined to be suitable for Burrowing Owl. Ground squirrels and their burrows appear on the site. A 1.02 acre residential parcel on the site is unsuitable for Burrowing Owl (Osborne 2015). The 16.32 acre portion of the site with open fields was surveyed for Burrowing Owl during the nesting season for this species.

This and previous investigations (Osborne 2015) found no potential for narrow endemic, rare, or endangered plant species. In addition, riparian or riverine habitats, vernal pools, or any other potential jurisdictional waters or wetlands have been found to be absent from the site. The investigation found a small developed parcel set in the larger context of open fields of disked annual vegetation on other contiguous parcels.

1.0 INTRODUCTION

This report presents the methods and results of a nesting season Burrowing Owl (*Athene cunicularia*) survey, on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington, San Bernardino County, California.

Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, 7.5' USGS quadrangle. Figure 2 shows the site at 200% scale on this quadrangle.

2.0 SITE DISPOSITION

The subject site is located south of Slover Avenue, between Locust Avenue and Laurel Avenue, Bloomington. Specifically, the site is located on the Fontana U.S.G.S.-7.5' quadrangle, in the northwestern portion of Section 28, Township 1 S., Range 5 W.

3.0 METHODS

Habitat conditions were previously evaluated for Burrowing Owl on the entire 17.34 acres of the site (Osborne 2015). The nesting season Burrowing Owl survey was conducted on 16.32 acres of suitable owl habitat, with the remaining 1.02 areas determined as unsuitable for Burrowing Owl (Osborne 2015). Surveys were conducted on May 2, 24, and June 18, 2015. Figures 3 – 8 are photographs representing various

views of the study site and other objects of interest on the site. Figure 9 shows the locations on the site from which photographs were taken.

Methods for this burrowing owl study follow the survey protocol recommended by the California Department of Fish and Game (CDFG 2012). In the course of previous studies (Osborne 2015) and at the outset of this investigation, open fields on the subject site were systematically searched for ground squirrel burrows, or any other soil cavities or structures suitable for Burrowing Owl. This search was conducted by walking the perimeter of the site, walking the fence lines, and walking regular, parallel transects through the site (transects spaced approximately 15 meters). During this phase, any burrows found were carefully inspected for evidence of Burrowing Owl (such as pellets, plumage, insect parts, tracks, whitewash) or evidence of inactivity (such as undisturbed spider webs). Animal burrows and other structures suitable for Burrowing Owl were mapped using GPS. No Burrowing Owl was observed in the course of this burrow survey.

Following identification of animal burrows or soil/rubble cavities suitable for Burrowing Owl, a focused survey (nesting season Burrowing Owl) was undertaken on the site. These surveys were conducted by Kendall Osborne. These survey efforts were generally conducted within two hours of sunrise. Table 1 provides a schedule and site weather conditions during surveys of the subject property. At least one hour of survey effort was applied on the site on each of three site visits, May 2, 24, June 18, 2015.

Table 1. Nesting Season Burrowing Owl Focused Survey Schedule and Site Weather Conditions (2015).

Date and area	Hours	Weather Conditions
2 May	0630-0747	clear, 64-70° F, calm: Sunrise 0603 hrs
24 May	0645-0745	overcast, 61-63° F, calm: Sunrise 0546 hrs
18 June	0544-0644	clear, 62-67° F, calm: Sunrise 0542 hrs

4.0 RESULTS

Figures 3 – 8 are photographs representing landscapes and general aspects of the subject property. Figure 9 provides an aerial perspective and key as to where on the site these photographs were taken.

Burrowing Owl was not observed on the site in the course of this nesting season survey. Furthermore, no sign of Burrowing Owl, such as pellets, plumage, insect parts, tracks, whitewash was observed on the site.

Habitat conditions on the southeastern, approximately one-acre residential lot were determined to be unsuitable for Burrowing Owl due to the high density of trees and other structures.

No special status animal species (species of concern) were encountered in the course of this survey or previous studies (Osborne 2015). Animals previously observed on the subject site are listed in

the general biological report (Osborne 2015). Animals observed in the course of this nesting season Burrowing Owl survey are listed in the appendix.

5.0 EXISTING ENVIRONMENT

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project). The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet. Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Dominant plants are rancher's fiddleneck (*Amsinkia intermedia*), puncture vine (*Tribulus terrestris*), cheeseweed (*Malva parviflora*), summer mustard (*Hirschfeldia incana*), and Spanish clover (*Lotus purshianus*). *Eucalyptus* windbreaks, previously along the northern edge of the site, were recently eliminated by the widening of Slover Avenue. Remnant trees such as olive and Peruvian pepper are found on the southern site boundary, additional *Eucalyptus* adjacent to the residential lot on the southeastern corner of the site. The residential lot itself supports several various exotic shade trees.

6.0 DISCUSSION

Abundant quano at one of the soil mounds on the southwestern site are likely accumulated from other common, insectivorous birds on the site such as Say's Pheobe, American Kestrel, and Cassin's Kingbird.

It is my conclusion that Burrowing Owl is currently absent from the site. Burrowing Owl continues to be absent from this site during the course of both winter (Osborne 2015) and nesting season surveys.

7.0 REFERENCES

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

Haug E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing Owl (*Spcoyto cucularia*), In The Birds of North America, No. 61 (A Poole and F. Gill Eds.). Philadelphia: The Academy of Natural Sciences, Washington, D. C.: The American Ornithologists' Union.

Osborne, K. H. 2015. General Biology; Including Habitat Assessments and Surveys for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) and Burrowing Owl (*Athene cucularia*) on a 17.34-acre site (Assessor's Parcel Nos. 256-041-001, -002, -003, -047, and -048, Bloomington, San Bernardino County, California. Submitted to San Bernardino County Planning, April 2015.

8.0 FIGURES

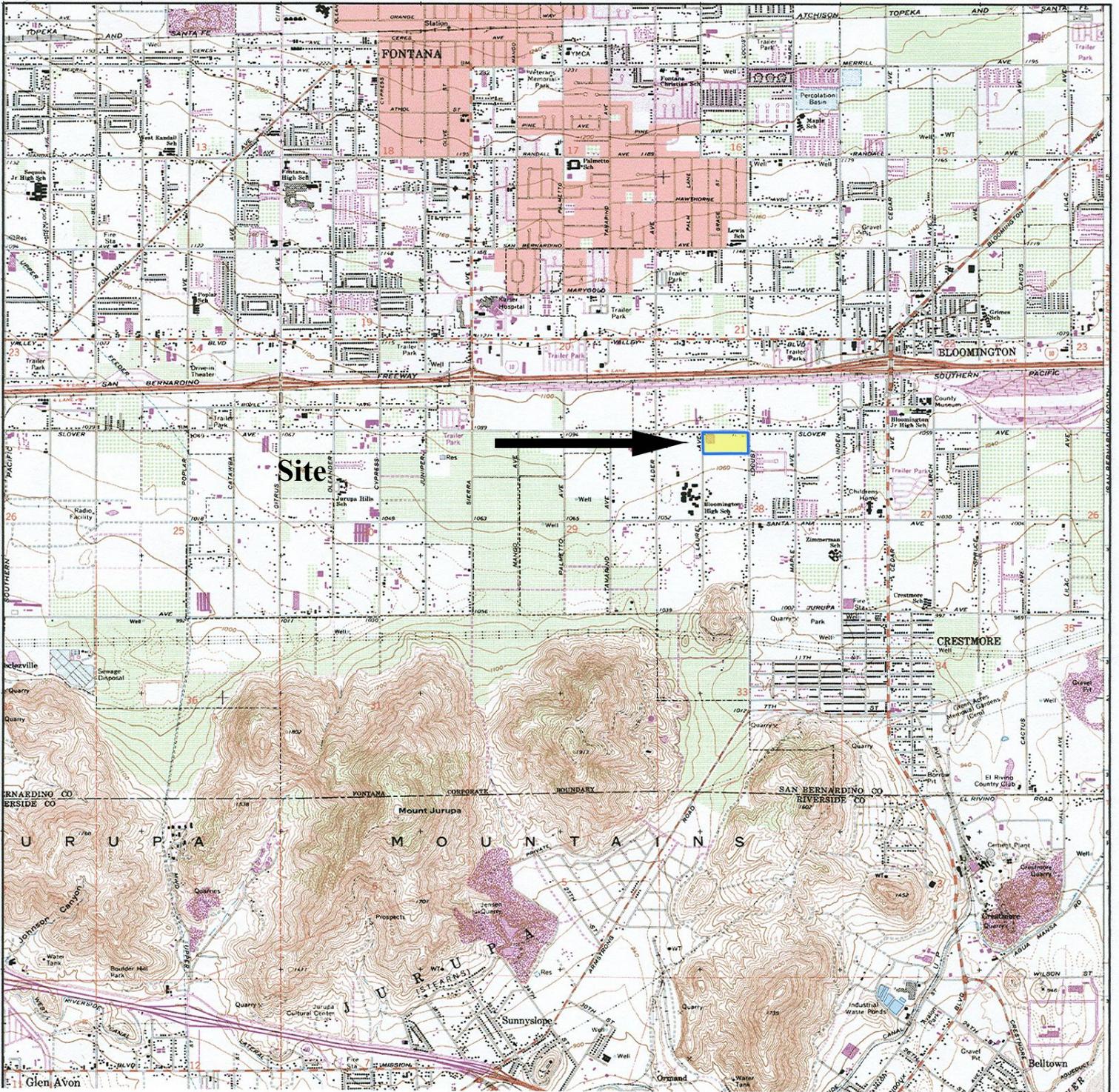
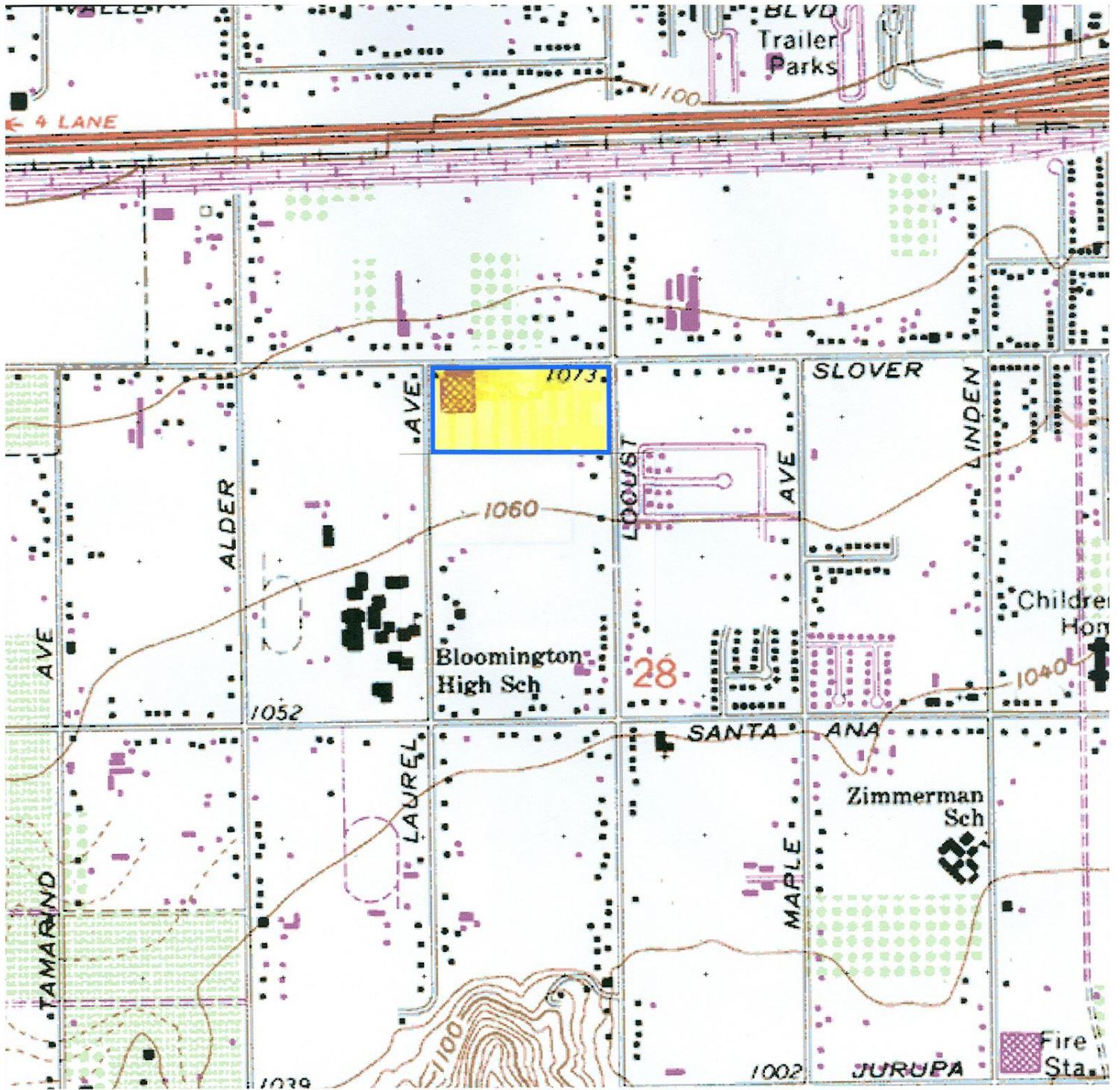


Figure 1. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 50%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



= 100 meters

 ↑
N

Figure 2. General vicinity of survey site, Fontana, California USGS 7.5' quadrangle at 200%. 17.34-acre subject site is outlined in blue and highlighted in yellow.



Figure 3. Photograph of the southwestern portion of open fields on the study area as viewed (looking east) from near the western edge of the site. Wall on the background (right) represents the southern edge of the site.



Figure 4. Photograph of open fields across the site as viewed (looking to the northeast) from near the southwestern corner of the site.



Figure 5. Photograph of view across open fields on the northeastern study site looking toward the southwest from a northeastern portion of the site.



Figure 6. Photograph of the northern portions of the site (Slover Avenue on the right) as viewed looking west northwest across the site from a northeastern portion of the site.



Figure 7. Photograph of a portion (immediately adjacent to the existing home) of the back yard of the 1.02 acre residential lot (a portion of the site not suitable for Burrowing Owl. View looks southeast from a fence line on the northern edge of this lot.



Figure 8. Photograph of the 1.02 acre residential lot. View looks west from the front of the existing residence and landscaping from the northeastern corner of this residential lot. This area is not suitable habitat for Burrowing Owl and was not surveyed.

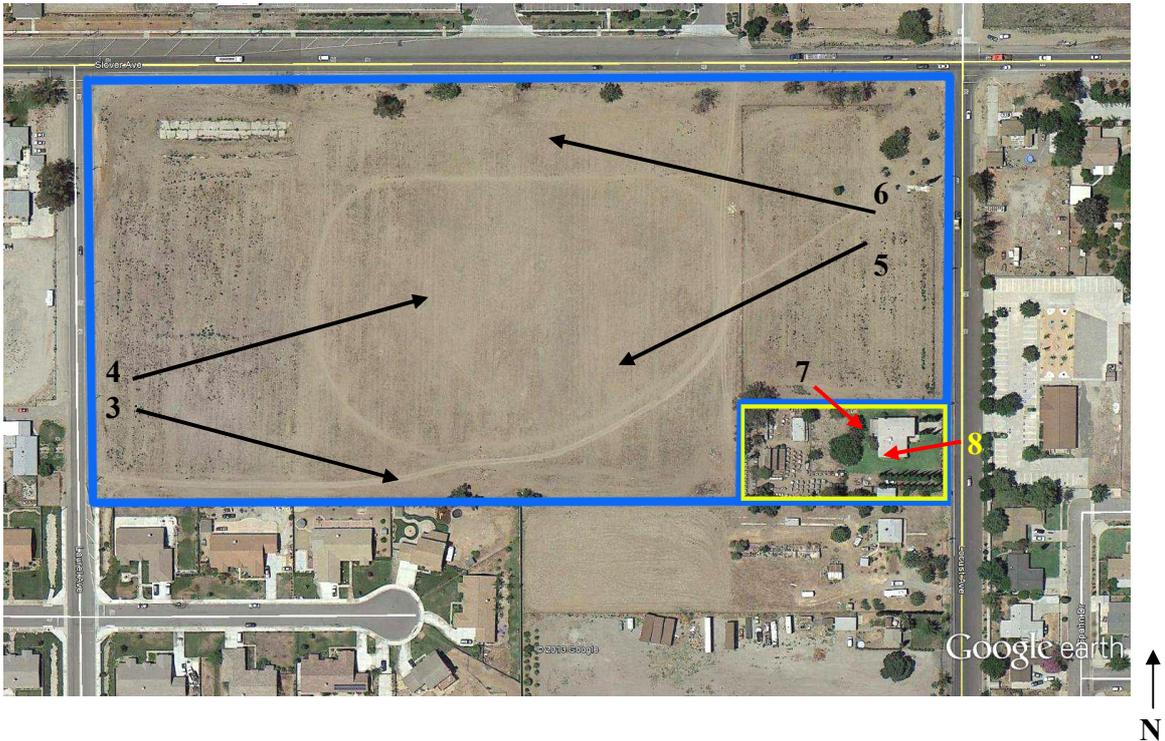


Figure 9. Approximate locations around study site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-8). One-acre residential lot on the southeastern portion of the site is outlined in Yellow (and not surveyed for Burrowing Owl).

9.0 APPENDIX

Vertebrate species encountered

Distribution (coordinates) of rubble piles and/or ground squirrels examined for Burrowing Owl

Distribution (map) of rubble piles and/or ground squirrels examined for Burrowing Owl: Appendix Figure 1

Field notes

Table A1. Vertebrate species (or sign) encountered on the survey site (summer 2015).

Common name	<i>Species</i>
Birds	
Red-tailed hawk	<i>Buteo jamaicensis</i>
Anna's hummingbird	<i>Calypte anna</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
House finch	<i>Carpodacus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Rock dove	<i>Columbia livia</i>
American crow	<i>Corvus brachyrhynchos</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
American Kestrel	<i>Falco sparverius</i>
Northern mockingbird	<i>Mimus polyglottos</i>
House sparrow	<i>Passer domesticus</i>
Say's phoebe	<i>Sayornis saya</i>
Eurasian Collared-dove	<i>Streptopelis decaocto</i>
Cassin's kingbird	<i>Tyrannus vociferans</i>
Morning dove	<i>Zenaida macroura</i>
Mammals	
horse	<i>Equus caballus</i>
Domestic cat	<i>Felis felis</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
Unidentified Bat	

Table A3. Location of Ground Squirrel burrows, soil cavities, and wood/refuse piles found on the subject site. Latitude and Longitude for selected burrows is indicated decimal degrees. These location estimates are approximate, usually with at least 16 foot error in each dimension.

Description	Latitude N	Longitude W
Rubble pile	34.06264°	-117.41016°
Rubble pile	34.06188°	-117.41058°
Rubble pile	34.06141°	-117.41071°
Rubble pile	34.06146°	-117.41193°
Rubble pile	34.06146°	-117.41210°
Soil pile with burrow	34.06164°	-117.41344°
Soil pile	34.06174°	-117.41321°
burrows concrete rubble complex	34.06255°	-117.41064°
burrow fence line	34.06208°	-117.41060°
burrow fence line with webs	34.06202°	-117.41059°
burrow fence line	34.06252°	-117.41061°
burrow fence line	34.06246°	-117.41061°
burrow with webs	34.06158°	-117.41074°
burrow	34.06153°	-117.41071°
wood refuse	34.06138°	-117.41073°
burrow	34.06172°	-117.41261°
burrow	34.06171°	-117.41259°
burrows	34.06181°	-117.41256°
mattress (no burrow)	34.06611°	-117.41210°



Appendix Figure 1. Approximate locations around survey site of ground squirrel burrows and other structures (rubble or refuse piles) with potential to harbor Burrowing Owl (red dots). Burrows and structures in close proximity may appear under one dot.

Date 5/2/2015 Time 6:30 to 7:47 AM Job JM Realty
 Miles 9977 mi on st Location Bloomington - Stoner/Locust
 Biologists KH Osborne
 Survey for: Burrowing Owl
 Habitat Assessment for:

Weather: Temp 64° Wind calm Cloud cover 0 Rain 0
70° @ 7:48 AM clear

Biological elements:

Vegetative communities:

Burrows & Structures
34.06208 117.41060
202 059 w/webs
255 064 concrete rubble complex } Fence line
252 063
252 061
Soil type 246 061 n=2 burrows
.06158 .41074 w/webs near roofing refuse
Plant species: 153 071
138 073 wood refuse
611 210 mattress (but no burrows)

Vertebrates

EUDO MODO HOFI AMCR KIRI AMKE CAKI
EU SP RODO LEGO (all birds)

Ground Squirrels, Gophers

Arthropods

Oak Woodlands Riparian Veg type

Vernal Pools

Comments:

Sunrise @ 6:03 am

Date 5/24/2015 Time 6:45 to 7:45 am. Job Blossoming for Joe Reatty
Miles 1062 on 516 Location Stoner & Locust
Biologists KAT Osborne
Survey for: Burrowing Owl
Habitat Assessment for: ✓

Weather: Temp 61 @ 6:45 Wind calm Cloud cover 100% Rain ✓
63 @ 7:45 overcast

Biological elements:

Vegetative communities:

Soil type _____

~~Plant species:~~

New Burrow location exposed after mowing.

34, 06172 117, 41261

Vertebrates

NOMO ANKA MODO SANKI HOSK KIDI ANKE
RUDO
Ground squirrel (Burrows)
Gopher (burrows)

Arthropods

Oak Woodlands _____ Riparian Veg _____ type _____

Vernal Pools _____

Comments:

Sunrise @ 5:46 am.

Date 6/18/2015 Time 544 to 644 Job JM Realty
Miles 7067 on site Location Bloomington Clover/Locust Ave
Biologists KA Osborne
Survey for: Burrowing Owl
Habitat Assessment for: φ

Weather: Temp 62 Wind calm Cloud cover clear Rain φ 544
67 calm clear φ 645

Biological elements:

~~Vegetative communities:~~

Soil type _____

Plant species:

Vertebrates

MODO HOSP ANHU NOMO RODO AMCR HUEI
REWA CAKI GUDO BRBL SAPH KIDI
Gophers, Ground Squirrel Cat.
1 force

Arthropods

~~Oak Woodlands~~ ~~Riparian Veg~~ ~~type~~

Vernal Pools _____

Comments:

Sunrise @ 5:42 Am

No Burrowing Owl or owl signs seen on
this survey

**SECOND YEAR FOCUSED SURVEY FOR
DELHI SANDS
FLOWER-LOVING FLY
(*Rhaphiomidas terminatus abdominalis*)
ON A 16.32-acre SITE IN BLOOMINGTON, SAN
BERNARDINO COUNTY, CALIFORNIA**

Prepared for:

**America United Development, LLC.
c/o Andy Wang
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Diamond Bar, CA 91765**

Prepared by:

**Kendall H. Osborne
Osborne Biological Consulting
6675 Avenue Juan Diaz
Riverside, CA 92509**

October 24, 2014

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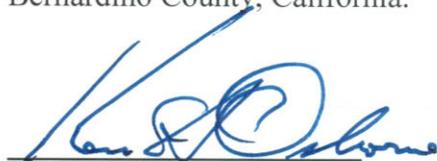
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Osborne Biological Consulting
6675 Avenue Juan Diaz
Riverside, CA 92509**

The undersigned certify this report to be a complete and accurate account of the findings and conclusions of a second year, 2014 focused survey for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, San Bernardino County, California.



**Ken H. Osborne
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**Rick Rogers
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October 24, 2014

SUMMARY

America United Development, LLC., on behalf of Mr. K. A. Wang, has requested a second year focused survey to assess the presence or absence of Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site in Bloomington, San Bernardino County, California. To assess this site for potential as habitat for the federally endangered DSF, and to determine presence or absence of DSF on the site, a series of 27 field visits, totaling 32.01 hours, were conducted on the site from July 2 to September 18, 2014. This site was previously surveyed for two successive years (Osborne 2003a, 2003b, 2004, and 2004a) with negative results for DSF.

The site has soils mapped as Delhi sands, and consists of an open vacant lot. Habitat conditions on the site are uniform sand dune supporting annual grassland vegetation, representing *Moderate Quality to High Quality* habitat potential for the DSF. Vegetation was scraped off to clean sand substrate prior to the survey season. Approximately 1.8 acres of the site have been rendered *Unsuitable* for DSF by habitat loss associated with the widening of Slover Avenue during the winter of 2013-14.

Delhi Sands Flower-Loving Fly was not observed on the site during the course of this second year 2014 field season. The subject site does not support a population of the Delhi Sands Flower-Loving Fly. No special status plant or animal species (species of concern) were encountered in the course of this survey.

1.0 INTRODUCTION

This report presents the methods and results of a Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) focused survey for a 16.32-acre site, in Bloomington, San Bernardino County. The DSF was listed as an endangered species by the U.S. Fish and Wildlife Service on September 23, 1993 (USFWS 1993).

The survey site is located on the Fontana, California USGS 7.5-minute quadrangle map, Township 1 South, Range 5 West, in Section 28. Latitude ranges from approximately 34° 03' 41" to 34° 03' 46" N and Longitude from 117° 24' 31" to 117° 24' 46" W. Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, California USGS 7.5-minute quadrangle map. Figure 2 displays the survey site at 200% scale on this USGS quadrangle. This site is located immediately south of Slover Avenue, between Locust Avenue and Laurel Avenue. The survey area is bounded by Slover Avenue on the north, Laurel Avenue on the west, Locust Avenue on the east, and various developed residential and vacant lots to the south. Approximately 1.8 acres of the northern and northwestern site have been rendered *Unsuitable* for DSF by habitat loss associated with the widening of Slover Avenue during the winter of 2013-14.

The subject site does not support a population of the DSF. The DSF was not found on the subject site during the course of surveys over two field seasons in 2013 (Osborne 2013) and 2014; nor was it found in the course of two previous years of survey (Osborne 2003a, 2003b, 2004, and 2004a).

2.0 NATURAL HISTORY OF THE DELHI SANDS FLOWER-LOVING FLY

Delhi Sands Flower-loving fly belongs to a genus of flies (*Rhaphiomidas*) commonly known as flower loving flies. There are more than 30 species of these flies, distributed across the southwestern United States and northern Mexico. These flies are huge by the standards set by most flies – with size among the species ranging from approximately 1.5 centimeters up to 3, and even 4 centimeters, usually gray, tan, rust or yellow in color. All species of *Rhaphiomidas* are associated with rather arid, sandy habitats, with most species living on dune systems of inland desert valleys, rivers, deltas, and beach strands. A few species are found in sandy washes, alluvial benches and remnant glacial moraines. Many species of these flies often hover before flowers in the manner of hummingbirds, using a long, thin, tubular proboscis (mouth-part), with which the flies probe for nectar – hence a traditional name “giant flower-loving flies”. Smaller flies of the family Apioceridae, once considered very closely related to *Rhaphiomidas* were formerly called “flower-loving flies”.

The DSF is only known to occur in association with Delhi sand deposits, presumably occupied the once extensive dune system of the upper Santa Ana River Valley, including portions of what is now the City of Colton, west through portions of the City of Ontario, and south to the Santa Ana River. Today, DSF exists on only a few disjunct sites (USFWS 1997) within a radius of about eight miles in southwestern San Bernardino and northwestern Riverside Counties (Colton, Rialto, Fontana, and Ontario). More than 95 percent of known DSF habitat was considered eliminated by development, agriculture and other land management practices by 1993 (Smith 1993, USFWS 1996 in Kingsley 1996), however, this proportion is now nearer 98 to 99% due to these ongoing processes. Many of the last remaining fragments of DSF habitat are currently under pressure by land management efforts such as heavy disking, irrigation, manure dumping, and gravel dumping. There is presently an estimated 1,200 acres of habitat that can support this species (USFWS 1997), but this estimate likely includes lands needing extensive habitat restoration.

Adult DSF flight period is typically August and September, when individual adults emerge, reproduce and die. The adult life span of an individual DSF lasts for a few days and adults do not live beyond the flight period (Kiyani 1995). Adult DSF are highly mobile, agile fliers. Male DSF are frequently seen flying low through habitat, using apparently random, circuitous paths around and between shrubs in search of females. Such “cruising” behavior often covers areas on the scale of 1000 square meters in the time span of a minute. Alternatively, male DSF are often seen flying about an open patch of ground (ca 100 square meters) such as along a dirt path or dune blow-out area. Here, males may repetitively land and rest on one or another object (such as small dried plants) in the area, and such rests are interrupted by periods of patrolling flight (apparently territorial) about the spot. When alarmed, these insects tend to fly rapidly in more or less a straight line – often covering distances of 100 meters in less than 6 seconds. Adult DSF are known to nectar at flowers of California buckwheat and California croton.

DSF, like other *Rhaphiomidas* species, appears to have an annual life cycle (because of the annual flight). However, it has been widely believed that the underground larval/pupal stage may persist for additional years, depending upon various environmental factors such as annual rainfall, food availability and weather conditions during the flight season (many desert *Rhaphiomidas* species do

not appear after a drought year and often, substantial flights occur only sporadically over the years). The biology of *Rhaphiomidas trochilus* is likely informative of *Rhaphiomidas* species in general and DSF in particular. Based on observations of captive *R. trochilus* larvae (Osborne and Ballmer 2014) it is reasonable to conclude that they are mobile opportunistic predators of soft-bodied, sand-inhabiting insects. Larvae from Sand Ridge, Kern County, CA were maintained in captivity for several months, during which they burrowed actively through sand maintained with slight moisture content (similar to the damp sand where they were found). They fed on larvae of a scarab beetle (Scarabaeidae) and an unidentified beefly (Diptera: Bombyliidae), which were also recovered from Sand Ridge, and larvae of paper wasps (*Polistes* sp.) which were removed from their nests and buried in the sand. Captive larvae grew and molted after feeding; but, when not fed for extended periods of time, they molted again – losing weight and size in the process. Some larvae were observed to repeat the growth and “shrinkage” cycle multiple times. One larva survived about 17 months in captivity; because it was captured nine months after the most recent flight season, it was at least two years old at time of death. This larva molted four times while undergoing five cycles of growth and shrinkage driven by variable food availability. Its final dry weight was slightly smaller than the typical dry weight of an adult male *R. trochilus*. The ability of *R. trochilus* larvae to molt down during times of scarce food resources could allow an extended and indeterminate larval growth period, but with maturation and appearance of adults always during summer months. This may also explain the common observations that populations of various *Rhaphiomidas* species apparently exhibit little or no adult emergence in some years (especially years of below normal precipitation).

The brief adult life span and active mate-locating behavior of DSF males (typical of all *Rhaphiomidas* species) suggests that relatively high population density and/or nearly synchronous adult emergence may be crucial to survival of populations. Protracted *Rhaphiomidas* larval biology and staggered (across years) adult emergence must enhance population momentum and cross generational gene flow, and the requirement of abundant and diverse insect prey on which larvae develop – all explain why DSF populations appear as long-term entities (persisting for decades) associated with ecologically intact dune habitats.

2.1 DSF Habitat Characteristics

DSF is typically found in areas of unconsolidated sandy soils (Delhi series) supporting an open community of native and exotic plant species. Dominant plants are typically California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), telegraph weed (*Heterotheca grandiflora*), and deerweed (*Lotus scoparius*) but many exotic species often dominate on DSF habitat as well. DSF have been found in habitats that do not support these dominant plant species, and plant species composition may not be directly relevant to larval development (due to likely predatory or parasitic habit of DSF larvae). Adult DSF are known to nectar at flowers of California buckwheat and California croton. Many other plant species are common, including Thurber’s eriogonum (*Eriogonum thurberi*), autumn vinegar weed (*Lessingia glandulifera*), and sapphire eriastrum (*Eriastrum sapphirinum*). Non native plant species also occur in DSF habitat (and incidentally, virtually everywhere). DSF habitat also supports other associated insects such as flies and wasps considered as indicator species – *Apiocera convergens*, *Apiocera chrysolasia*, *Ligyra gozophylax*, *Campsomeris tolteca*, *Trielis alcione*, and *Nemomydas pantherinus*. Over 350

insect species have been found on one DSF site, and DSF habitat is typically marked by high abundance and diversity of predatory and parasitic insect groups including many highly specialized families of flies, wasps, bees, beetles, and antlions. The Delhi Sands community is one of California's unique natural communities containing an array of native plants and animals, some of which are found nowhere else. One plant species, Pringle's monardella, (*Monardella pringlei*) is already presumed extinct, as no living individuals have been observed in many years. Several species of insects and some vertebrates, which inhabit the Delhi Sands dunes system, are as endangered as the DSF, but no one has yet petitioned to have them officially declared Endangered. These include the convergent flower-loving fly *Apiocera convergens*, a newly discovered species of Jerusalem cricket, (*Stenopelmatus* sp.), a new species of camel cricket (*Ceuthophilus* sp.) and an endemic subspecies of butterfly *Apodemia mormo nigrescens* (Emmel and Emmel 1998). The other apiocerid fly (*Apiocera chrysolasia*), although known from approximately six general localities, is only common within the Delhi sands.

3.0 METHODOLOGY

3.1 DSF Survey Guidelines

Interim General Survey Guidelines for the DSF have been suggested by the USFWS (1996). By following these guidelines, DSF presence or absence survey results may be deemed acceptable to the USFWS (rejection of survey results may result where the guidelines are not followed). The guidelines indicate that focused DSF surveys should be conducted wherever Delhi sands are present within the presumed range of DSF, twice weekly (two days per week) during the single annual flight period (usually from July 1 to September 20). Recent early season DSF discoveries lead the USFWS to recommend a survey season from July 15 to September 20 for 2003 and a survey season from July 1 to September 20 from the year 2004. Weather conditions must be suitable for DSF activity at the times survey work is pursued. The DSF is generally active when daytime temperatures exceed 80 degrees Fahrenheit (°F), but may fly with slightly cooler temperatures in bright sunlight.

3.2 Habitat Assessment Methods

During the course of surveys the previous year (Osborne 2013), Osborne examined the subject site to rate its potential to support DSF. Photographs were taken of the site from various perspectives. Habitat suitability for DSF was evaluated using indicators of potential DSF habitat including: presence and abundance of loose, unconsolidated Delhi sands with low organic contamination; degree of habitat disturbance indicated by plant species composition and disposition of soil surface, presence and abundance of native sand associated plants such as *Croton californicus*, *Heterotheca grandiflora*, *Eriogonum thurberi* and *Eriogonum fasciculatum*. These plants are actually more an indication of relative disturbance regimen – conditions with lesser disturbance being of higher quality for DSF. Presence and abundance of Delhi sands associated insects such as *Apiocera convergens*, *Apiocera chrysolasia* and (to a lesser extent) *Nemomydas pantherinus*, noted throughout the course of focused surveys, serve as further indicators of DSF habitat quality. Potential DSF habitat has been further evaluated on the basis of overall insect diversity and abundance, particularly with respect to sand associated predators and parasitoids.

In the course of previous work Osborne (2003, Osborne et al. 2003) developed a means of rating habitat on site for potential to support DSF, rating areas within any site based on a scale of 1 to 5, with 5 being the best quality and most suitable habitat based on the following scheme:

1. Developed areas, non-Delhi sands soils with high clay, silt, and/or gravel content. Delhi sands extensively and deeply covered by dumping of exotic soils, rubble, trash, manure, or organic debris. *Unsuitable*.
2. Delhi sands are present but the soil characteristics include a predominance of exotic soils such as alluvial materials, or predominance of other foreign contamination as gravels, manure, or organic debris. Severe and frequent disturbance (such as a maintenance yard or high use roadbed). *Very Low Quality*.
3. Moderately contaminated Delhi sands. Delhi sands with moderate to high disturbance (such as annual disking). Sufficient Delhi Sands are present to prevent soil compaction (related to contamination by foreign soils). Some sandy soils exposed on the surface due to fossorial animal activity. *Low Quality*.
4. Abundant clean Delhi Sands with little or no foreign soils (such as alluvial material) present. Moderate abundance of exposed sands on the soil surface. Low vegetative cover. Evidence of moderate degree of fossorial animal activity by vertebrates and invertebrates. May represent high quality habitat with mild or superficial disturbance. *Moderate Quality*
5. Sand dune habitat with clean Delhi Sands. High abundance of exposed sands on the soil surface. Low vegetative cover. Evidence (soil surface often gives under foot) of high degree of fossorial animal activity by vertebrates and invertebrates. Sand associated plant and arthropod species may be abundant. *High Quality*

It should be noted that habitat qualities often vary spatially within a site so that conditions on a site fall within a range of qualities. Further, overall habitat quality is affected by the overall habitat area on a site, such that very small areas diminish the overall habitat value of a site. It is also important to note that suitable habitats, even rated as high quality for DSF, are very rarely actually occupied by DSF. These ratings are more informative on mitigation and conservation measures in the event that DSF is found on any particular site. Use of this habitat rating system is somewhat subjective and best undertaken by a biologist who has extensive experience with *Rhaphiomidas* species. While investigating the subject site, Osborne subjected the site to an analysis of this kind so as to give a general estimate of overall habitat conditions relevant to DSF potential.

3.3 Focused Survey Methods

The subject site was surveyed on 27 dates, totaling 32.01 field hours, with site visits made from July 2, to September 18, 2014. Focused DSF surveys were conducted by Kendall H. Osborne and Rick Rogers under Federal U. S. Fish and Wildlife Permit # TE-837760-8. Following the USFWS Interim General Survey Guidelines, we surveyed all portions of the subject site at least twice a week, between the hours of 1000 and 1400 (Table 1). The survey protocol, as set forth in the

Interim General Guidelines for the Delhi Sands flower-loving fly survey, is designed to maximize the validity of a presence/absence determination.

Osborne photographed the property from several perspectives to document existing conditions. Notes were taken on vegetative cover and plant species composition, abundance and diversity and species composition of insects and other animals, soil types, degree and nature of disturbance, surface cover, organic content, compaction, current land management practices, existing development, and conditions of surrounding vicinity and proximity of other DSF populations.

Table 1. Dates, personnel, times and conditions for focused DSF survey work.

Date	Biologist	Hours	Weather Conditions
2-Jul	R. Rogers	1100-1230	clear, winds 3-7 mph, 85-90
5-Jul	K. H. Osborne	1050-1210	0-25% clouds, clear/overcast, winds 0-2 mph, 88
8-Jul	K. H. Osborne	1205-1325	clear, winds 0-2 mph, 88-90
12-Jul	K. H. Osborne	1007-1127	0-5% clouds, clear/high cirrus, winds 0-2 mph, 80-82
15-Jul	R. Rogers	1245-1400	5-10% patchy clouds, winds 5-8 mph, 90-93
16-Jul	K. H. Osborne	1245-1255	clear, calm, 82
18-Jul	K. H. Osborne	1015-1135	10-5% patchy clouds, winds 3-5 mph, 76-78
22-Jul	K. H. Osborne	1145-1245	clear, calm, 86-88
23-Jul	R. Rogers	1255-1355	clear, winds 5-10 mph, 98-101
25-Jul	K. H. Osborne	1010-1130	50% patchy clouds, calm, 85-90
29-Jul	R. Rogers	1020-1140	0-5% clear to patchy clouds, winds 2-6 mph, 88-93
2-Aug	K. H. Osborne	1000-1120	clear, calm, 71-80
6-Aug	K. H. Osborne	1000-1120	clear, winds 0-2 mph, 78-80
8-Aug	K. H. Osborne	1000-1120	25% haze to clear, winds 0-6 mph, 74-80
13-Aug	R. Rogers	1225-1345	clear, winds 4-8 mph, 90-91
15-Aug	R. Rogers	1120-1240	clear, winds 4-8 mph, 89-95
19-Aug	K. H. Osborne	1000-1120	clear, winds 2-5 mph, 77-79
22-Aug	R. Rogers	1100-1220	clear, winds 1-8 mph, 91-95
29-Aug	R. Rogers	1130-1250	clear, winds 2-5 mph, 98-102
1-Sep	R. Rogers	1240-1400	clear, winds 4-9 mph, 92-95
3-Sep	K. H. Osborne	1300-1400	clear, winds 3-6 mph, 85-90
5-Sep	R. Rogers	1110-1230	clear, winds 3-9 mph, 89-93
7-Sep	K. H. Osborne	1000-1020	clear, calm, 92-93
9-Sep	R. Rogers	1045-1220	clear, winds 1-5 mph, 90-95
11-Sep	R. Rogers	1040-1200	clear, winds 2-7 mph, 90-99
16-Sep	K. H. Osborne	1032-1155	clear and humid, calm, 96-100
18-Sep	K. H. Osborne	1134-1254	clear to 5% clouds, winds 0-5 mph, 80-82

4.0 RESULTS

4.1 Habitat Assessment Results

The site consists of moderately clean, regularly disturbed Delhi sand substrate. Although annual weedy vegetation was disked prior to survey efforts, the entire site presented an open clean sand substrate with potential habitat conditions for DSF rated as being of *Moderate to High Quality*. Figures 3 through 8 present photographs of representative habitat conditions on the study site. It is noteworthy that the subject site was surveyed for DSF through years 2003-2004 with negative results (Osborne 2003a, 2003b, 2004, 2004a). A single male DSF was located 250 meters north of the subject site (Osborne 2004b) but that area was promptly graded and paved, and during the course of summer 2013, graded again for a new commercial project. An additional small population of DSF was documented 1.4 km west of the subject site (Osborne 2000) on a sandy area associated with *Eucalyptus* windbreaks (on conditions similar to the subject site) and the habitat for that population was subsequently developed to commercial use. The prospects of DSF population occurrence on the subject site have been reduced over the last decade in the course of further habitat degradation, and extirpation of local DSF populations through the succession of recent commercial developments. Approximately 1.8 acres of the northern and northwestern site have been rendered *Unsuitable* for DSF by habitat loss – asphalt and gravel paving - associated with the widening of Slover Avenue during the winter of 2013-14.

4.2 Survey Results

Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) was not observed on the subject site during the course of either year 2013 or 2014 survey seasons. Lists of plants and insects observed during the course of the survey are given in the appendix.

4.3 Existing Environment and Community

4.3.1 Adjacent lands

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project).

4.3.2 Topography

The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet.

4.3.3 Soils

Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

4.3.4 Vegetation

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Dominant plants are puncture vine (*Tribulus terrestris*), summer mustard (*Hirschfeldia incana*), and spanish clover (*Lotus purshianus*). Annual vegetation cover is much reduced as compared to previous studies a decade ago (Osborne 2003a, 2003b, 2004, 2004a). Woolly buckwheat (*Eriogonum gracile*), a dominant in previous studies is now absent, and western ragweed (*Ambrosia acanthicarpa*) formerly abundant is now largely restricted to a strip of undisked habitat adjacent to Locust Avenue. Old Eucalyptus windbreaks line the northern site boundary, and remnant trees such as Olive and Peruvian Pepper are found on the southern site boundary. Figures 3-8 present representative views of the survey site and habitats. Figure 9 provides a key as to where on the site these photographs were taken. Table 1 (Appendix A) provides a list of plant species encountered on the survey site. No special status plant species (species of concern) were encountered in the course of this survey.

4.3.5 Insect Community

During site visits for 2013 and 2014, at least 51 insect species (counting only large and conspicuous insects) were either casually observed or collected. A list of most insect species observed is presented in the appendix (Table 2, Appendix A). No special status animal species (species of concern) were encountered in the course of this survey. The insect community encountered on the subject site was relatively species depauperate as compared to undisturbed ecological communities occurring on Delhi sands, but included Mydidae (*Nemomydas*), Apioceridae, Asilidae, Mutilidae, Chrysididae, Mymerliontidae, and Sphecidae. Indicators of potential high quality of DSF habitat found on the subject site during the course of the current survey include flies *Apiocera chrysolasia*, *Apiocera convergens*, *Nemomydas pantherinus*, and the Mutilid (*Dasymutilla sackeni*).

5.0 CONCLUSIONS

Delhi Sands Flower-loving fly is absent from the site. Finding of the presence of Delhi sands on the survey site, and the observations of Mydidae (*Nemomydas pantherinus*), Apioceridae (*Apiocera chrysolasea* and *A. convergens*), Mutilidae, and Asilidae, along with the overall habitat ratings made for the site and the historic presence of DSF nearby to the north (Osborne 2004b), have suggested some degree of habitat suitability and potential for DSF. After the course of two field seasons of DSF survey with negative results, we conclude that the project site does not support a population of DSF.

6.0 REFERENCES

- Cazier, M.A. 1985. A revision of the North American flies belonging to the genus *Rhaphiomidas* (Diptera:Apioceridae). Bulletin of the American Museum of Natural History 182(2):181-263.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.

- Kingsley, Kenneth J. 1996. Behavior of the Delhi Sands Flower-Loving Fly (Diptera: Mydidae), a Little Known Endangered Species. *Ann. Entomol. Soc. Am.* 89(6): 883-891.
- Kiyani Environmental Consultants. 1995. Principal Investigator's Annual Report, Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*) Studies at Colton, California. Prepared for San Bernardino County and U.S. Fish and Wildlife Service, Carlsbad, CA. 25+ pp.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, California.
- Osborne, K. H. 2000. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 125-acre portion of the Fontana Empire Business Center Site. Prepared for the City of Fontana. Submitted to USFWS, Carlsbad, October 2000.
- Osborne, K. H. 2003. *Delhi Sands Flower-loving fly Habitat Assessment for the Hermosa Cemetery, Colton*. Prepared for Inland Memorial Cremations and Burial. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. 2003a. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2003b. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2004. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004a. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004b. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 17-acre site in Bloomington, San Bernardino County, California. Prepared for Boruchin Enterprises. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2013. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2013.

- Osborne, K. H., G. R. Ballmer, and T. McGill. 2003. *DSF Habitat Assessment for the Proposed Mary Vagle Conservation Area*. Prepared for the City of Fontana. Submitted to the U.S. Fish and Wildlife Service, CA.
- Osborne, K. H. and G. R. Ballmer. 2014. A Petition to the United States Department of the Interior, Fish and Wildlife Service, for emergency action to list an endangered species pursuant to the conditions and regulations of the Federal Endangered Species Act: For the San Joaquin Valley Giant Flower-loving Fly (*Rhaphiomidas trochilus*). Submitted June, 2014.
- Rogers, R. and M. Mattoni. 1993. Observations on the natural history and conservation biology of the giant flower-loving flies, *Rhaphiomidas* (Diptera: Apioceridae). *Dipterological Research* 4(1-2):21-34.
- U.S. Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Delhi Sands Flower-loving Fly.
U.S. Department of Interior. *Federal Register*, 58 (183): 49881-49887.
- U.S. Fish and Wildlife Service. 1996. Delhi Sands Flower-loving Fly Draft Presence/Absence Survey Guidelines. December 30.
- U.S. Fish and Wildlife Service. 1997. Delhi sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR.
51 pp.
- Woodruff, G. A. 1980. Soil survey of San Bernardino County, southwestern part, California. U.S. Department of Agriculture, Soil Conservation Service.

7.0 FIGURES

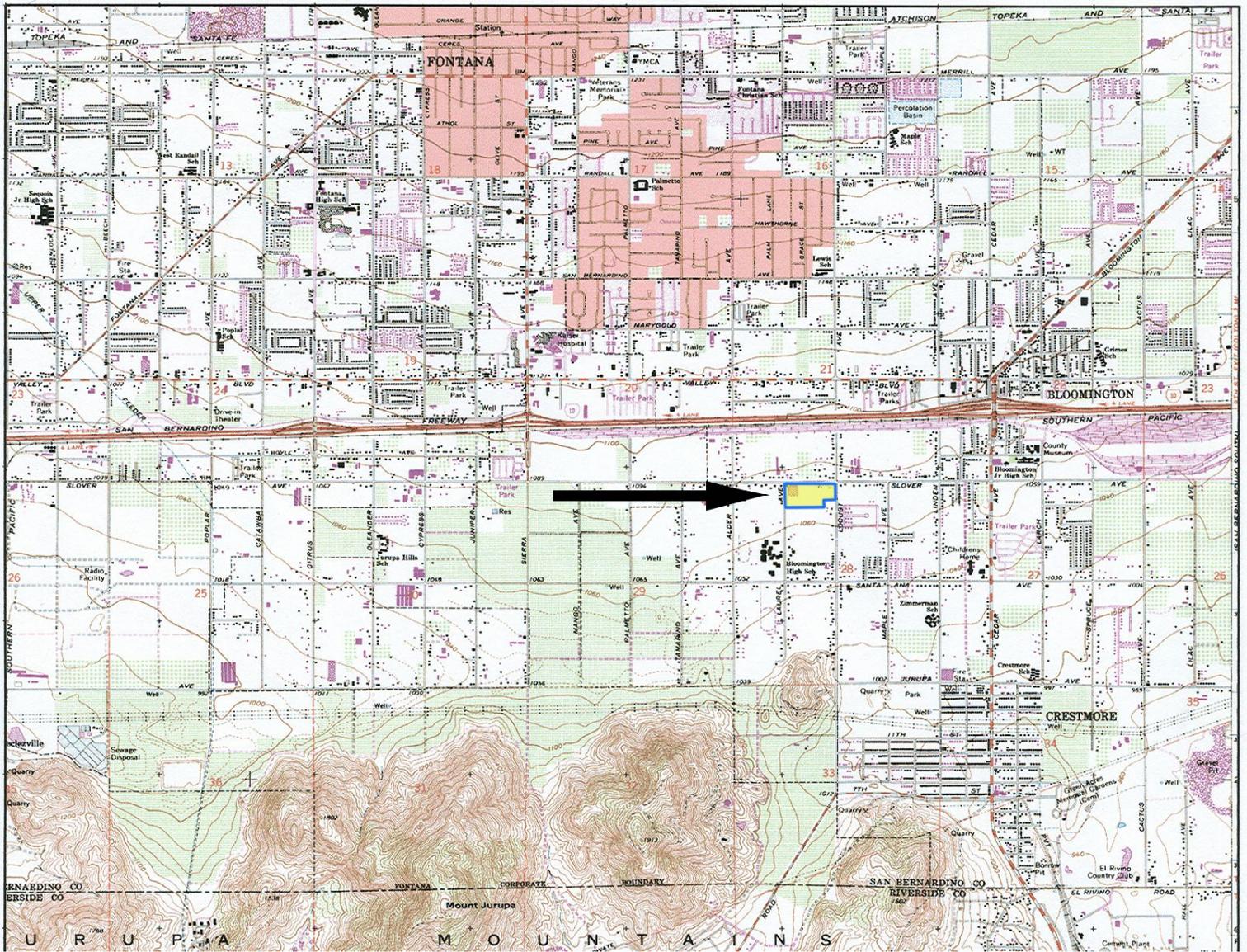
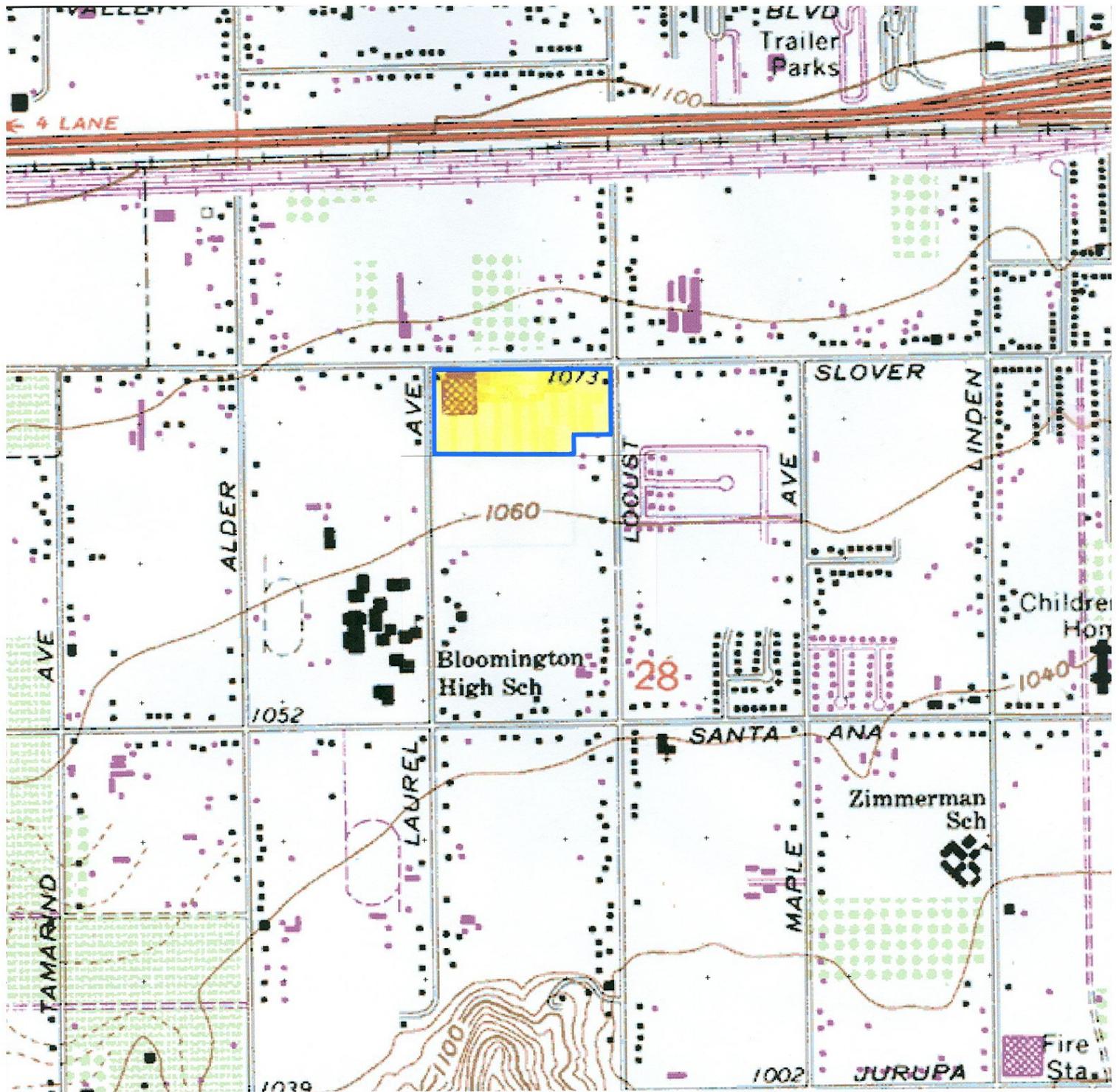


Figure 1. General vicinity of survey site, Fontana, California USGS 7.5" quadrangle at 50%. 16.32-acre site is outlined in blue and highlighted in yellow (arrow).



 = 100 meters N


Figure 2. General vicinity of survey site, Fontana, California USGS 7.5" quadrangle at 200%. 16.32-acre site is outlined in blue and highlighted in yellow.



Figure 3. Photograph (2013) of the western survey site, looking to the south from the northwestern corner of the site.



Figure 4. Photograph (2014) of northern portions of the survey site along Slover Avenue. View looks west from the northeastern corner of the site. Note that Slover Avenue has been widened during the previous year to subsume a portion of the northern edge of the survey site.



Figure 5. Photograph (2013) of southern portions of the site. View looks west along the southern boundary of the site from a position on a southeastern portion of the site.



Figure 6 Photograph (2014) of an eastern portion of the site looking to the south from a northeastern portion of the site.



Figure 7. Photograph (2014) of the view across the site looking east southeast from the northwestern portion of the site.



Figure 8. Photograph from 2004 of a view across the site looking to the southwest from a location on a northeastern portion of the site. Note the abundance of annual vegetation as compared to current conditions. Residential development is now present just beyond the olive trees (background) on the southern edge of the site.



Figure 9. Approximate locations around survey site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-8).

8.0 APPENDIX

Appendix A

Table A1. Plant species encountered on the survey site (Osborne 2004, 2004a, 2013 and current).

FAMILY and COMMON NAME	Species
AMERANTHACEAE	
tumbleweed	<i>Amaranthus albus</i>
ASTERACEAE	
annual bur ragweed	<i>Ambrosia acanthicarpa</i>
flax-leaved horseweed	<i>Conyza bonariensis</i>
horseweed	<i>Conyza canadensis</i>
sunflower	<i>Helianthus annua</i>
telegraphweed	<i>Heterotheca grandiflora</i>
prickly lettuce	<i>Lactuca serriola</i>
common sow-thistle	<i>Sonchus oleraceus</i>
golden crownbeard	<i>Verbesina encelioides</i>
BORAGINACEAE	
ranchers fiddleneck	<i>Amsinkia intermedia</i>
BRASSICACEAE	
shortpod mustard	<i>Hirschfeldia incana</i>
London rocket	<i>Sisymbrium irio</i>
CHENOPODIACEAE	
red saltbush	<i>Atriplex rosea</i>
lamb's quarters	<i>Chenopodium album</i>
Kochia	<i>Kochia scoparia</i>
russion thistle	<i>Salsola tragus</i>
FABACEAE	
alfalfa	<i>Medicago sativa</i>
GERANIACEAE	
filaree	<i>Erodium cicutarium</i>
MALVACEAE	
cheeseweed	<i>Malva parviflora</i>
OLEACEAE	
Olive	<i>Olea europa</i>
POACEAE	
Foxtail chess/red brome	<i>Bromus madritensis</i>
Bermuda grass	<i>Cynodon dactylon</i>

Mediterranean barley	<i>Hordeum murinum</i>
Shismus	<i>Schismus barbatus</i>
bur bristlegrass	<i>Setaria verticillata</i>
SOLANACEAE	
Jimson weed	<i>Datura wrightii</i>
Tree tobacco	<i>Nicotiana glouca</i>
Nightshade	<i>Solanum duglasi</i>
ZYGOPHYLLACEAE	
Puncture vine	<i>Tribulus terrestris</i>

Table A2. Insects encountered on the survey site (2013).

Order	Family	Genus, species	
Diptera	Mydidae	<i>Nemomydas pantherinus</i>	
	Apioceridae	<i>Apiocera convergens</i>	
		<i>Apiocera crysolasia</i>	
	Bombyliidae	<i>Apheobantus mus</i>	
		<i>Poecilanthrax arethusa</i>	
		<i>Thyridanthrax atrata</i>	
		<i>Villa moliter</i>	
	Asilidae	<i>Efferia albibarbis</i>	
		<i>Mallophora faultrix</i>	
		<i>Stenopogon brevisculus</i>	
	Hymenoptera	Therividae	<i>Thereva semitaria</i>
		Stratiomyidae	<i>Hermicia illuceus</i>
		Apidae	<i>Apis mellifera</i>
			<i>Bembix americana</i>
Crabionidae		<i>Philanthus gibbosus</i>	
		<i>Agapostemon</i>	
Halictidae		<i>Nomada</i>	
		<i>Chlonrion aerarium</i>	
Sphecidae		<i>Scellphron caementarium</i>	
		<i>Ammophila azteca</i>	
	<i>Polistes apachus</i>		
Vespidae	<i>Polistes exclamens</i>		
	<i>Pepsis</i>		
Neuroptera	Pompilidae	<i>Pogonomyrmex californicus</i>	
	Formicidae	<i>Dasymutilla sackeni</i>	
	Mutillidae	<i>Brachynemurus</i>	
Heteroptera	Mymerliontidae	<i>Chlorochroa sayi</i>	
	Pentatomidae	<i>Bagrada hilaris</i>	

Heteroptera	Reduviidae	<i>Zelus renardii</i>
Coleoptera	Chrysomelidae	<i>Lema trilineata</i>
	Scarabaeidae	<i>Cotinus texana</i>
	Coccinellidae	<i>Hippodamia convergens</i>
	Curculionidae	unidentified
Odonata	Aeshnidae	<i>Anax junius</i>
		<i>Aeshna multicolor</i>
	Libellulidae	<i>Brechmorhoga mendax</i>
		<i>Pantala flavescens</i>
		<i>Pantala hymenaea</i>
		<i>Sympetrum corruptum</i>
		<i>Tramea lacerata</i>
Lepidoptera	Coenagrionidae	<i>Argia</i>
	Pieridae	<i>Pontia protodice</i>
	Lycaenidae	<i>Brephidium exilis</i>
		<i>Leptotes marina</i>
		<i>Strymon melinus</i>
		<i>Hylephila phyleus</i>
	Hesperiidae	<i>Vanessa cardui</i>
	Nymphalidae	<i>Caenurgia togataria</i>
	Noctuidae	<i>Drasteria ochraceae</i>
	Orthoptera	Papilionidae
Acrididae		<i>Trimerotropis pallidipennis</i>

Appendix B
Correspondence with USFWS
Field Notes

Ken H. Osborne (permit #TE837760-8)
6675 Avenue Juan Diaz,
Riverside, CA 92509
(951) 360-6461
Euproserpinus@msn.com

June 17, 2014

Attn: Ms. Stacey Love,
USFWS Carlsbad Field Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

To Whom It May Concern:

I write to notify you of intent to conduct a second season of survey for Delhi Sands Giant Flower-loving fly (DSF, *Rhaphiomidas terminatus abdominalis*) on an approximately 16.32-acre site located in Bloomington. We previously surveyed this area (in addition to last year, as two adjacent sites and two separate studies, through years 2003-2004) with negative results. This site is located immediately south of Slover Avenue, between Locust Avenue and Laurel Avenue. The attached map shows the site on the Fontana, CA, USGS topographic map at 200% scale.

This continued survey is being undertaken on behalf of America United Development, LLC., of Diamond Bar, CA. The survey will commence on the week of July 1.

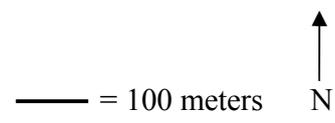
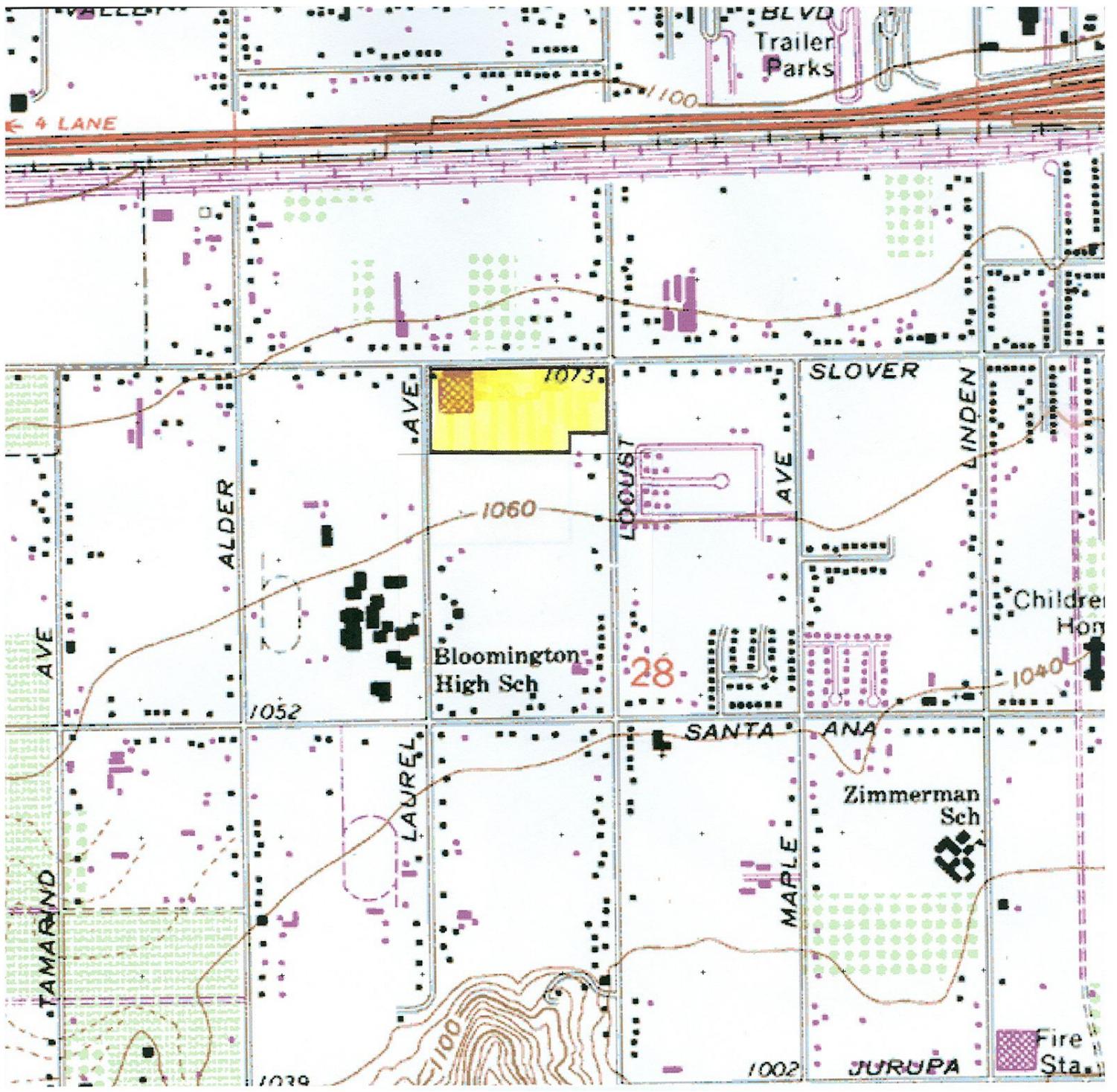
If you have any questions or comments regarding this survey, please feel free to contact me.

Respectfully submitted,



Ken H. Osborne

cc: Gus Andros
Andy Wang



General vicinity of the 16.32-acre survey site, Fontana, California USGS 7.5" quadrangle at 200%. Site is outlined in black and highlighted in yellow.

Delhi sands flower-loving fly - General Form

Date July 2, 2014 Overall Time 1 hr. 20 min.AUD
Jobs Bloomington (Slover)Surveyor Rick Rodgers Survey Partner(s) _____

Overall Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>11:00</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>3-4</u>	<u>85</u>
<u>11:30</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>5-6</u>	<u>89</u>
<u>12:00</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>5-7</u>	<u>90</u>
Stop <u>12:20</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>5-7</u>	<u>90</u>

Site #	Time	Mileage on site
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____
_____	_____ to _____	_____

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids
 Mydids Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids (sm. round sp.)
 Other insects of note Chlorion arcuatum (many ♂ or no ♀ yet)

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Delhi sands flower-loving fly – General Field Form

Date 7/5/2014 Overall Time 1.33 hr Job AUD-wangSurveyor K H Osborne Survey Partner(s) *[Signature]*Mileage 10062 on STA

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>10:50</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>88</u>
<u>11:30</u>	<u>25</u>	clear patchy <u>overcast</u> drizzle shower	<u>0-2</u>	<u>88</u>
		clear patchy overcast drizzle shower		
Stop <u>12:10</u>		<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>92</u>

Biological elements:

Rhaphiomidas terminatus? ___ time ___ sex ___ numbers ___.

Other arthropods (general) Bombyliids Asilids
 Mydids ___ Apiocerids ___ Sphecids
 Pompillids ___ Scoliids ___ Chrysidids ___
 Other insects of note P. apache, Pogonomyza, Ulla, Eleria, Bembix
Microbambix, Cotinus, Trimerotropis

Plants: Croton ___ Telegraph weed ___ Eriogonum fasciculatum ___
 Eriogonum thurberi ___ other Eriogonum ___ Oenothera ___
 Camissonia ___ Eriastrum ___

Others:

Disturbance veg dominated by Salvia.Vertebrates: H. f.

Comments:

Expansion of Stoner: large northern strip of site now developed to road and gravel. Also large strip of W. boundary.Eucalyptus windbreaker one gone.Site dished again during the year veg now predominated by only

Delhi sands flower-loving fly – General Field Form

Date 7/8/14 Overall Time 1hr, 20min Job AUD BloomingtonSurveyor K A Osborne Survey Partner(s) ✓Mileage 0172 mi on site

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>1205</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>0</u>	<u>88</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>125</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>0-2</u>	<u>90</u>

Biological elements:

Rhaphiomidas terminatus? ___ time ___ sex ___ numbers ___.

Other arthropods (general) Bombyliids ___ Asilids ✓

Mydids ___ Apiocerids ___ Sphecids ✓

Pompillids ___ Scoliids ___ Chrysidids ___

Other insects of note Stenopogon, Eflavia, Rambix, Pogonomyza

Amphibia, Polista apachea, Puntia, Braphidum,

Plants: *Croton* ___ Telegraph weed ___ *Eriogonum fasciculatum* ___

Eriogonum thurberi ___ other *Eriogonum* ___ *Oenothera* ___

Camissonia ___ *Eriastrum* ___

Others: _____

Vertebrates: Cottontail and squirrel

Comments:

Delhi sands flower-loving fly – General Field Form

Date 7/12/14 Overall Time 1hr 20min Job AU4Surveyor KLAD Survey Partner(s) ØMileage 0310 on st

Weather:

Time (24 hr)	% Cloud	Sky				Winds (mph)	Temp (F)
Start <u>1007</u>	<u>5</u>	clear	patchy <u>high cirrus</u>	overcast	drizzle	shower	<u>80</u>
		clear	patchy	overcast	drizzle	shower	
		clear	patchy	overcast	drizzle	shower	
Stop <u>1127</u>	<u>0</u>	clear	patchy	overcast	drizzle	shower	<u>82</u>

Biological elements:

Rhaphiomidas terminatus ? time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asp 6 ✓ Asilids Asp 10, 11 ✓
 Mydids _____ Apiocerids _____ Sphecids Amphila ✓
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Malphora

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: AMKIS HUSP Uta

Comments:

Delhi sands flower-loving fly – General Field Form

Date 7/18/2014 Overall Time 1.33 hr Job AUWSurveyor KAO Osborne Survey Partner(s) [Signature]Mileage 0714 mi on 576

Weather:

Time (24 hr)	% Cloud	Sky				Winds (mph)	Temp (F)	
Start <u>1015</u>	<u>10</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>3 mph</u>	<u>76'</u>
<u>1100</u>	<u>10</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>3-5 mph</u>	<u>77</u>
		<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>		
Stop <u>1135</u>	<u>5</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>calm</u>	<u>78</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____Other arthropods (general) Bombyliids Aug 6 Asilids Aug 10, 11
Mydids _____ Apiocerids _____ Sphecids Bombix
Pompillids _____ Scoliids _____ Chrysidids _____

Other insects of note

Pentac Polista apachin Catinus
Dyastaria uchracea Therera sanatorum Leptulus Urolyphora
PaccitanthusPlants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____Vertebrates: Ground Squirrel

Comments:

Today, lacking the warming marine layer of previous days
Mild conditions from beginning of survey

7/18/14 1/2 hr total time

SIGP

RAD-shore w/ no additional Biologist
0718 mi on site

1146 52 knots clear calm 75°F

1216 clear calm 76°F

Apis Continus Hylaeus H. cressphorae

7/22 Tudor 1002 mi 40 min total

1100 am 0-3 mph clear 84°

1140 86°

Dip II Antea, *A. chrysolasa Polistes apachus Dip 6
Mokelad (s-haini); Catinus, T.p. Braconidius Thoreva

7/22 AWD 1004 mi on site 1/2 hr total

RAD-shore (abund)

1145 clear calm 86°

1215 clear calm 88°

Dip 10, Dip 11, Bantia, Dip 6, T.p. Apis Braconidius.

7/22 SIGP 1008 mi on site 1/2 hr
RADU.

1230 pm calm clear 88°

100 pm calm clear 90°

Trinostropis, Uoluchella, Myrmica (larvae) Hylaeus.

P. Kevia = Dip 10

Delhi sands flower-loving fly – General Field FormDate July 23, 2014 Overall Time 1 hrJob AUD/BloomingtonSurveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>12:55</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5-8</u>	<u>98</u>
<u>1:15</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5-8</u>	<u>99</u>
<u>1:35</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>7-10</u>	<u>100</u>
Stop <u>1:55</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>8-10</u>	<u>101</u>

Biological elements:*Rhaphiomidas terminatus* ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date July 29 2014 Overall Time 1 hr, 20 min.

Job AUD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>10:20</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>2-3</u>	<u>88°</u>
<u>11:21</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>2-4</u>	<u>91°</u>
<u>11:30</u>	<u>5%</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>4-5</u>	<u>92°</u>
Stop <u>11:40</u>	<u>5%</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>4-6</u>	<u>93°</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____.

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apocerids Sphecids
 Pompilids _____ Scoliids _____ Chrysidids
 Other insects of note Apocera chrysofascia ♂

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date 8/6/2014 Overall Time 1 hr 20 min Job ALWSurveyor K A Osborne. Survey Partner(s) /Mileage 1328 on site

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>10⁰⁰</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>calm</u>	<u>78</u>
		clear	patchy	overcast	drizzle	shower		
		clear	patchy	overcast	drizzle	shower		
Stop <u>11²⁰</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>2</u>	<u>80</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____.

Other arthropods (general) Bombyliids 5/5 Asilids ✓
 Mydids ✓ Apicerids ✓ Sphecids ✓ 1, 2 cocoons
 Pompillids ✓ Scoliids _____ Chrysidids _____
 Other insects of note _____

Catantops

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: Cond Squirrel.

Comments:

Delhi sands flower-loving fly – General Field Form

Date Aug 13, 2014 Overall Time 1 hr. 20 min.

Job AVD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start 12:25	0	clear	patchy	overcast	drizzle	shower	5-6	90°
12:55	0	clear	patchy	overcast	drizzle	shower	5-8	90°
1:30	0	clear	patchy	overcast	drizzle	shower	6-8	91°
Stop 1:45	0	clear	patchy	overcast	drizzle	shower	4-8	91°

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apocerids Sphecids
 Pompilids _____ Scoliids _____ Chrysidids _____
 Other insects of note Dusymutilla sackenii ♀ (large)

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Aug 15, 2014 Overall Time 1 hr. 20 min.

Job AVD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>11:20</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5-6</u>	<u>89</u>
<u>12:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-5</u>	<u>90</u>
<u>12:25</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-6</u>	<u>92</u>
Stop <u>12:40</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>7-8</u>	<u>95</u>

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____

Other insects of note Thereva sp. (large pale species ♂ & ♀)
Dasymutilla sackeni ♂?

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date 8/19/2014 Overall Time 1 hr 20 min Job A UDSurveyor K A Osborne Survey Partner(s) DMileage 2457 on site

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>1000</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>calm</u>	<u>77</u>
		clear	patchy	overcast	drizzle	shower		
		clear	patchy	overcast	drizzle	shower		
Stop <u>1120</u>		<u>clear</u>	patchy	overcast	drizzle	shower	<u>2-5</u>	<u>79</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ✓ 6 Asilids 11
 Mydids _____ Apiocerids ✓ Sphecids 1
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note Mutillidae Sackenii

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Aug. 22, 2014 Overall Time 1 hr. 20 min.

Job AUD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>11:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-3</u>	<u>91°</u>
<u>11:36</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>1-3</u>	<u>93°</u>
<u>12:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5-7</u>	<u>94°</u>
Stop <u>12:20</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5-8</u>	<u>95°</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids Scoliids _____ Chrysidids _____
 Other insects of note Dasyneut. sackeni o →

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Aug 29, 2014 Overall Time 1 hr. 20 min.

Job AUD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>11=30</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-3</u>	<u>98°</u>
<u>12=10</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>3-4</u>	<u>100°</u>
<u>12=25</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-5</u>	<u>101°</u>
Stop <u>12=50</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-5</u>	<u>102°</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note Dasypoda f. sackeni (5 or 6) no ♀ seen.

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Sept. 1, 2014 Overall Time 1 hr. 20m

Job AVD/Bloom

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>12:40</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-6</u>	<u>92</u>
<u>12:55</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>6-7</u>	<u>95</u>
<u>1:30</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>6-8</u>	<u>95</u>
Stop <u>2:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>8-9</u>	<u>95</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Sept. 5, 2014 Overall Time 1 hr. 20 min

Job AVD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>10:10</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>3-6</u>	<u>89</u>
<u>11:45</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-6</u>	<u>90</u>
<u>12:10</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5-8</u>	<u>91</u>
Stop <u>12:30</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>8-9</u>	<u>93</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____

Other insects of note large, mostly black Gompid! "club-tail" = Brachmorhoga
 after consultation w/Rick

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly - General Field Form

Date Sept 9, 2014 Overall Time 1 hr. 20 min.

Job AUD/Bloom.

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>10:45</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>1-2</u>	<u>90°</u>
<u>11:45</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>3-4</u>	<u>94°</u>
<u>12:04</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>2-3</u>	<u>95°</u>
Stop <u>12:20</u>	<u>0</u>	<u>clear</u>	<u>patchy</u>	<u>overcast</u>	<u>drizzle</u>	<u>shower</u>	<u>4-5</u>	<u>95°</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

2/21

Delhi sands flower-loving fly – General Field Form

Date Sept-11, 2014 Overall Time 1 hr. 20 min

Job AUD/Bloom-

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>10:40</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-5</u>	<u>90°</u>
<u>11:20</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-6</u>	<u>98°</u>
<u>11:40</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-5</u>	<u>99°</u>
Stop <u>12:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>4-7</u>	<u>99°</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompillids Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

all vegetat. on mowed & removed! *

*except for thin strip along So. fence ^W up to Olive tree

Delhi sands flower-loving fly – General Field Form

Date 9/18/14 Overall Time 1.33 hr Job AUD
 Surveyor KAD Survey Partner(s) [Signature]
 Mileage 3908 on srb

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>1134</u>	<u>5</u>	<u>clear</u> patchy overcast drizzle shower	<u>80</u>	<u>0-3</u>
		clear patchy overcast drizzle shower	<u>↔</u>	
		clear patchy overcast drizzle shower		
Stop <u>1254</u>	<u>5</u>	<u>clear</u> patchy overcast drizzle shower	<u>82</u>	<u>0-5</u>
			<u>↔</u>	

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids [Signature] Asilids [Signature]
 Mydids _____ Apiocerids _____ Sphecids [Signature]
 Pompilids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Trinervis, Catantopidae, Pentatomidae

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

**FOCUSED SURVEY FOR
DELHI SANDS
FLOWER-LOVING FLY
(*Rhaphiomidas terminatus abdominalis*)
ON A 16.32-acre SITE IN BLOOMINGTON, SAN
BERNARDINO COUNTY, CALIFORNIA**

Prepared for:

**America United Development, LLC.
c/o Andy Wang
1940 Derringer Lane
Diamond Bar, CA 91765**

Prepared by:

**Kendall H. Osborne
Osborne Biological Consulting
6675 Avenue Juan Diaz
Riverside, CA 92509**

October 10, 2013

**FOCUSED SURVEY FOR
DELHI SANDS
FLOWER-LOVING FLY
(*Rhaphiomidas terminatus abdominalis*)
ON A 16.32-acre SITE IN BLOOMINGTON, SAN
BERNARDINO COUNTY, CALIFORNIA**

Prepared for

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1940 Derringer Lane
Diamond Bar, CA 91765**

Prepared by

**Kendall H. Osborne
Osborne Biological Consulting
6675 Avenue Juan Diaz
Riverside, CA 92509**

The undersigned certify this report to be a complete and accurate account of the findings and conclusions of a first year, 2013 focused survey for Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site, Bloomington, San Bernardino County, California.



**Ken H. Osborne
6675 Avenue Juan Diaz
Riverside, CA 92509**



**Rick Rogers
8614 Foothill Blvd.
Apt. 201
Sunland, CA 91040**

October 10, 2013

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SUMMARY

America United Development, LLC. has requested a focused survey to assess the presence or absence of Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) on a 16.32-acre site in Bloomington, San Bernardino County, California. To assess this site for potential as habitat for the federally endangered DSF, and to determine presence or absence of DSF on the site, a series of 23 field visits, totaling 31.94 hours, were conducted on the site from July 5 to September 20, 2013.

The site has soils mapped as Delhi sands, and consists of an open vacant lot. Habitat conditions on the site are uniform sand dune supporting annual grassland vegetation, representing *Moderate Quality* to *High Quality* habitat potential for the DSF. Vegetation was scraped off to clean sand substrate prior to the survey season.

Delhi Sands Flower-Loving Fly was not observed on the site during the course of this year 2013 field season. No special status plant or animal species (species of concern) were encountered in the course of this survey.

1.0 INTRODUCTION

This report presents the methods and results of a Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) focused survey for a 16.32-acre site, in Bloomington, San Bernardino County. The DSF was listed as an endangered species by the U.S. Fish and Wildlife Service on September 23, 1993 (USFWS 1993).

The survey site is located on the Fontana, California USGS 7.5-minute quadrangle map, Township 1 South, Range 5 West, in Section 28. Latitude ranges from approximately 34° 03' 41" to 34° 03' 46" N and Longitude from 117° 24' 31" to 117° 24' 46" W. Figure 1 shows the general vicinity of the survey site at 50% scale on the Fontana, California USGS 7.5-minute quadrangle map. Figure 2 displays the survey site at 200% scale on this USGS quadrangle. This site is located immediately south of Slover Avenue, between Locust Avenue and Laurel Avenue. The survey area is bounded by Slover Avenue on the north, Laurel Avenue on the west, Locust Avenue on the east, and various developed residential and vacant lots to the south.

The results of this field survey will provide additional baseline data required to evaluate potential impacts to DSF or supporting suitable habitat for the species as a result of any future development of the subject site.

2.0 NATURAL HISTORY OF THE DELHI SANDS FLOWER-LOVING FLY

Delhi Sands Flower-loving fly belongs to a genus of flies (*Rhaphiomidas*) commonly known as flower loving flies. There are more than 30 species of these flies, distributed across the southwestern United States and northern Mexico. These flies are huge by the standards set

by most flies – with size among the species ranging from approximately 1.5 centimeters up to 3, and even 4 centimeters, usually gray, tan, rust or yellow in color. All species of *Rhaphiomidas* are associated with rather arid, sandy habitats, with most species living on dune systems of inland desert valleys, rivers, deltas, and beach strands. A few species are found in sandy washes, alluvial benches and remnant glacial moraines. Many species of these flies often hover before flowers in the manner of hummingbirds, using a long, thin, tubular proboscis (mouth-part), with which the flies probe for nectar – hence a traditional name “giant flower-loving flies”. Smaller flies of the family Apioceridae, once considered very closely related to *Rhaphiomidas* were formerly called “flower-loving flies”.

The DSF is only known to occur in association with Delhi sand deposits, presumably occupied the once extensive dune system of the upper Santa Ana River Valley, including portions of what is now the City of Colton, west through portions of the City of Ontario, and south to the Santa Ana River. Today, DSF exists on only a few disjunct sites (USFWS 1997) within a radius of about eight miles in southwestern San Bernardino and northwestern Riverside Counties (Colton, Bloomington, Fontana, and Ontario). More than 95 percent of known DSF habitat was considered eliminated by development, agriculture and other land management practices by 1993 (Smith 1993, USFWS 1996 in Kingsley 1996), however, this proportion is now nearer 98 to 99% due to these ongoing processes. Many of the last remaining fragments of DSF habitat are currently under pressure by land management efforts such as heavy disking, irrigation, manure dumping, and gravel dumping. There is presently an estimated 1,200 acres of habitat that can support this species (USFWS 1997), but this estimate likely includes lands needing extensive habitat restoration.

Adult DSF flight period is typically August and September, when individual adults emerge, reproduce and die. The adult life span of an individual DSF lasts for a few days and adults do not live beyond the flight period (Kiyani 1995). DSF, like other *Rhaphiomidas* species, appears to have an annual life cycle (because of the annual flight). However, it is widely believed that the underground larval/pupal stage may persist for additional years, depending upon various environmental factors such as annual rainfall, food availability and weather conditions during the flight season (many desert *Rhaphiomidas* species do not appear after a drought year and often, substantial flights occur only sporadically over the years). It is known that DSF larvae develop underground, however the specific biology (larval biology, habits and food requirements) are not yet known for DSF or any other *Rhaphiomidas* species. Known life histories of all related fly families and genera involve parasitism or predation on other soil dwelling arthropods and it is there for considered highly likely that *Rhaphiomidas* development is dependent on some other endemic insect species in the community.

Adult DSF are highly mobile, agile fliers. Male DSF are frequently seen flying low through habitat, using apparently random, circuitous paths around and between shrubs in search of females. Such “cruising” behavior often covers areas on the scale of 1000 square meters in the time span of a minute. Alternatively, male DSF are often seen flying about an open patch of ground (ca 100 square meters) such as along a dirt path or dune blow-out area. Here, males may repetitively land and rest on one or another object (such as small dried plants) in the area, and such rests are interrupted by periods of patrolling flight (apparently territorial) about the spot. When alarmed, these insects tend to fly rapidly in more or less a

straight line – often covering distances of 100 meters in less than 6 seconds. Adult DSF are known to nectar at flowers of California buckwheat and California croton.

2.1 DSF Habitat Characteristics

DSF is typically found in areas of unconsolidated sandy soils (Delhi series) supporting an open community of native and exotic plant species. Dominant plants are typically California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), telegraph weed (*Heterotheca grandiflora*), and deerweed (*Lotus scoparius*) but many exotic species often dominate on DSF habitat as well. DSF have been found in habitats that do not support these dominant plant species, and plant species composition may not be directly relevant to larval development (due to likely predatory or parasitic habit of DSF larvae). Adult DSF are known to nectar at flowers of California buckwheat and California croton. Many other plant species are common, including Thurber's eriogonum (*Eriogonum thurberi*), autumn vinegar weed (*Lessingia glandulifera*), and sapphire eriastrum (*Eriastrum sapphirinum*). Non native plant species also occur in DSF habitat (and incidentally, virtually everywhere). DSF habitat also supports other associated insects such as flies and wasps considered as indicator species – *Apiocera convergens*, *Apiocera chrysolasia*, *Ligyra gozophylax*, *Campsomeris tolteca*, *Trielis alcione*, and *Nemomydas pantherinus*. Over 350 insect species have been found on one DSF site, and DSF habitat is typically marked by high abundance and diversity of predatory and parasitic insect groups including many highly specialized families of flies, wasps, bees, beetles, and antlions. The Delhi Sands community is one of California's unique natural communities containing an array of native plants and animals, some of which are found nowhere else. One plant species, Pringle's monardella, (*Monardella pringlei*) is already presumed extinct, as no living individuals have been observed in many years. Several species of insects and some vertebrates, which inhabit the Delhi Sands dunes system, are as endangered as the DSF, but no one has yet petitioned to have them officially declared Endangered. These include the convergent flower-loving fly *Apiocera convergens*, a newly discovered species of Jerusalem cricket, (*Stenopelmatus* sp.), a new species of camel cricket (*Ceuthophilus* sp.) and an endemic subspecies of butterfly *Apodemia mormo nigrescens* (Emmel and Emmel 1998). The other apiocerid fly (*Apiocera chrysolasia*), although known from approximately six general localities, is only common within the Delhi sands.

3.0 METHODOLOGY

3.1 DSF Survey Guidelines

Interim General Survey Guidelines for the DSF have been suggested by the USFWS (1996). By following these guidelines, DSF presence or absence survey results may be deemed acceptable to the USFWS (rejection of survey results may result where the guidelines are not followed). The guidelines indicate that focused DSF surveys should be conducted wherever Delhi sands are present within the presumed range of DSF, twice weekly (two days per week) during the single annual flight period (usually from July 1 to

September 20). Recent early season DSF discoveries lead the USFWS to recommend a survey season from July 15 to September 20 for 2003 and a survey season from July 1 to September 20 from the year 2004. Weather conditions must be suitable for DSF activity at the times survey work is pursued. The DSF is generally active when daytime temperatures exceed 80 degrees Fahrenheit (°F), but may fly with slightly cooler temperatures in bright sunlight.

3.2 Habitat Assessment Methods

During the course of surveys from July 5 to September 20, 2013, Osborne examined the subject site to rate its potential to support DSF. Photographs were taken of the site from various perspectives. Habitat suitability for DSF was evaluated using indicators of potential DSF habitat including: presence and abundance of loose, unconsolidated Delhi sands with low organic contamination; degree of habitat disturbance indicated by plant species composition and disposition of soil surface, presence and abundance of native sand associated plants such as *Croton californicus*, *Heterotheca grandiflora*, *Eriogonum thurberi* and *Eriogonum fasciculatum*. These plants are actually more an indication of relative disturbance regimen – conditions with lesser disturbance being of higher quality for DSF. Presence and abundance of Delhi sands associated insects such as *Apiocera convergens*, *Apiocera chrysolasia* and (to a lesser extent) *Nemomydas pantherinus*, noted throughout the course of focused surveys, serve as further indicators of DSF habitat quality. Potential DSF habitat has been further evaluated on the basis of overall insect diversity and abundance, particularly with respect to sand associated predators and parasitoids.

In the course of previous work Osborne (2003, Osborne et al. 2003) developed a means of rating habitat on site for potential to support DSF, rating areas within any site based on a scale of 1 to 5, with 5 being the best quality and most suitable habitat based on the following scheme:

1. Developed areas, non-Delhi sands soils with high clay, silt, and/or gravel content. Delhi sands extensively and deeply covered by dumping of exotic soils, rubble, trash, manure, or organic debris. *Unsuitable*.
2. Delhi sands are present but the soil characteristics include a predominance of exotic soils such as alluvial materials, or predominance of other foreign contamination as gravels, manure, or organic debris. Severe and frequent disturbance (such as a maintenance yard or high use roadbed). *Very Low Quality*.
3. Moderately contaminated Delhi sands. Delhi sands with moderate to high disturbance (such as annual disking). Sufficient Delhi Sands are present to prevent soil compaction (related to contamination by foreign soils). Some sandy soils exposed on the surface due to fossorial animal activity. *Low Quality*.
4. Abundant clean Delhi Sands with little or no foreign soils (such as alluvial material) present. Moderate abundance of exposed sands on the soil surface.

Low vegetative cover. Evidence of moderate degree of fossorial animal activity by vertebrates and invertebrates. May represent high quality habitat with mild or superficial disturbance. *Moderate Quality*

5. Sand dune habitat with clean Delhi Sands. High abundance of exposed sands on the soil surface. Low vegetative cover. Evidence (soil surface often gives under foot) of high degree of fossorial animal activity by vertebrates and invertebrates. Sand associated plant and arthropod species may be abundant. *High Quality*

It should be noted that habitat qualities often vary spatially within a site so that conditions on a site fall within a range of qualities. Further, overall habitat quality is affected by the overall habitat area on a site, such that very small areas diminish the overall habitat value of a site. It is also important to note that suitable habitats, even rated as high quality for DSF, are very rarely actually occupied by DSF. These ratings are more informative on mitigation and conservation measures in the event that DSF is found on any particular site. Use of this habitat rating system is somewhat subjective and best undertaken by a biologist who has extensive experience with *Rhaphiomidas* species. While investigating the subject site, Osborne subjected the site to an analysis of this kind so as to give a general estimate of overall habitat conditions relevant to DSF potential.

3.3 Focused Survey Methods

The subject site was surveyed on 23 dates, totaling 31.94 field hours, with site visits made from July 5, to September 20, 2013. Focused DSF surveys were conducted by Kendall H. Osborne and Rick Rogers under Federal U. S. Fish and Wildlife Permit # TE-837760-8. Following the USFWS Interim General Survey Guidelines, we surveyed all portions of the subject site at least twice a week, between the hours of 1000 and 1400 (Table 1). The survey protocol, as set forth in the Interim General Guidelines for the Delhi Sands flower-loving fly survey, is designed to maximize the validity of a presence/absence determination.

Osborne photographed the property from several perspectives to document existing conditions. Notes were taken on vegetative cover and plant species composition, abundance and diversity and species composition of insects and other animals, soil types, degree and nature of disturbance, surface cover, organic content, compaction, current land management practices, existing development, and conditions of surrounding vicinity and proximity of other DSF populations.

Table 1. Dates, personnel, times and conditions for focused DSF survey work.

Date		Hours	Weather Conditions
5 July 2013	K. H. Osborne	1000 - 1120	86°F, calm, clouds 50%, humid
7 July 2013	K. H. Osborne	1240 - 1400	90-92°F, winds 2-5 mph, clear
9 July 2013	K. H. Osborne	1000 - 1120	92-96°F, calm, clear
13 July 2013	K. H. Osborne	1037 - 1157	88-92°F, calm, clear
16 July 2013	K. H. Osborne	1015 - 1135	88°F, winds 0-2 mph, clear

20 July 2013	R. Rogers	1000 - 1120	85-90°F, winds 3-5 mph, clouds 60%, patchy
22 July 2013	R. Rogers	1000 - 1120	85-88°F, winds 3-7 mph, clouds 15%, patchy
24 July 2013	K. H. Osborne	1140 - 1300	89-90°F, winds 0-3 mph, clear
30 July 2013	K. H. Osborne	1115 - 1235	79-82°F, winds 3-5 mph, clear
1 August 2013	R. Rogers	1030 - 1215	79-83°F, winds 3-5 mph, clouds 5-10%, clear/patchy
9 August 2013	R. Rogers	1020 - 1145	78-80°F, winds 2-7 mph, clear
11 August 2013	K. H. Osborne	1100 - 1220	85°F, wind 3-5 mph, clear
13 August 2013	K. H. Osborne	1125 - 1255	82-90°F, wind 0-5 mph, clear
20 August 2013	R. Rogers	1100 - 1245	87-95°F, wind 0-2 mph, clear
22 August 2013	K. H. Osborne	1225 - 1345	94-96°F, winds 0-2 mph, clear
26 August 2013	R. Rogers	1045 - 1230	88-92°F wind 2-5 mph, clouds 75-100% patchy/overcast
28 August 2013	K. H. Osborne	1235 - 1355	95°F, calm, clear
2 September 2013	R. Rogers	1100 - 1220	94-96°F, wind 2-7 mph, cloud 0-5%, clear/patchy
5 September 2013	K. H. Osborne	1216 - 1336	97-98°F, calm, clear
9 September 2013	K. H. Osborne	1120 - 1240	86-90°F, winds 2-5 mph, cloud 5%, patchy/overcast
12 September 2013	R. Rogers	1100 - 1220	89-93°F, winds 1-5 mph, cloud 5%, clear/patchy
18 September 2013	K. H. Osborne	1140 - 1300	75-79°F, winds 0-5 mph, clear
20 September 2013	K. H. Osborne	1240 - 1400	72-76°F, winds 0-2 mph, clear

4.0 RESULTS

4.1 Habitat Assessment Results

The site consists of moderately clean, regularly disturbed Delhi sand substrate. Although annual weedy vegetation was disked prior to survey efforts, the entire site presented an open clean sand substrate with potential habitat conditions for DSF rated as being of *Moderate to High Quality*. Figures 3 through 8 present photographs of representative habitat conditions on the study site. It is noteworthy that the subject site was surveyed for DSF through years 2003-2004 with negative results (Osborne 2003a, 2003b, 2004, 2004a). A single male DSF was located 250 meters north of the subject site (Osborne 2004b) but that area was promptly graded and paved, and during the course of summer 2013, graded again for a new commercial project. An additional small population of DSF was documented 1.4 km west of the subject site (Osborne 2000) on a sandy area associated with *Eucalyptus* windbreaks (on conditions similar to the subject site) and the habitat for that population was subsequently developed to commercial use. The prospects of DSF population occurrence on the subject site have been reduced over the last decade in the course of further habitat degradation, and extirpation of local DSF populations through the succession of recent commercial developments

4.2 Survey Results

Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) was not observed on the subject site during the course of this year 2013 survey season. Lists of plants and insects observed during the course of the survey are given in the appendix.

4.3 Existing Environment and Community

4.3.1 Adjacent lands

The survey area is bounded on the south, west, and east by scattered residential developments interspersed with vacant lots; and to the north by Slover Avenue with commercially developed lands beyond (currently being graded for a new commercial project).

4.3.2 Topography

The site is generally flat throughout all portions. Elevation on the site is approximately 1070 feet.

4.3.3 Soils

Woodruff (1980) indicated the site to consist of Delhi fine sands. These sands are evident throughout the site.

4.3.4 Vegetation

The survey area is generally characterized as highly disturbed due to a history of disking, and supports low vegetative diversity of an early successional type. Dominant plants are puncture vine (*Tribulus terrestris*), summer mustard (*Hirschfeldia incana*), and spanish clover (*Lotus purshianus*). Annual vegetation cover is much reduced as compared to previous studies a decade ago (Osborne 2003a, 2003b, 2004, 2004a). Woolly buckwheat (*Eriogonum gracile*), a dominant in previous studies is now absent, and western ragweed (*Ambrosia acanthicarpa*) formerly abundant is now largely restricted to a strip of undisked habitat adjacent to Locust Avenue. Old Eucalyptus windbreaks line the northern site boundary, and remnant trees such as Olive and Peruvian Pepper are found on the southern site boundary. Figures 3-8 present representative views of the survey site and habitats. Figure 9 provides a key as to where on the site these photographs were taken. Table 1 (Appendix A) provides a list of plant species encountered on the survey site. No special status plant species (species of concern) were encountered in the course of this survey.

4.3.5 Insect Community

During site visits for 2013, at least 40 insect species (counting only large and conspicuous insects) were either casually observed or collected. A list of most insect species observed during the course of this year 2013 focused survey work is presented in the appendix (Table 2, Appendix A). No special status animal species (species of concern) were encountered in the course of this survey. The insect community encountered on the subject site was relatively species depauperate as compared to undisturbed ecological communities occurring on Delhi sands, but included Mydidae (*Nemomydas*), Apioceridae, Asilidae, Mutilidae, Chrysididae, Mymerliontidae, and Sphecidae. Indicators of potential high quality of DSF habitat found on the subject site during the course of the current survey include flies *Apiocera crysolasia*, *Apiocera convergens*, *Nemomydas pantherinus*, and the Mutilid (*Dasymutilla sackeni*).

5.0 REFERENCES

- Cazier, M.A. 1985. A revision of the North American flies belonging to the genus *Rhaphiomidas* (Diptera:Apioceridae). Bulletin of the American Museum of Natural History 182(2):181-263.
- Hickman, J.C. (ed.). 1993. The Jepson manual: Higher plants of California. University of California Press. Berkeley, California.
- Kingsley, Kenneth J. 1996. Behavior of the Delhi Sands Flower-Loving Fly (Diptera: Mydidae), a Little Known Endangered Species. Ann. Entomol. Soc. Am. 89(6): 883-891.
- Kiyani Environmental Consultants. 1995. Principal Investigator's Annual Report, Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*) Studies at Colton, California. Prepared for San Bernardino County and U.S. Fish and Wildlife Service, Carlsbad, CA. 25+ pp.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, California.
- Osborne, K. H. 2000. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 125-acre portion of the Fontana Empire Business Center Site. Prepared for the City of Fontana. Submitted to USFWS, Carlsbad, October 2000.
- Osborne, K. H. 2003. *Delhi Sands Flower-loving fly Habitat Assessment for the Hermosa Cemetery, Colton*. Prepared for Inland Memorial Cremations and Burial. Submitted to the U.S. Fish and Wildlife Service, CA.

- Osborne, K. H. 2003a. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2003b. Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2003.
- Osborne, K. H. 2004. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 13.88-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004a. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.3-acre site, Bloomington, California. Prepared for Mr. K. A. Wang. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H. 2004b. Second Year Focused Survey for the Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 17-acre site in Bloomington, San Bernardino County, California. Prepared for Boruchin Enterprises. Submitted to USFWS, Carlsbad, October 2004.
- Osborne, K. H., G. R. Ballmer, and T. McGill. 2003. *DSF Habitat Assessment for the Proposed Mary Vagle Conservation Area*. Prepared for the City of Fontana. Submitted to the U.S. Fish and Wildlife Service, CA.
- Rogers, R. and M. Mattoni. 1993. Observations on the natural history and conservation biology of the giant flower-loving flies, *Rhaphiomidas* (Diptera: Apioceridae). *Dipterological Research* 4(1-2):21-34.
- U.S. Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Delhi Sands Flower-loving Fly. U.S. Department of Interior. Federal Register, 58 (183): 49881-49887.
- U.S. Fish and Wildlife Service. 1996. Delhi Sands Flower-loving Fly Draft Presence/Absence Survey Guidelines. December 30.
- U.S. Fish and Wildlife Service. 1997. Delhi sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 51 pp.
- Woodruff, G. A. 1980. Soil survey of San Bernardino County, southwestern part, California. U.S. Department of Agriculture, Soil Conservation Service.

6.0 FIGURES

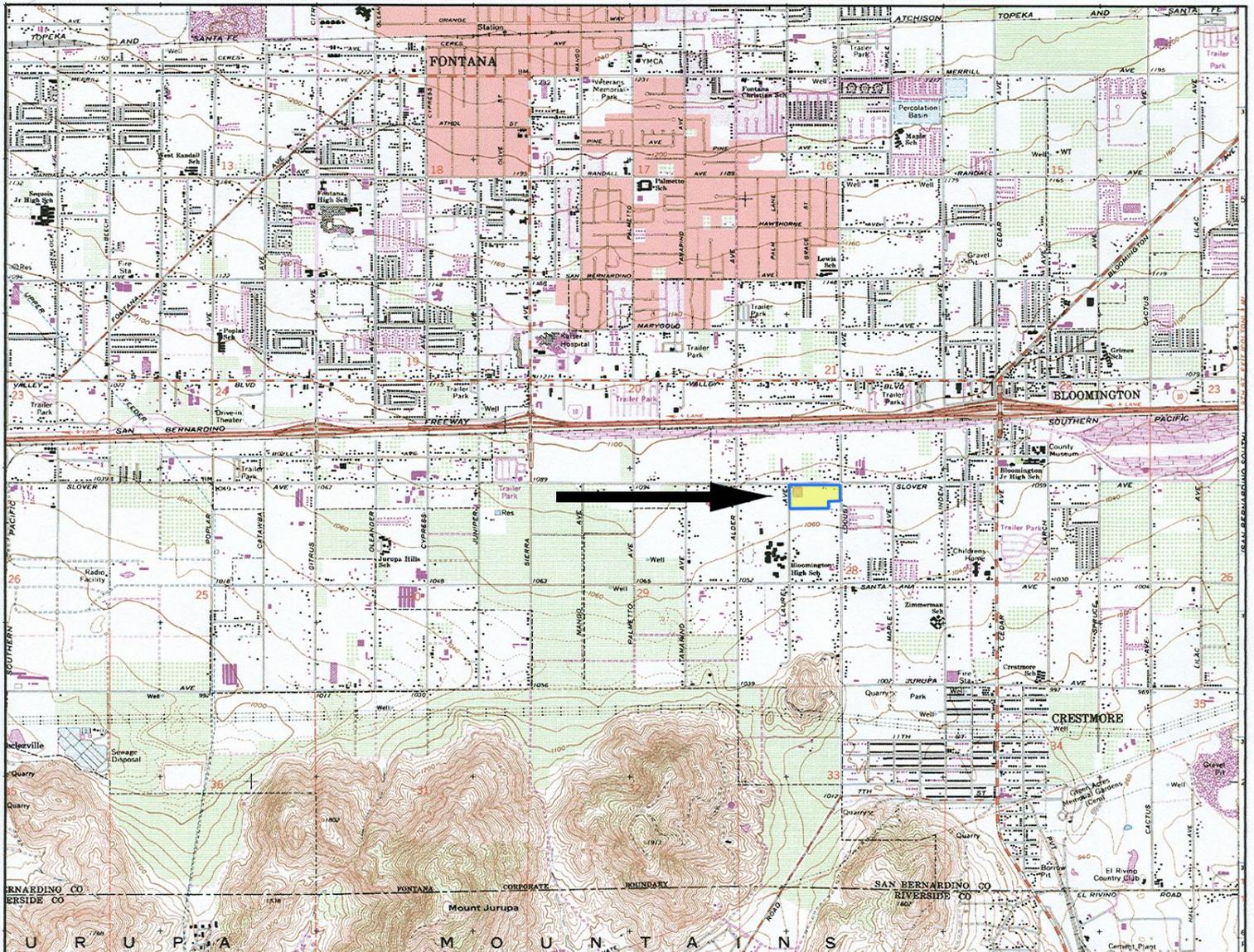
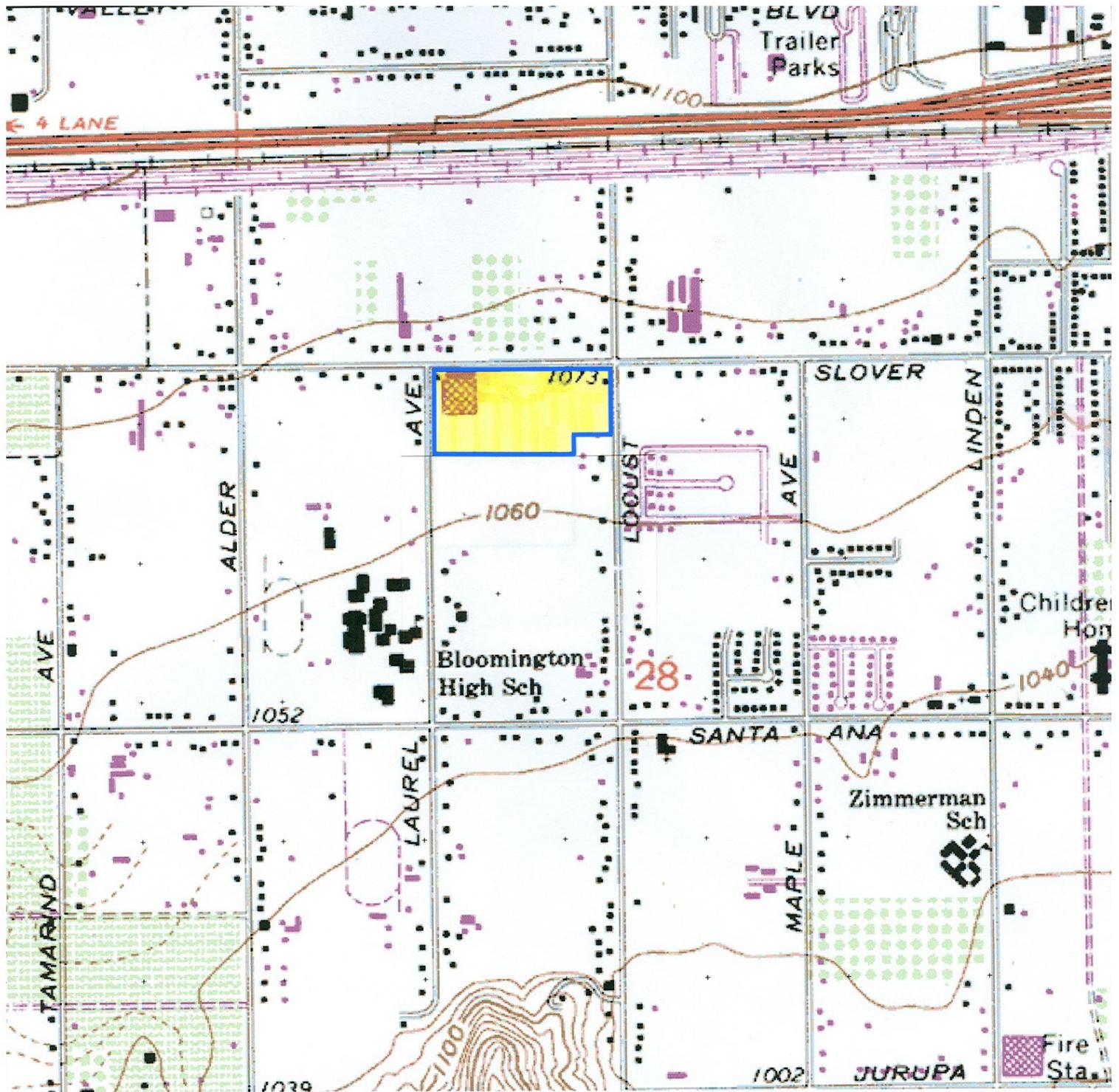


Figure 1. General vicinity of survey site, Fontana, California USGS 7.5" quadrangle at 50%. 16.32-acre site is outlined in blue and highlighted in yellow (arrow).



— = 100 meters N
 ↑

Figure 2. General vicinity of survey site, Fontana, California USGS 7.5" quadrangle at 200%. 16.32-acre site is outlined in blue and highlighted in yellow.



Figure 3. Photograph of the western survey site, looking to the south from the northwestern corner of the site.



Figure 4. Photograph of northern portions of the survey site along Slover Avenue. View looks east from the northwestern corner of the site.



Figure 5. Photograph of southern portions of the site. View looks west along the southern boundary of the site from a position on a southeastern portion of the site.



Figure 6 Photograph of an eastern portion of the site looking to the south southeast from a northeastern portion of the site.



Figure 7. Photograph of the view across the site looking southeast from the northwestern corner of the site.



Figure 8. Photograph from 2004 of a view across the site looking to the southwest from a location on a northeastern portion of the site. Note the abundance of annual vegetation as compared to current conditions. Residential development is now present just beyond the olive trees (background) on the southern edge of the site.

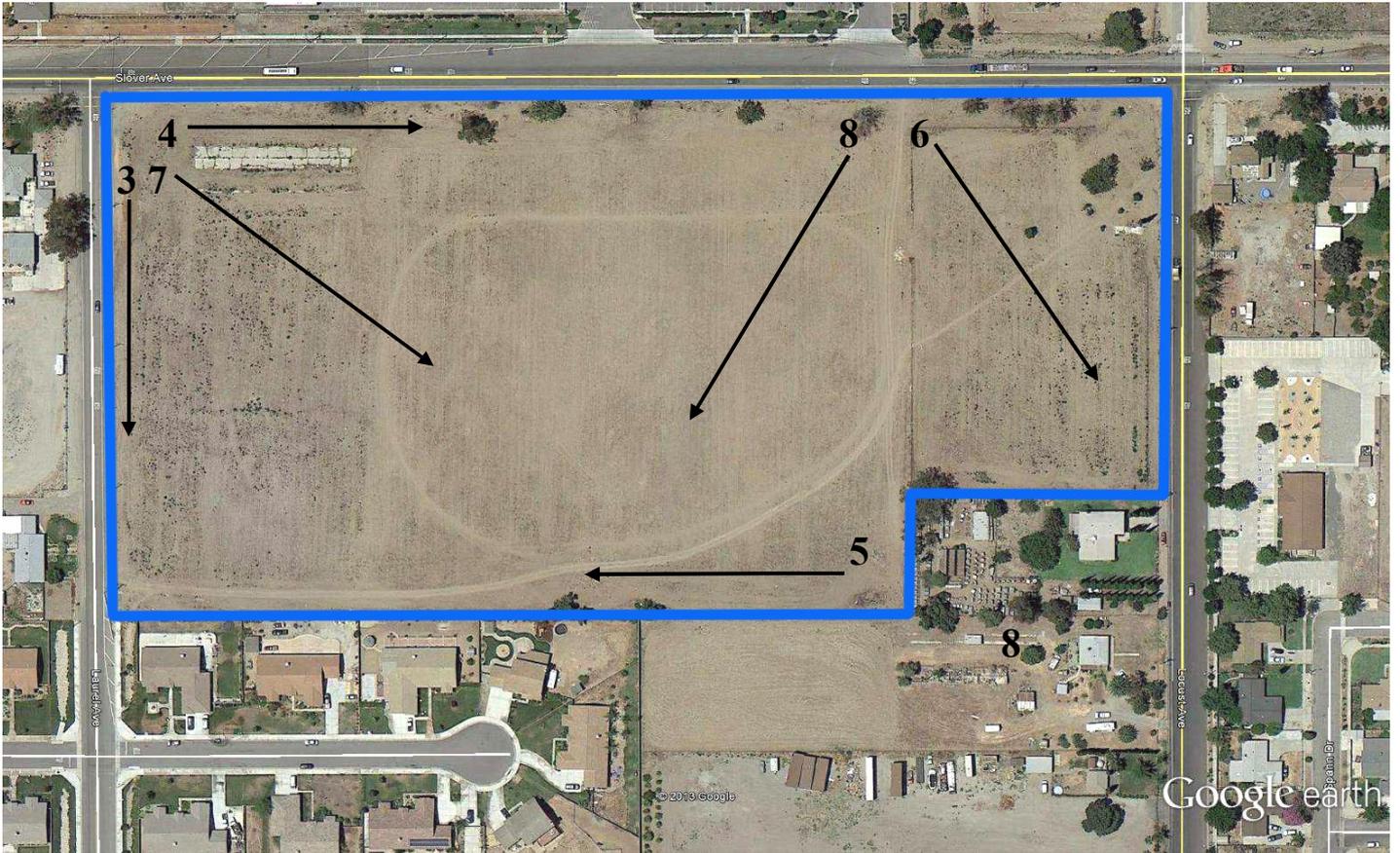


Figure 9. Approximate locations around survey site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 3-8).

7.0 APPENDIX

Appendix A

Table A1. Plant species encountered on the survey site (Osborne 2004, 2004a and current).

FAMILY and COMMON NAME	Species
AMERANTHACEAE	
tumbleweed	<i>Amaranthus albus</i>
ASTERACEAE	
annual bur ragweed	<i>Ambrosia acanthicarpa</i>
flax-leaved horseweed	<i>Conyza bonariensis</i>
horseweed	<i>Conyza canadensis</i>
sunflower	<i>Helianthus annua</i>
telegraphweed	<i>Heterotheca grandiflora</i>
prickly lettuce	<i>Lactuca serriola</i>
common sow-thistle	<i>Sonchus oleraceus</i>
golden crownbeard	<i>Verbesina encelioides</i>
BORAGINACEAE	
ranchers fiddleneck	<i>Amsinkia intermedia</i>
BRASSICACEAE	
shortpod mustard	<i>Hirschfeldia incana</i>
London rocket	<i>Sisymbrium irio</i>
CHENOPODIACEAE	
red saltbush	<i>Atriplex rosea</i>
lamb's quarters	<i>Chenopodium album</i>
Kochia	<i>Kochia scoparia</i>
russion thistle	<i>Salsola tragus</i>
FABACEAE	
alfalfa	<i>Medicago sativa</i>
GERANIACEAE	
filaree	<i>Erodium cicutarium</i>
MALVACEAE	
cheeseweed	<i>Malva parviflora</i>
OLEACEAE	
Olive	<i>Olea europa</i>
POACEAE	
Foxtail chess/red brome	<i>Bromus madritensis</i>
Bermuda grass	<i>Cynodon dactylon</i>

Mediterranean barley	<i>Hordeum murinum</i>
Shismus	<i>Schismus barbatus</i>
bur bristlegrass	<i>Setaria verticillata</i>
SOLANACEAE	
Jimson weed	<i>Datura wrightii</i>
Tree tobacco	<i>Nicotiana glouca</i>
Nightshade	<i>Solanum duglasi</i>
ZYGOPHYLLACEAE	
Puncture vine	<i>Tribulus terrestris</i>

Table A2. Insects encountered on the survey site (2013).

Order	Family	Genus, species	
Diptera	Mydidae	<i>Nemomydas pantherinus</i>	
	Apioceridae	<i>Apiocera convergens</i>	
		<i>Apiocera crysolasia</i>	
		<i>Apiocera mus</i>	
	Bombyliidae	<i>Thyridanthrax atrata</i>	
		<i>Villa moliter</i>	
		<i>Efferia albibarbis</i>	
	Asilidae	<i>Stenopogon brevisculus</i>	
		<i>Thereva semitaria</i>	
	Hymenoptera	Stratiomyidae	<i>Hermicia illuceus</i>
		Apidae	<i>Apis mellifera</i>
			<i>Bembix americana</i>
		Crabionidae	<i>Philanthus gibbosus</i>
<i>Chlonrion aerarium</i>			
<i>Scellphron caementarium</i>			
Sphecidae		<i>Ammophila azteca</i>	
		<i>Polistes apachus</i>	
		<i>Pogonomyrmex californicus</i>	
Vespidae		<i>Dasymutilla sackeni</i>	
	<i>Brachynemurus</i>		
Neuroptera	Mymerliontidae	<i>Brachynemurus</i>	
Heteroptera	Pentatomidae	<i>Chlorochroa sayi</i>	
		<i>Bagrada hilaris</i>	
		<i>Lema trilineata</i>	
Coleoptera	Chrysomelidae	<i>Lema trilineata</i>	
	Scarabaeidae	<i>Cotinus texana</i>	
	Coccinellidae	<i>Hippodamia convergens</i>	
	Curculionidae		
Odonata	Aeshnidae	<i>Anax junius</i>	

Odonata	Aeshnidae	<i>Aeshna multicolor</i>
	Libellulidae	<i>Sympetrum corruptum</i> <i>Tramea lacerata</i> <i>Pantala flavescens</i>
Lepidoptera	Pieridae	<i>Pontia protodice</i>
	Lycaenidae	<i>Strymon melinus</i> <i>Brephidium exilis</i>
	Hesperiidae	<i>Hylephila phyleus</i>
	Nymphalidae	<i>Vanessa cardui</i>
	Noctuidae	<i>Caenurgia togataria</i>
	Papilionidae	<i>Papilio cressphontes</i>
Orthoptera	Acrididae	<i>Trimerotropis pallidipennis</i>

Appendix B
Correspondence with USFWS
Field Notes

Ken H. Osborne (permit #TE837760-8)
6675 Avenue Juan Diaz,
Riverside, CA 92509
(951) 360-6461
Euproserpinus@msn.com

July 3, 2013

Attn: Ms. Susie Tharratt,
USFWS Carlsbad Field Office
6010 Hidden Valley Road, Suite 101
Carlsbad, CA 92011

To Whom It May Concern:

I write to notify you of intent to conduct a first season of survey for Delhi Sands Giant Flower-loving fly (DSF, *Rhaphiomidas terminatus abdominalis*) on an approximately 16.32-acre site located in Bloomington. We previously surveyed this area (as two adjacent sites and two separate studies, through years 2003-2004) with negative results. This site is located immediately south of Slover Avenue, between Locust Avenue and Laurel Avenue. The attached map shows the site on the Fontana, CA, USGS topographic map at 200% scale.

This survey is being undertaken on behalf of America United Development, LLC., of Diamond Bar, CA. The survey will commence on July 5 with the first repeat visit on July 7.

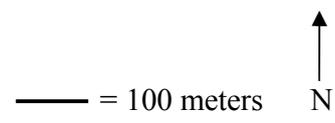
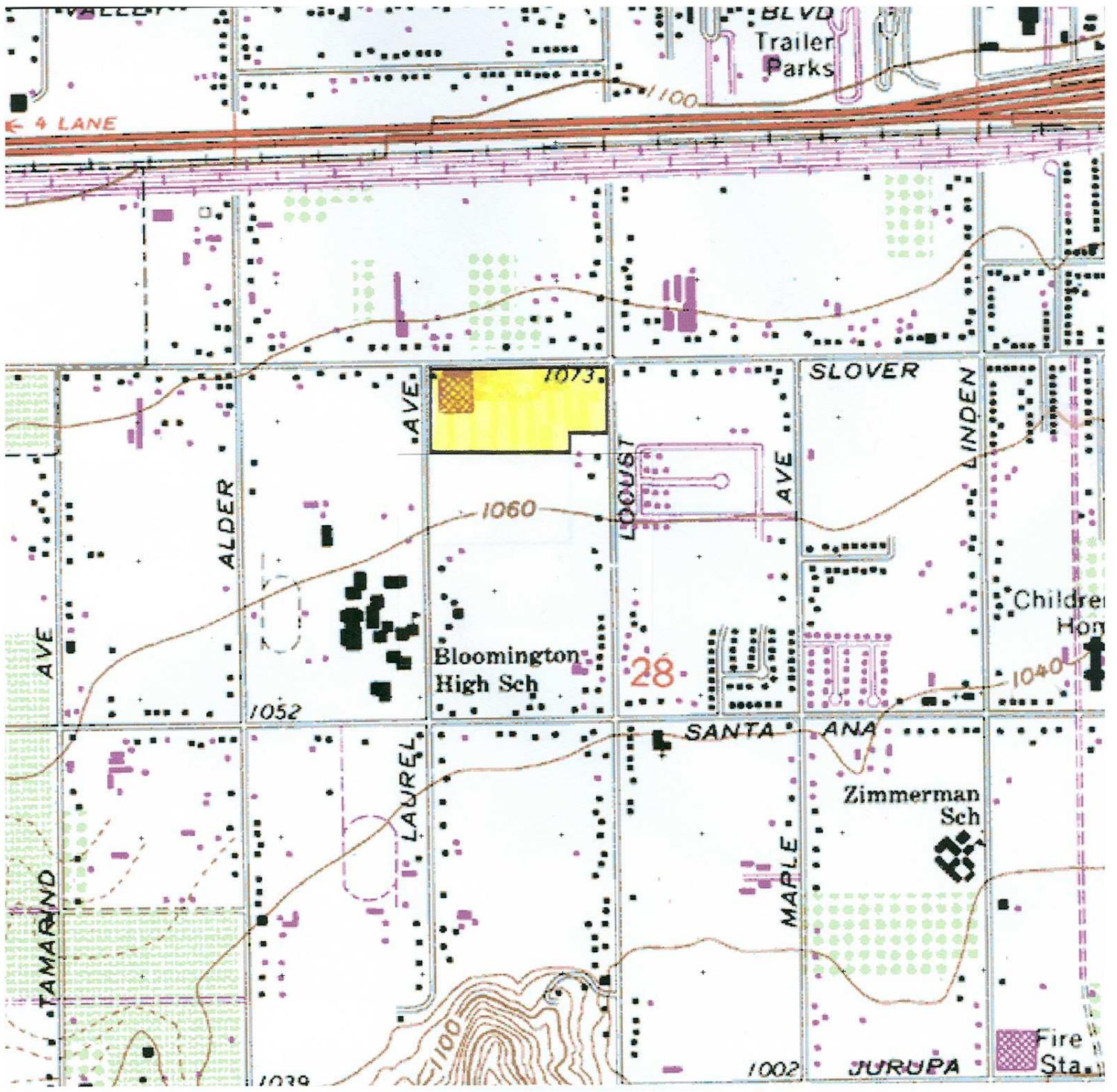
If you have any questions or comments regarding this survey, please feel free to contact me.

Respectfully submitted,



Ken H. Osborne

cc: Gus Andros
Andy Wang



General vicinity of the 16.32-acre survey site, Fontana, California USGS 7.5" quadrangle at 200%. Site is outlined in black and highlighted in yellow.

Delhi sands flower-loving fly – General Field Form

Date 7/5/2013 Overall Time 1.3 hrJob UDA BloomingtonSurveyor K Osborne Survey Partner(s) [Signature]Mileage 6051 mi on road

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>10:00</u>	<u>50</u>	clear <u>patchy</u> overcast drizzle shower	<u>calm</u>	<u>86</u>
<u>10:45</u>	<u>50</u>	clear <u>patchy</u> overcast drizzle shower	<u>Humid</u>	
		clear patchy overcast drizzle shower		
Stop <u>11:20</u>		clear patchy overcast drizzle shower		

Biological elements:

Rhaphiomidas terminatus ? 0 time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids 1 sp 10
 Mydids 1 sp 2 Apicercids _____ Sphecids 1 sp 1
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____ Ambrasia
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: See list

Vertebrates: lots Gophers BLAN SAND ANCR

Comments:

Wished late spring

Delhi sands flower-loving fly – General Field Form

Date 7/7/2013 Overall Time 1.33 Job Blossington
 Surveyor WAO Survey Partner(s) A
 Mileage 6091 on rd

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>12:40</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2</u>	<u>90</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>2:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>5</u>	<u>92</u>

Biological elements:

Rhaphiomidas terminatus? 0 time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ✓ Asilids ✓
 Mydids _____ Apiocerids _____ Sphecids ✓
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Diplo, Hyal, Diplo, Cestius, Peritica, Brachidion,
Cenogastera, T. n. vago.

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: Uta, Sc. Cervidum, AMCO2

Comments:

Delhi sands flower-loving fly – General Field Form

Date 7/9/13 Overall Time 1.33 hrJob UWA Blowing Rock
STOPSurveyor K.A. Osborne Survey Partner(s) ØMileage 51 + 2 ...

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>1000</u>	<u>5</u>	<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>92</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>1120</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>96</u>

Biological elements:

Rhaphiomidas terminatus? Ø time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids ✓ Dip 10, 11
 Mydids _____ Apiocerids _____ Sphecids ✓ Hym 1
 Pompilids _____ Scoliids _____ Chrysidids _____
 Other insects of note white mantid Aeshna

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: Gopher snake, SARA, BLPA

Comments:

Delhi sands flower-loving fly – General Field Form

Date 7/13/13 Overall Time 1 hr 20 min Job BloomingtonSurveyor K A Osborne Survey Partner(s) JMileage 196389 mi on site

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>1037</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>88</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>1157</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>92</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____
 Mydids _____ Apiocerids _____ Sphecids _____
 Pompilids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: RODO KIDIE utu MODO NOMO

Comments:

Delhi sands flower-loving fly – General Field Form

Date July 20, 2013 Overall Time 1 hr, 20 min

Job AUD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start 10:00	60	clear	patchy	overcast	drizzle	shower	3-4	85
10:20	60	clear	patchy	overcast	drizzle	shower	3-4	
10:55	60	clear	patchy	overcast	drizzle	shower	4	
Stop 11:20	60	clear	patchy	overcast	drizzle	shower	3-5	90

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids Apiocerids _____ Sphecids
 Pompillids Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly - General Field Form

Date July 22, 2013 Overall Time 1 hour & 20 min.

Job AUD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start 10:00	15	clear	patchy	overcast	drizzle	shower	3-4	85
10:30	15	clear	patchy	overcast	drizzle	shower	3	87
11:05	15	clear	patchy	overcast	drizzle	shower	4	87
Stop 11:20	15	clear	patchy	overcast	drizzle	shower	5-7	88

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids Apiocerids _____ Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____

Other insects of note Hermeia illucens (str. det.) Saw a ♀ Dusymilla sackeni near entrance on locust Ave.

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____

Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date 7/30/13 Overall Time 1.33 hr Job Blossoming henSurveyor KWO Osborne Survey Partner(s) ØMileage 6845 mi on site

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>11¹⁵</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>3-5</u>	<u>79</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>12³⁵</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>3-5</u>	<u>82</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____.

Other arthropods (general) Bombyliids 6 Asilids 10
 Mydids 2 Apiocerids 4 Sphecids ✓
 Pompillids _____ Scoliids _____ Chrysidids _____

Other insects of note Dasyneutera
Cotinus, T.p., Pogonomyia, T. n. n., Braconidae, Polistes apachus
Fire skipper, Mymecodidae

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: AMCA EUPD WSKI KIDE BLAD

Comments:

Tractor following above track area

Delhi sands flower-loving fly – General Field Form

Date Aug 9, 2013 Overall Time 1 hr 45 min.

Job AVD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>10:20</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-4</u>	<u>78</u>
<u>10:50</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>3-4</u>	<u>79</u>
<u>11:15</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-5</u>	<u>80</u>
Stop <u>11:45</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>2-7</u>	<u>80</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids Apiocerids _____ Sphecids
 Pompillids Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Aug 20, 2013 Overall Time 1 hr. 45 min.

Job AUD/Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>11:00</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>0-2</u>	<u>87</u>
<u>12:07</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower		<u>92</u>
<u>12:30</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower		<u>92</u>
Stop <u>12:45</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower		<u>95</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids

Mydids Apiocerids Sphecids _____

Pompillids Scoliids _____ Chrysidids _____

Other insects of note Dasyneutilla sackeii / Aphaeobantus sp. (Bomby.)

Saw 2 ♂ or 1 ♀ of Apiocera convergens

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____

Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____

Camissonia _____ *Eriastrum* _____

Others: _____

Vertebrates: _____

Comments:

DSE Field Notes:

8/28/13 1.3 hr

Bloomington site

140-99041 mi on St

start 12:35 clear 95° clear humid

stop 1:55 pm clear

Delhi sands flower-loving fly – General Field Form

Date Sept. 2, 2013 Overall Time 1 hr. 20 min.

Job AVD Bloomington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>11:00</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>2-4</u>	<u>95°</u>
<u>11:25</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>2-5</u>	<u>94°</u>
<u>12:08</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>2-5</u>	<u>95°</u>
Stop <u>12:20</u>	<u>5</u>	clear	<u>patchy</u>	overcast	drizzle	shower	<u>4-7</u>	<u>96°</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids Sphecids
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date 9/5/13 Overall Time 1hr 20 min Job Bloomington
 Surveyor KHO Survey Partner(s) B
 Mileage 0545 on rd

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>1216</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>0-4</u>	<u>97</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>136</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>0-5</u>	<u>98</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____
 Mydids _____ Apiocerids _____ Sphecids _____
 Pompilids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

P. cressphontis v.c.

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date Sept. 12, 2013 Overall Time 1 hr. 20 min.

Job AUD-B/Comington

Surveyor Rick Rogers Survey Partner(s) _____

Mileage _____

Weather:

Time (24 hr)	% Cloud	Sky					Winds (mph)	Temp (F)
Start <u>11:00</u>	<u>5</u>	clear	<u>patchy</u>	overcast	drizzle	shower	<u>1-2</u>	<u>89</u>
<u>11:30</u>	<u>5</u>	clear	<u>patchy</u>	overcast	drizzle	shower	<u>1-3</u>	<u>90</u>
<u>12:00</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>1-4</u>	<u>90</u>
Stop <u>12:20</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>2-5</u>	<u>93</u>

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids Asilids
 Mydids _____ Apiocerids _____ Sphecids
 Pompilids _____ Scoliids _____ Chrysidids _____

Other insects of note philanthus gibbosus / Dasymutilla sackenii

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____

Others: _____

Vertebrates: _____

Comments:

Delhi sands flower-loving fly – General Field Form

Date 9/18/13 Overall Time 1 hr 20 minJob AUD
BloomingtonSurveyor RHO Survey Partner(s) _____Mileage ~850

Weather:

Time (24 hr)	% Cloud	Sky				Winds (mph)	Temp (F)
Start <u>11:40</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>75</u>
<u>12:15</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	
		clear	patchy	overcast	drizzle	shower	
Stop <u>1:00</u>	<u>0</u>	<u>clear</u>	patchy	overcast	drizzle	shower	<u>79</u>

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids 11 ✓
 Mydids _____ Apicercids _____ Sphecids _____
 Pompillids _____ Scoliids _____ Chrysidids _____
 Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates: _____

Comments:

East of N perimeter cleared out annual veg
in previous days

Delhi sands flower-loving fly – General Field Form

Date 9/20/13 Overall Time 1 1/2 hr Job A 40
 Surveyor K. H. Osborne Survey Partner(s) B. Livingston
 Mileage 0945 on rd

Weather:

Time (24 hr)	% Cloud	Sky	Winds (mph)	Temp (F)
Start <u>1240</u>	<u>c</u>	<u>clear</u> patchy overcast drizzle shower	<u>2</u>	<u>72</u>
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop <u>200</u>	<u>0</u>	<u>clear</u> patchy overcast drizzle shower	<u>calm</u>	<u>76</u>

Biological elements:

Rhaphiomidas terminatus? ___ time ___ sex ___ numbers ___.

Other arthropods (general) Bombyliids 6 ✓ Asilids 11 ✓
 Mydids ___ Apocerids ___ Sphecids ___
 Pompillids ___ Scoliids ___ Chrysidids ___
 Other insects of note Sympetrum thylepides

Plants: *Croton* ___ Telegraph weed ___ *Eriogonum fasciculatum* ___
Eriogonum thurberi ___ other *Eriogonum* ___ *Oenothera* ___
Camissonia ___ *Eriastrum* ___
 Others: _____

Vertebrates: _____

Comments:

Perimeter recently, cleared of annual veg.
Plant list generated by photographs

SCIENTIFIC_NAME	COMMON_NAME	ELEMENT_CODE	OCC_NUMBER	MAPNEX	EONDX	KEY_QUAD_CODE	KEY_QUAD_NAME	KEY_COUNTY_CODE	ACCURACY	PRESENCE	Occ_Type	OCC_RANK	SENSITIVE	SITE_DATE	ELM_DATE	OWNER_MANAGEMENT	Federal_Status	State_Status	GLOBAL_RANK	STATE_RANK	RARE_PLANT_RANK	CDWF_Status	Other_Status	Symbology	
Arenaria pallidicola	marsh sandwort	POKAR040U	8	48810	48810	3411713	San Bernardino South	SBD	5 miles	Extirpated	Natural/Native occurrence	None	N	18990501	18990501	UNKNOWN	Endangered	Endangered	G1	S1	1B.1		SB_SB8G	810	
Arizona elegans occidentalis	California glossy snake	ARAD080107	86	A3387	105023	3411713	San Bernardino South	SBD	1/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20008006	20008006	UNKNOWN	None	None	G5T2	S2		SSC		206	
Arizona elegans occidentalis	California glossy snake	ARAD080107	97	A3390	105026	3411713	San Bernardino South	SBD	1/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20020422	20020422	UNKNOWN	None	None	G5T2	S2		SSC		205	
Arizona elegans occidentalis	California glossy snake	ARAD080107	235	54923	105420	3411714	Fontana	SBD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19660415	19660415	UNKNOWN	None	None	G5T2	S2		SSC		809	
Athene curculiaria	burrowing owl	ABMSB10010	335	41052	41052	3411714	Fontana	SBD	1/5 mile	Possibly Extirpated	Natural/Native occurrence	None	N	20040712	20040712	PVT	None	None	G4	S3		SSC	BLM_S; IUCN_LC; USFWS_BCC	207	
Athene curculiaria	burrowing owl	ABMSB10010	273	39621	34623	3411713	San Bernardino South	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Good	N	20070511	20070511	PVT	None	None	G4	S3		SSC	BLM_S; IUCN_LC; USFWS_BCC	203	
Athene curculiaria	burrowing owl	ABMSB10010	1786	81886	82859	3411714	Fontana	SBD	80 meters	Presumed Extant	Natural/Native occurrence	Unknown	N	20060524	20060524	PVT	None	None	G4	S3		SSC	BLM_S; IUCN_LC; USFWS_BCC	201	
Bombus crochii	Crotch bumble bee	IHMMA24480	184	97670	99036	3411713	San Bernardino South	SBD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19380703	19380703	UNKNOWN	None	None	G3G4	S3S2		SSC		209	
Bombus crochii	Crotch bumble bee	IHMMA24480	185	54923	49037	3411714	Fontana	SBD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19380404	19380416	UNKNOWN	None	None	G3G4	S1S2		SSC		809	
Chaetodops fallax fallax	northwestern San Diego pocket mouse	AMAFD050311	61	57353	57717	3411714	Fontana	SBD	5 miles	Possibly Extirpated	Natural/Native occurrence	None	N	19990210	19990210	PVT	None	None	G5T4T4	S3S4		SSC		803	
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	PMSCRO00C2	16	40810	34954	3411713	San Bernardino South	SBD	0.9 miles	Possibly Extirpated	Natural/Native occurrence	None	N	1888XXXX	1888XXXX	UNKNOWN	Endangered	Endangered	G4T1	S1	1B.2		SB_RSABG	810	
Chorizanthe parryi var. parryi	Parry's spineflower	POFNG04012	29	42068	42068	3411714	Fontana	RIV	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	19030426	19030426	UNKNOWN	None	None	G3T2	S2	1B.1		SSC	BLM_S; SB_RSABG; USFS_S	809
Dioscorea merriami parvus	San Bernardino kangaroo rat	AMAFD03143	1	37990	33006	3411713	San Bernardino South	SBD	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19930728	19930728	UNKNOWN	Endangered	None	G5T1	S1		SSC		999	
Eriostemon densiflorus ssp. sanctorum	Santa Ana River woollystar	POFMA03035	29	71670	72569	3411714	Fontana	RIV	1/10 mile	Extirpated	Natural/Native occurrence	None	N	19980606	19980606	PVT	Endangered	Endangered	G4T1	S1		SSC		104	
Horkelia cuneata var. puberula	mesa horkelia	POKOS0W045	7	20580	54868	3411713	San Bernardino South	SBD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	18880520	18880520	UNKNOWN	None	None	G4T1	S1	1B.1		USFS_S	809	
Horkelia cuneata var. puberula	mesa horkelia	POKOS0W045	9	54922	54922	3411714	Fontana	SBD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	188504XX	188504XX	UNKNOWN	None	None	G4T1	S1	1B.1		USFS_S	109	
Horkelia cuneata var. puberula	mesa horkelia	POKOS0W045	10	54923	54923	3411714	Fontana	SBD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	19080404	19080404	UNKNOWN	None	None	G4T1	S1	1B.1		USFS_S	809	
Horkelia cuneata var. puberula	mesa horkelia	POKOS0W045	11	42068	54925	3411714	Fontana	RIV	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19040515	19040515	UNKNOWN	None	None	G4T1	S1	1B.1		USFS_S	809	
Lasius xanthinus	western yellow bat	AMACC05070	34	58906	58942	3411714	Fontana	SBD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19960811	19960811	UNKNOWN	None	None	G5	S3		SSC	IUCN_LC; WBWG_H	209	
Lepidium virginicum var. robinsonii	Robinson's pepper grass	POBRA1M114	53	51205	51205	3411714	Fontana	RIV	nonspecific area	Presumed Extant	Natural/Native occurrence	Unknown	N	19980217	19980217	UNKNOWN	None	None	G5T3	S3		4.3		103	
Lepus californicus benettii	San Diego black-tailed jackrabbit	AMAKB03051	54	57353	57369	3411714	Fontana	SBD	nonspecific area	Possibly Extirpated	Natural/Native occurrence	None	N	19990210	19990210	PVT	None	None	G5T4T4	S3S4		SSC		803	
Malacothamnus parishii	Parish's bush-mallow	POMALDQ0C0	2	68464	1255	3411713	San Bernardino South	SBD	5 miles	Possibly Extirpated	Natural/Native occurrence	None	N	18850720	18850720	UNKNOWN	None	None	GXQ	SX	1A			810	
Monardella pringlei	Pringle's monardella	POLAM18010	2	20580	9659	3411713	San Bernardino South	SBD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	1941XXXX	1941XXXX	CITY OF RIALTO; PVT	None	None	GX	SX	1A			809	
Nyctinomus ferrocactus	pocketed free-tailed bat	AMACD04010	23	68464	68724	3411713	San Bernardino South	SBD	5 miles	Presumed Extant	Natural/Native occurrence	Unknown	N	19851115	19851115	UNKNOWN	None	None	G4	S3		SSC	IUCN_LC; WBWG_M	810	
Nyctinomus ferrocactus	pocketed free-tailed bat	AMACD04010	20	20141	45407	3411713	San Bernardino South	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Fair	N	20000721	20000721	PVT	None	None	G5T1T2	S1S2		SSC		203	
Phrynosoma blainvillii	coast horned lizard	ARACF12100	441	41870	41870	3411714	Fontana	SBD	nonspecific area	Possibly Extirpated	Natural/Native occurrence	None	N	1999XXXX	1999XXXX	PVT	None	None	G3G4	S3S4		SSC	BLM_S; IUCN_LC	203	
Poliophila californica californica	coastal California gnatcatcher	ABPBJ08081	462	30072	29845	3411714	Fontana	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Excellent	N	1995XXXX	1995XXXX	PVT	Threatened	None	G4G5T2Q	S2		SSC	NABO_YWL	203	
Poliophila californica californica	coastal California gnatcatcher	ABPBJ08081	934	99261	100788	3411714	Fontana	SBD	specific area	Presumed Extant	Natural/Native occurrence	Unknown	N	19991224	19991224	PVT	Threatened	None	G4G5T2Q	S2		SSC	NABO_YWL	202	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	1	20130	9728	3411713	San Bernardino South	SBD	nonspecific area	Extirpated	Natural/Native occurrence	None	N	199009XX	199009XX		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	2	20140	9727	3411713	San Bernardino South	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Good	Y	20100905	20100905		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	6	49119	49119	3411714	Fontana	SBD	80 meters	Extirpated	Natural/Native occurrence	None	Y	20020917	20020909		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	7	51663	51663	3411713	San Bernardino South	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Good	Y	20050726	20050726		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	8	51664	51664	3411714	Fontana	SBD	specific area	Presumed Extant	Natural/Native occurrence	Fair	Y	201009XX	201009XX		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	10	60849	60885	3411714	Fontana	RIV	specific area	Extirpated	Natural/Native occurrence	None	Y	19960909	19960902		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	11	60853	60889	3411714	Fontana	RIV	specific area	Presumed Extant	Natural/Native occurrence	Unknown	Y	200607XX	19960901		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	13	60850	60895	3411713	San Bernardino South	SBD	1/10 mile	Presumed Extant	Natural/Native occurrence	Poor	Y	20010808	20010806		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	17	99373	100922	3411714	Fontana	RIV	specific area	Presumed Extant	Natural/Native occurrence	Good	Y	20130829	20130816		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	18	99374	100924	3411714	Fontana	RIV	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	Y	201008XX	201008XX		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	19	99376	100926	3411714	Fontana	RIV	specific area	Presumed Extant	Natural/Native occurrence	Unknown	Y	20050830	20050830		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	20	99383	100932	3411714	Fontana	RIV	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	Y	20040319	19960812		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	21	99383	100934	3411714	Fontana	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Fair	Y	19980920	19980818		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	22	99385	100936	3411714	Fontana	SBD	1/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	Y	19980XXX	19980XXX		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	23	99388	100937	3411714	Fontana	SBD	specific area	Extirpated	Natural/Native occurrence	None	Y	20040920	20040812		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	24	99397	100953	3411714	Fontana	RIV	specific area	Extirpated	Natural/Native occurrence	None	Y	20060828	20060814		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	25	40447	102005	3411713	San Bernardino South	SBD	nonspecific area	Extirpated	Natural/Native occurrence	None	Y	19950917	19950917		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	26	40449	102006	3411713	San Bernardino South	SBD	nonspecific area	Presumed Extant	Natural/Native occurrence	Good	Y	20130909	20130807		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	27	40638	102195	3411713	San Bernardino South	SBD	nonspecific area	Extirpated	Natural/Native occurrence	None	Y	199009XX	199009XX		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	28	40608	102469	3411713	San Bernardino South	SBD	specific area	Extirpated	Natural/Native occurrence	None	Y	20060918	20060911		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	29	40910	102470	3411713	San Bernardino South	SBD	nonspecific area	Possibly Extirpated	Natural/Native occurrence	None	Y	20040920	20040809		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	30	40911	102471	3411713	San Bernardino South	SBD	80 meters	Presumed Extant	Natural/Native occurrence	Poor	Y	19960910	19960822		Endangered	None	G1T1	S1				999	
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	IDIP05021	31	40918	102478	3411713	San Bernardino South	SBD	specific area	Presumed Extant	Natural/Native occurrence	Unknown													

SCIENTIFIC_NAME	COMMON_NAME	ELEMENT_CODE	OCC_NUMBER	MAPXID	IONXID	KEY_QUAD_CODE	KEY_QUAD_NAME	KEY_COUNTY_CODE	ACCUPLACY	PRESENCE	Occ_Type	OCC_RANK	SENSITIVE	SITE_DATE	ELM_DATE	ELM_OWNER	MANAGEMENT	Federal_Status	Status	GLOBAL_RANK	STATE_RANK	RARE_PLANT_RANK	CDPW_Status	Other_Status	Symbol	
<i>Agavea tricolor</i>	inverted blackbird	APR980020	769	99996	102143	3311784	Riverside West	SD	2.5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20110920	1950482	CITY OF RIVERSIDE	None	None	Candidate Endangered	None	None	None	None	None	None	None
<i>Artemisa pallidula</i>	marsh sandwort	PCAR004017	8	40810	40810	3411713	San Bernardino South	SD	5 miles	Extirpated	Natural/Native occurrence	None	N	18995001	18995001	UNKNOWN	None	None	Endangered	Endangered	G1	51	18.1	SSC	BLM_S, IUCN_EN, NABCI, RWFL, USFS_BCC	206
<i>Arizona elegans occidentalis</i>	California glossy snake	ARAB001017	96	43387	1050263	3411713	San Bernardino South	SD	2/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20009008	20009008	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	810
<i>Arizona elegans occidentalis</i>	California glossy snake	ARAB001017	97	43390	1050263	3411713	San Bernardino South	SD	1/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20009008	20009008	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	205
<i>Arizona elegans occidentalis</i>	California glossy snake	ARAB001017	101	43404	1050401	3311784	Riverside West	SD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19356069	19356069	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	209
<i>Arizona elegans occidentalis</i>	California glossy snake	ARAB001017	235	54923	1050420	3411714	Fontana	SD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19666415	19666415	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	209
<i>Artemisia tridentata</i>	Belt's sage scrub	ARAB001017	60	29703	102150	3411713	San Bernardino South	SD	50 meters	Presumed Extant	Natural/Native occurrence	Good	Y	20150621	20150621	PVT	None	None	Endangered	Endangered	G1	51		WC	USFS_BCC	209
<i>Aspidoscelis hyperythra</i>	orange-throated whiptail	ARAC022640	406	99701	101248	3411713	San Bernardino South	SD	specific area	Presumed Extant	Natural/Native occurrence	Good	Y	20150515	20150515	PVT	None	None	Endangered	Endangered	G4	53	25.3	WL	IUCN_LC, USFS_5	203
<i>Aspidoscelis tigris streperii</i>	coast whiptail	ARAC021243	83	72476	64661	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Unknown	N	19959936	19959936	UNKNOWN	None	None	Endangered	Endangered	G5	53		SSC	None	202
<i>Athene cuculularia</i>	burrowing owl	ABNS100102	335	41152	41622	3411714	Fontana	SD	1/2 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20070511	20070511	PVT	None	None	Endangered	Endangered	G1	51		SSC	BLM_S, IUCN_LC, USFS_BCC	207
<i>Athene cuculularia</i>	burrowing owl	ABNS100102	927	62655	70046	3411724	Devore	SD	80 meters	Presumed Extant	Natural/Native occurrence	Good	Y	20061108	20061108	PVT	None	None	Endangered	Endangered	G4	53		SSC	BLM_S, IUCN_LC, USFS_BCC	201
<i>Athene cuculularia</i>	burrowing owl	ABNS100102	273	39621	34623	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Good	Y	20070511	20070511	PVT	None	None	Endangered	Endangered	G4	53		SSC	BLM_S, IUCN_LC, USFS_BCC	201
<i>Athene cuculularia</i>	burrowing owl	ABNS100102	1785	81885	82858	3411713	San Bernardino South	SD	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20070511	20070511	UNKNOWN	None	None	Endangered	Endangered	G4	53		SSC	BLM_S, IUCN_LC, USFS_BCC	201
<i>Athene cuculularia</i>	burrowing owl	ABNS100102	1786	81886	82859	3411713	San Bernardino South	SD	1/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20062624	20062624	PVT	None	None	Endangered	Endangered	G1	51		SSC	BLM_S, IUCN_LC, USFS_BCC	201
<i>Athene cuculularia</i>	burrowing owl	ABNS100102	1793	81901	82874	3411724	Devore	SD	80 meters	Presumed Extant	Natural/Native occurrence	Unknown	N	20070511	20070511	UNKNOWN	None	None	Endangered	Endangered	G4	53		SSC	BLM_S, IUCN_LC, USFS_BCC	201
<i>Bombus crochoti</i>	Crotch bumble bee	BHW14480	184	97670	99036	3411713	San Bernardino South	SD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19387073	19387073	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	209
<i>Bombus crochoti</i>	Crotch bumble bee	BHW14480	185	97676	99038	3411724	Devore	SD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19353068	19353068	PVT	None	None	Endangered	Endangered	G1	51		SSC	None	209
<i>Bombus crochoti</i>	Crotch bumble bee	BHW14480	185	54923	99037	3411714	Fontana	SD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19388416	19388416	UNKNOWN	None	None	Endangered	Endangered	G1	51		SSC	None	209
<i>Calochortus plummerae</i>	Plummer's mariposa lily	PMUL001210	34	63102	63108	3411714	Fontana	SD	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19980609	19980609	UNKNOWN	None	None	Endangered	Endangered	G4	54		SSC	None	184
<i>Calotomus santsanae</i>	Santa Ana sucker	AFCC021290	25	78971	29581	3311784	Riverside West	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Poor	N	20049292	20049292	RIV COUNTY FLOOD CONTROL	Threatened	None	Endangered	Endangered	G4	54		SSC	None	184
<i>Calotomus santsanae</i>	Santa Ana sucker	AFCC021290	31	52810	50990	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Fair	N	20040831	20040831	UNKNOWN	Threatened	None	Endangered	Endangered	G1	51		SSC	None	203
<i>Calotomus santsanae</i>	Santa Ana sucker	AFCC021290	27	78973	30063	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Unknown	N	20051006	20051006	UNKNOWN	Threatened	None	Endangered	Endangered	G1	51		SSC	None	203
<i>Calotomus santsanae</i>	Santa Ana sucker	AFCC021290	18	21284	10040	3311784	Riverside West	SD	1/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	20020531	20020531	CITY OF RIVERSIDE, UNKNOWN	Threatened	None	Endangered	Endangered	G1	51		SSC	None	205
<i>Chaetodipus fallax fallax</i>	northwestern San Diego pocket mouse	AMAF05031	61	57353	57717	3411714	Fontana	SD	nonspecific area	Possibly Extirpated	Natural/Native occurrence	None	N	19990210	19990210	PVT	None	None	Endangered	Endangered	G5	54		SSC	None	803
<i>Charania umbratica</i>	Southern rubber boa	ASAD041011	59	22487	27458	3411722	Hampton Mtns.	SD	3/5 mile	Presumed Extant	Natural/Native occurrence	Unknown	Y	19810417	19810417	UNKNOWN	None	None	Threatened	Threatened	G4	59		SSC	None	999
<i>Chlorophery maritimum</i>	salt marsh leaf-beak	P05SC0002	16	40810	34654	3411713	San Bernardino South	SD	5 miles	Possibly Extirpated	Natural/Native occurrence	None	N	1888000X	1888000X	UNKNOWN	None	None	Endangered	Endangered	G4	51	18.2	SSC	None	809
<i>Chlorura parryi</i>	Parry's spiniflower	POPN04002	29	42068	42068	3411714	Fontana	SD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	19803426	19803426	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	BLM_S, SB, RSABG, USFS_5	809
<i>Cnidocera transpacifica viridissima</i>	greenest tiger beetle	ICDCL0201	1	60909	60945	3411714	Fontana	SD	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19870313	19870313	UNKNOWN	None	None	Endangered	Endangered	G1	51		SSC	None	204
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	POW002022	79	42607	44131	3411713	San Bernardino South	SD	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19300204	19300204	UNKNOWN	None	None	Endangered	Endangered	G1	51		SSC	BLM_S, NABCI, RWFL, USFS_5, USFS_BCC	203
<i>Colonyx variegatus abboti</i>	San Diego banded gecko	AMAC01001	6	99738	101284	3411713	San Bernardino South	SD	specific area	Presumed Extant	Natural/Native occurrence	Good	Y	20150529	20150529	PVT	None	None	Endangered	Endangered	G5	54		SSC	None	202
<i>Dipodomys merriami parvus</i>	San Bernardino kangaroo rat	AMAD031403	1	37999	38006	3411713	San Bernardino South	SD	1/10 mile	Presumed Extant	Natural/Native occurrence	Unknown	Y	19930728	19930728	UNKNOWN	Endangered	None	Endangered	Endangered	G1	51		SSC	None	202
<i>Eriastrum densiflorum ssp. sanctorum</i>	Santa Ana River woollystar	POPLM03015	21	71722	72920	3411713	San Bernardino South	SD	specific area	Presumed Extant	Natural/Native occurrence	Unknown	N	19940801	19940801	RIV COUNTY FLOOD CONTROL	Endangered	None	Endangered	Endangered	G1	51	18.1	SSC	SB, RSABG	102
<i>Eriastrum densiflorum ssp. sanctorum</i>	Santa Ana River woollystar	POPLM03015	22	28747	9581	3411713	San Bernardino South	SD	specific area	Presumed Extant	Natural/Native occurrence	Poor	N	20070528	20070528	RIV COUNTY FLOOD CONTROL	Endangered	None	Endangered	Endangered	G1	51	18.1	SSC	SB, RSABG	102
<i>Eriastrum densiflorum ssp. sanctorum</i>	Santa Ana River woollystar	POPLM03015	27	71270	72569	3411714	Fontana	SD	1/10 mile	Extirpated	Natural/Native occurrence	None	N	19980606	19980606	UNKNOWN	Endangered	None	Endangered	Endangered	G4	51	18.1	SSC	SB, RSABG	104
<i>Eriastrum densiflorum ssp. sanctorum</i>	Santa Ana River woollystar	POPLM03015	30	71722	72920	3411713	San Bernardino South	SD	1/10 mile	Presumed Extant	Natural/Native occurrence	Poor	N	20020906	20020906	UNKNOWN	Endangered	None	Endangered	Endangered	G1	51	18.1	SSC	SB, RSABG	102
<i>Eriastrum densiflorum ssp. sanctorum</i>	Santa Ana River woollystar	POPLM03015	24	28746	9743	3411714	Fontana	SD	specific area	Presumed Extant	Natural/Native occurrence	Fair	N	20140904	20140904	RIV COUNTY FLOOD CONTROL	Endangered	None	Endangered	Endangered	G4	51	18.1	SSC	SB, RSABG	102
<i>Eriastrum densiflorum ssp. sanctorum</i>	Santa Ana River woollystar	POPLM03015	40	96406	97566	3411713	San Bernardino West	SD	specific area	Presumed Extant	Natural/Native occurrence	Unknown	N	20130614	20130614	SD COUNTY	Endangered	None	Endangered	Endangered	G4	51	18.1	SSC	SB, RSABG	102
<i>Eriopogon perotis californicus</i>	western manfuff	AMAC020132	83	66322	66419	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Unknown	N	19380828	19380828	RIV COUNTY FLOOD CONTROL	None	None	Endangered	Endangered	G2	52		SSC	None	809
<i>Gilia cruttii</i>	arroyo chub	AFCB131120	15	34088	20118	3411713	Riverside West	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Unknown	N	19990727	19990727	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	203
<i>Gilia cruttii</i>	arroyo chub	AFCB131120	27	41493	41493	3411714	Fontana	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Fair	N	20050727	20050727	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	203
<i>Gilia cruttii</i>	arroyo chub	AFCB131120	81	66322	41451	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Poor	N	19980719	19980719	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	203
<i>Gilia cruttii</i>	arroyo chub	AFCB131120	41	50083	50083	3411713	San Bernardino South	SD	nonspecific area	Presumed Extant	Natural/Native occurrence	Fair	N	20009020	20009020	UNKNOWN	None	None	Endangered	Endangered	G2	52		SSC	None	203
<i>Horkelia cuneata var. puberula</i>	mesa horkelia	PORS020045	7	20580	54868	3411713	San Bernardino South	SD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	18880220	18880220	UNKNOWN	None	None	Endangered	Endangered	G4	51	18.1	SSC	USFS_5	809
<i>Horkelia cuneata var. puberula</i>	mesa horkelia	PORS020045	9	54922	54922	3411714	Fontana	SD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	1881014	18880404	UNKNOWN	None	None	Endangered	Endangered	G4	51	18.1	SSC	USFS_5	809
<i>Horkelia cuneata var. puberula</i>	mesa horkelia	PORS020045	10	54923	54923	3411714	Fontana	SD	1 mile	Possibly Extirpated	Natural/Native occurrence	None	N	19080404	19080404	UNKNOWN	None	None	Endangered	Endangered	G1	51	18.1	SSC	USFS_5	809
<i>Horkelia cuneata var. puberula</i>	mesa horkelia	PORS020045	11	42068	54825	3411714	Fontana	SD	1 mile	Presumed Extant	Natural/Native occurrence	Unknown	N	19040515	190405											

Scientific Name	Common Name	Family	Lifeform	CPRE	OTR	SRank	CESA	FESA	Blooming Period	Habitat	Micro Habitat	Elevation Low (m)	Elevation Low (ft)	Elevation High (m)	Elevation High (ft)	CA Endemic States	Counties
<i>Barberris nevadensis</i>	Nevad's barberry	Barberrisaceae	perennial evergreen shrub	18.1	G1	S1	CE	FE	(Feb)Mar-Jun	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub	sandy or gravelly	70	225	825	2705 T		LAX, RIV, SBD, SDO
<i>Calochortus plummerae</i>	Plummer's mariposa lily	Liliaceae	perennial bulbiferous herb	4.2	G4	S4	None	None	May-Jul	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	granitic, rocky	100	325	1700	5575 T		LAX, ORA, RIV, SBD, VEN
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	Polygonaceae	annual herb	18.1	G1T3	S3	None	None	Apr-Jun	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	sandy or rocky, openings	275	900	1220	4005 T		LAX, RIV, SBD
<i>Delandrea paniculata</i>	paniculate tarplant	Asteraceae	annual herb	4.2	G4	S4	None	None	(Mar)Apr-Nov	Coastal scrub, Valley and foothill grassland, Vernal pools	usually vernal meadow, sometimes sandy	25	80	940	3085 F	BA	ORA, RIV, SBA, SBD, SDO, SLD
<i>Eriastrum densifolium</i> ssp. <i>sanctum</i>	Santa Ana River woodfistula	Polemoniaceae	perennial herb	18.1	G4T1	S1	CE	FE	Apr-Sep	Chaparral, Coastal scrub (abundant fan)	sandy or gravelly	91	295	610	2000 T		ORA, RIV, SBD
<i>Horkelia cuneata</i> var. <i>puberula</i>	mead horkelia	Rosaceae	perennial herb	18.1	G4T1	S1	None	None	Feb-Jul(Sep)	Chaparral (maritime), Cismontane woodland, Coastal scrub	sandy or gravelly	70	225	810	2655 T		LAX, ORA, RIV, SBA, SBD, SDO, SIO, VEN
<i>Lespedeza virginicum</i> var. <i>robinsonii</i>	Robinson's pepper-grass	Brassicaceae	annual herb	4.3	G3T3	S3	None	None	Jan-Jul	Chaparral, Coastal scrub		1	0	885	2905 F	BA	LAX, ORA, RIV, SBA, SBD, SCZ, SDO, VEN
<i>Monardella pringlei</i>	Pringle's monardella	Lamiaceae	annual herb	1A	GX	SX	None	None	May-Jun	Coastal scrub (sandy)		300	980	400	1310 T		RIV, SBD
<i>Senecio aphanactis</i>	chaparral ragwort	Asteraceae	annual herb	28.2	G3	S2	None	None	Jan-Apr(May)	Chaparral, Cismontane woodland, Coastal scrub	sometimes alkaline	15	45	800	2625 F	BA	ALA, CCA, FRI, LAX, MEX, MNT, ORA, RIV, SBA, SBT, SCL, SCR, SCT, SDO, SIO, SLD, SMO, VEN
<i>Sphenopholis obtusata</i>	prairie wedge grass	Poaceae	perennial herb	28.2	G5	S2	None	None	Apr-Jul	Cismontane woodland, Meadows and seeps	meadow	300	980	2000	6560 F	AL, AR, AZ, BA, CO, CT, DC, DE, FL, GA, HI, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, WY	AMA, FRI, INY, AMO, RIV, SBD, SDO, STA, TUL

SciName	ComName	TaxonGroup	ElmCode	TotalOccs	FedList	CallList	GRank	SRank	RPlantRank	OthrStatus
Agelaius tricolor	tricolored blackbird	Birds	ABP8X80020	949	None	Candidate Endangered	G2G3	S1S2		BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern
Arenaria paludicola	marsh sandwort	Dicots	POCAR040L0	16	Endangered	Endangered	G1	S1	1B.1	SB_SBBG-Santa Barbara Botanic Garden
Arizona elegans occidentalis	California glossy snake	Reptiles	ARADB01017	260	None	None	G5T2	S2		CDFW_SSC-Species of Special Concern
Athene cucularia	burrowing owl	Birds	ABNSB10010	1936	None	None	G4	S3		BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern
Bombus crochili	Crotch bumble bee	Insects	IHYM24480	233	None	None	G3G4	S1S2		
Calochortus plummerae	Plummer's mariposa-lily	Monocots	PMUL0D150	230	None	None	G4	S4		4.2 SB_RSABG-Rancho Santa Ana Botanic Garden
Catostomus santeae	Santa Ana sucker	Fish	AFCC0D190	28	Threatened	None	G1	S1		AFS_TH-Threatened IUCN_VU-Vulnerable
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	Mammals	AMAF05031	94	None	None	G5T3T4	S3S4		CDFW_SSC-Species of Special Concern
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Dicots	POCRC00C2	27	Endangered	Endangered	G4T1	S1	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden
Chlorianthe parryi var. parryi	Parry's spineflower	Dicots	PDGPN040J2	127	None	None	G3T2	S2	1B.1	BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden USFS_S-Sensitive
Cicindela tranquebarica viridissima	greenest tiger beetle	Insects	ICOL02201	1	None	None	G5T1	S1		
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	Dicots	PDPLM03035	30	Endangered	Endangered	G4T1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden
Gila orcutti	arroyo chub	Fish	AFCB13120	49	None	None	G2	S2		AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern USFS_S-Sensitive
Horkelia cuneata var. puberula	mesa horkelia	Dicots	PORC05W045	103	None	None	G4T1	S1	1B.1	USFS_S-Sensitive
Lasiorus xanthinus	western yellow bat	Mammals	AMACC05070	58	None	None	G5	S3		CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_H-High Priority
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Dicots	PDBRA1M114	142	None	None	G5T3	S3	4.3	
Lepus californicus bennettii	San Diego black-tailed jackrabbit	Mammals	AMAE03051	103	None	None	G5T3T4	S3S4		CDFW_SSC-Species of Special Concern
Lycium parishii	Parish's desert thorn	Dicots	POSCLO0000	21	None	None	G3?	S1	2B.3	
Malacothamnus parishii	Parish's bush-mallow	Dicots	PDMAL0Q0C0	1	None	None	GXQ	SX	1A	
Monardella pringelii	Pringle's monardella	Dicots	PDLAM180J0	2	None	None	GX	SX	1A	
Nyctinomops femorosaccus	pocketed free-tailed bat	Mammals	AMACD04010	90	None	None	G4	S3		CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_M-Medium Priority
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	755	None	None	G3G4	S3S4		BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern
Polioglypta californica californica	coastal California gnatcatcher	Birds	ABPB08081	820	Threatened	None	G4G5T2Q	S2		CDFW_SSC-Species of Special Concern NABCI_YWL-Yellow Watch List
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	Insects	IDIP05021	36	Endangered	None	G1T1	S1		
Riversidian Alluvial Fan Sage Scrub	Riversidian Alluvial Fan Sage Scrub	Scrub	CTT32720CA	30	None	None	G1	S1.1		
Senecio aphanactis	chaparral ragwort	Dicots	PDAST8H060	47	None	None	G3	S2	2B.2	
Sphenopholis obtusata	prairie wedge grass	Monocots	PMPOA5T030	19	None	None	G5	S2	2B.2	
Vireo bellii pusillus	least Bell's vireo	Birds	ABPW01114	478	Endangered	Endangered	G5T2	S2		IUCN_NT-Near Threatened NABCI_YWL-Yellow Watch List

Habitats

Freshwater marsh | Marsh & swamp | Swamp | Wetland
Freshwater marsh | Marsh & swamp | Wetland

Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland

Chaparral | Cismontane woodland | Coastal scrub | Lower montane coniferous forest | Valley & foothill grassland

Aquatic | South coast flowing waters

Chaparral | Coastal scrub

Coastal dunes | Marsh & swamp | Salt marsh | Wetland

Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland

Riparian woodland

Chaparral | Coastal scrub

Aquatic | South coast flowing waters

Chaparral | Cismontane woodland | Coastal scrub

Desert wash

Chaparral | Coastal scrub

Coastal scrub | Sonoran desert scrub

Chaparral | Coastal scrub

Coastal scrub

Joshua tree woodland | Pinon & juniper woodlands | Riparian scrub | Sonoran desert scrub

Chaparral | Cismontane woodland | Coastal bluff scrub | Coastal scrub | Desert wash | Pinon & juniper woodlands | Riparian scrub | Riparian woodland | Valley & foothill grassland

Coastal bluff scrub | Coastal scrub

Interior dunes

Coastal scrub

Chaparral | Cismontane woodland | Coastal scrub

Cismontane woodland | Meadow & seep | Wetland

Riparian forest | Riparian scrub | Riparian woodland

GenHab

Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California.

Marshes and swamps.

Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular Ranges, south to Baja California.

Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation.

Coastal California east to the Sierra-Cascade crest and south into Mexico.

Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.

Endemic to Los Angeles Basin south coastal streams.

Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego Co.

Marshes and swamps, coastal dunes.

Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland.

Inhabits the woodlands adjacent to the Santa Ana River basin.

Coastal scrub, chaparral.

Native to streams from Malibu Cr to San Luis Rey River basin. Introduced into streams in Santa Clara, Ventura, Santa Ynez, Mohave & San Diego river basins.

Chaparral, cismontane woodland, coastal scrub.

Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats.

Chaparral, coastal scrub.

Intermediate canopy stages of shrub habitats & open shrub / herbaceous & tree / herbaceous edges.

Coastal scrub, Sonoran desert scrub.

Chaparral, coastal sage scrub.

Coastal scrub.

Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc.

Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.

Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California.

Found only in areas of the Delhi Sands formation in southwestern San Bernardino & northwestern Riverside counties.

Chaparral, cismontane woodland, coastal scrub.

Cismontane woodland, meadows and seeps.

Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft.

MicroHab

Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.

Growing up through dense mats of Typha, Junius, Scirpus, etc. in freshwater marsh. Sandy soil. 3-1.70 m.

Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.

Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.

Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.

Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.

Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, & algae.

Sandy, herbaceous areas, usually in association with rocks or coarse gravel.

Limited to the higher zones of salt marsh habitat. 0-10 m.

Dry slopes and flats; sometimes at interface of 2 vegetation types, such as chaparral and oak woodland. Dry, sandy soils. 90-1220 m.

Usually found in open spots between trees.

In sandy soils on river floodplains or terraced fluvial deposits. 180-700 m.

Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation & associated invertebrates.

Sandy or gravelly sites. 15-1645 m.

Roots in trees, particularly palms. Forages over water and among trees.

Dry soils, shrubland. 4-1435 m.

Coastal sage scrub habitats in Southern California.

135-1000 m.

In a wash. 305-455 m.

Sandy hills. 300-400 m.

Rocky areas with high cliffs.

Open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.

Low, coastal sage scrub in arid washes, on mesas & slopes. Not all areas classified as coastal sage scrub are occupied.

Requires fine, sandy soils, often with wholly or partly consolidated dunes & sparse vegetation. Oviposition req. shade.

Drying alkaline flats. 20-855 m.

Open moist sites, along rivers and springs, alkaline desert seeps. 300-2000 m.

Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.