ECOLOGICAL SCIENCES, inc.

General Biological Habitat Assessment

±223-acre Legacy Specific Plan Site
San Bernardino County, California

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Summary

Ecological Sciences, Inc. conducted a general biological assessment on the ±223-acre Legacy Specific Plan site located in San Bernardino County, California. Particular emphasis of this analysis was placed on the site's potential to support sensitive (or special-status) biological resources. Accordingly, this report is intended to provide the applicant with biological information regarding potentially suitable habitat to support sensitive species for use in evaluating potential consequences of endangered species act compliance and permitting. This report discusses biological resources either known or expected to occur based on reconnaissance-level field surveys conducted by Ecological Sciences in May 2005, habitats present (existing site conditions), and review of pertinent literature inclusive of previously conducted general and focused surveys (2001-2003). Potential adverse impacts as a result of project implementation and general measures to reduce project-related impacts are also generally discussed.

Results of the survey effort indicate that areas located within the ±223-acre development footprint are considered of a low biological constraint and value. This designation is due to the high level of disturbance due to recent and long-standing agriculture-related activities resulting in low biological diversity on the site, absence of native plant communities, and the overall low potential for special-status species to utilize or reside within areas proposed for development. Development of agricultural areas would not be expected to substantially affect potentially occurring sensitive plant or wildlife species on the basis that significance of habitat is it's value to listed or other protected species, which either do not occur, or are not expected to occur in substantial numbers due to extensive site disturbances and absence of suitable habitat. No threatened or endangered species are likely to occur in areas proposed for construction activities due to the highly disturbed site conditions. As such, construction activities would not likely jeopardize the continued existence of listed species, nor would construction adversely impact any designated critical habitat.

While no native habitat communities are present on the site, and no federal- or state-listed species are expected to occur on the site due to absence of suitable habitat, several special-status species known from the vicinity (e.g., loggerhead shrike, burrowing owl) could potentially occur despite highly disturbed site conditions. Depending upon the species and seasonal timing of construction activities, a pre-activity survey, and potentially other measures, may be necessary prior to construction activities in order to avoid or further reduce impacts to potentially occurring sensitive biological resources.

Introduction

This report presents findings of a reconnaissance-level biological survey completed by Ecological Sciences, Inc. on the subject ±223-acre site. Results of this general habitat assessment are intended to provide the applicant and reviewing regulatory agencies with preliminary biological information required for planning and permitting decisions concerning the proposed project.

As part of the environmental review process, proposed development projects that contain potentially suitable habitat to support sensitive biological resources must demonstrate to reviewing agencies that potential project-related impacts are avoided or minimized. In order to meet the environmental documentation and review requirements of resource agencies, potentially occurring sensitive biological resources must be addressed to document the applicant's conformance to the California Environmental Quality Act (CEQA) and the federal Endangered Species Act (Act) of 1973, as amended. Apart from CEQA documentation, if it were determined that the project site contained state listed threatened species; development of the site would be affected by constraints established in the California Endangered Species Act (CESA).

Accordingly, this report 1) describes the general biological resources present on site, 2) provides a general assessment of sensitive biological resources either actually or potentially present based on existing site conditions, and 3) generally analyzes constraints to development posed by the potential presence of sensitive biological resources. The potential occurrence of sensitive biological resources is solely based on results of a reconnaissance-level field survey, habitats present, and pertinent literature/database review. No focused surveys for potentially occurring sensitive biological resources were conducted as a part of this specific biological evaluation. Therefore, conclusions relative to presence or absence of certain sensitive biological resources are primarily based on habitats present. For the purposes of this report, study area, project area, and site are used interchangeably.

Project Location

The subject site is located in San Bernardino County, California (***Plate 1***), north of Bellegrave Avenue, west of Hamner Avenue, south of Edison Avenue, and east of Cleveland Avenue. The site occurs on the Corona North USGS 7.5-minute quadrangle map, Township 2 South, Range 7 West, comprising a portion of Sections 13 and 24 (***Plate 2***).

Regulatory Setting

Biological resources within the project site may fall under the jurisdiction of multiple federal and state agencies, including, but not necessarily limited to, California Department of Fish and Game (CDFG), Regional Water Quality Control Board (RWQCB), U.S. Army Corps of Engineers (USACOE), Natural Resources Conservation Service (NRCS), U.S. Fish and Wildlife Service (USFWS or Service), City of Ontario (City), and County of San Bernardino (County).

Constraints posed by biological resources upon development of the proposed project were generally evaluated by ranking the following sensitive biological issues, listed in descending order of significance: (1) a federally or state-listed endangered or threatened species of plant or animal; (2) streambeds, wetlands, and their associated vegetation; (3) habitats suitable to support a federally or state-listed endangered or threatened species of plant or wildlife; (4) species designated as candidates for federal listing; (5) habitat, other than wetlands, considered sensitive by regulatory agencies or resource conservation organizations; (6) and other species or issues of special concern to agencies, resource conservation organizations, or other interest groups.

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plate 1

Regional Site Location

Legacy Specific Plan Site

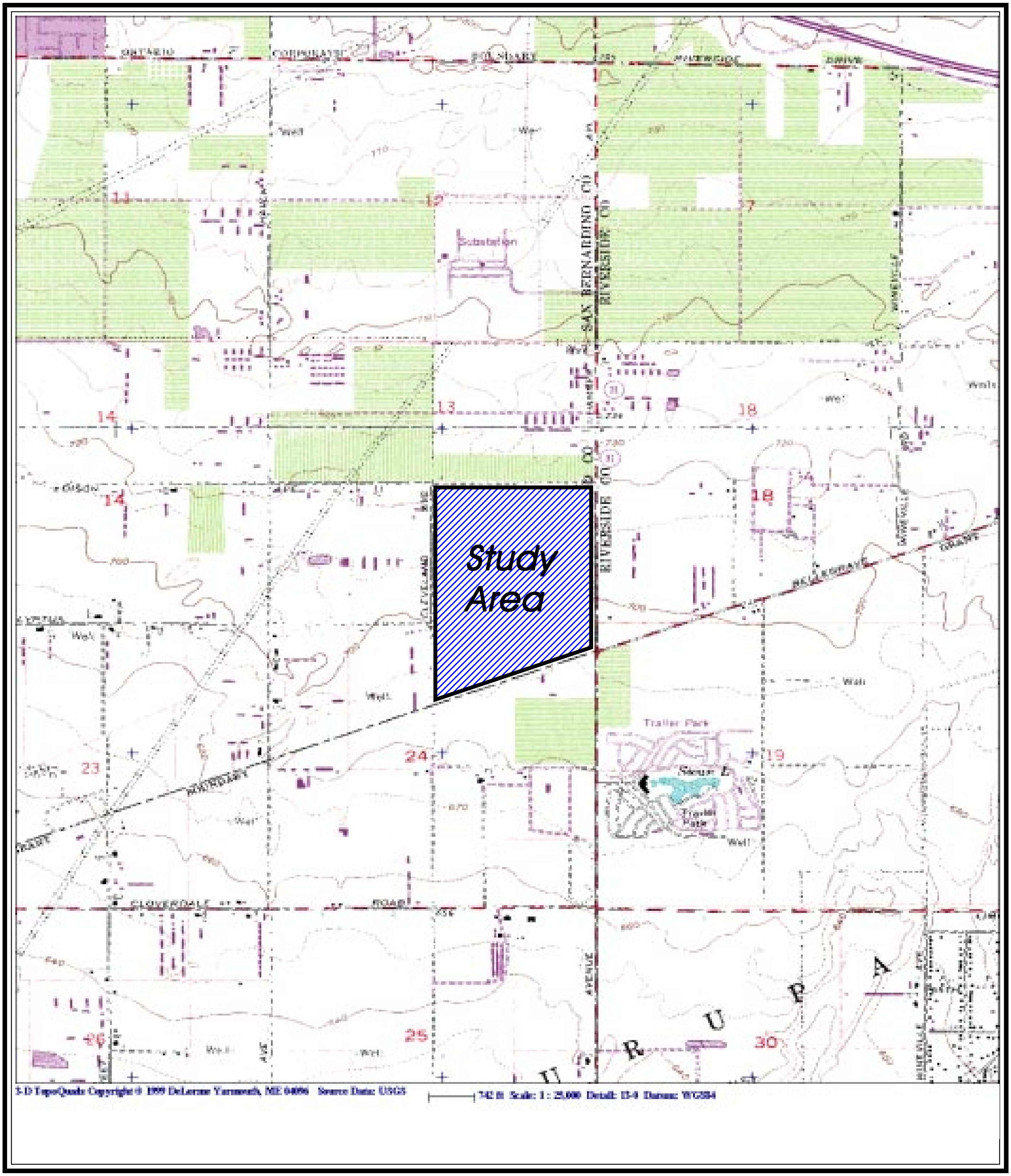

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plate 2

Site Vicinity

Legacy Specific Plan Site

Investigative Methods

This biological habitat assessment is based on information compiled through field reconnaissance, extensive literature review, and applicable reference materials. Methods used in this study are outlined below.

Scientific Literature Compilation and Review

Various data sources were reviewed to evaluate the potential occurrence of special-status species on the project site. Historical occurrence records of special-status plant and wildlife species were obtained from the California Natural Diversity Data Base (CNDDB 2005) for the Corona North California USGS 7.5-minute quadrangle map. This quadrangle map completely encompasses the project site, as well as an appropriate buffer area. To further assist in identification of special-status botanical resources, the California Native Plant Society (CNPS 2003) Electronic Inventory of Vascular Plants in California was also reviewed. In addition, the most current lists of special-status plant and wildlife species maintained by CDFG, USFWS, and CNPS were reviewed to determine the most current sensitivity status of species potentially occurring on the project site.

Other data sources reviewed include: (1) literature pertaining to habitat requirements of special-status species potentially occurring in the project site; (2) distribution data contained in Ingles (1965); Grinnell and Miller (1944); Garrett and Dunn (1981); Holland (1986); Munz (1974); Stebbins (1985); Hickman (1993); Skinner and Pavlik (1994); CNPS (2001); and (3) review of a general biological resources report and focused Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*) survey reports prepared for ±70-acres of the subject ±185-acre site (L&L Environmental, Inc. 2001-2002), and a General Biological Assessment prepared by Ecological Sciences (2003). References used for the nomenclature of wildlife include Jennings (1983) for amphibians and reptiles, the American Ornithologists' Union (1989, 1993 and supplements) for birds, and Jones et al (1982) for mammals. Names used to describe plant communities are based on the nomenclature of Holland (1986), where applicable, with modifications to accommodate non-described communities.

Sources used to determine the sensitivity status of biological resources are: **Plants**-U.S. Fish and Wildlife Service (USFWS 1996, 1999), California Natural Diversity Data Base (CNDDB 2005), and California Native Plant Society (CNPS 2001); **Wildlife**-USFWS (1996, 1999), CNDDB (2005); **Habitats**- CNDDB (2005).

Field Survey

Ecological Sciences, Inc. conducted a reconnaissance-level survey on May 17, 2005 to evaluate existing biological resources present on the subject ±223-acre site. Ecological Sciences biologists characterized on-site habitats and evaluated their potential to support sensitive biological resources. On-site resources were identified by and walking meandering transects throughout the site. Aerial photographs and topographic maps were used to aid the survey effort. Weather conditions at the time of the survey included 60 percent cloud cover, clear, a slight breeze (1-2 mph), and air temperatures of 70-77° F.

Floral and Faunal Inventory

Plants encountered during the survey were recorded in terms of their relative abundance and host habitat (plant community) type. Any species not readily identifiable in the field were later identified using plant taxonomic keys. Wildlife was detected during the course of the field survey by sight, calls, tracks, scat, or other diagnostic sign. In addition to species actually detected, expected use of the site by other wildlife was determined from habitat analysis of the site, combined with known habitat preferences of locally occurring wildlife species. The site was also generally evaluated for the potential presence of any plant, animal, or habitats considered rare, threatened, sensitive, endangered, or otherwise unique by regulatory or resource agencies. Analysis of potential wildlife movement corridors associated with the property was based on information compiled from a cursory review of topographic and aerial maps of the area.

Preliminary Jurisdictional Evaluation
Potential jurisdictional wetlands features subject to regulation under the federal Clean Water Act and CDFG Codes were generally evaluated during the reconnaissance site survey. USACOE jurisdiction is generally evaluated based on the definition of waters of the United States, as defined at 33 CFR Part 328, including adjacent or isolated wetlands as defined by the Corps of Engineers Wetland Delineation Manual (1987). CDFG jurisdiction would be evaluated based on Fish and Game Code Section 1600. No formal wetland delineation was conducted as part of this general biological habitat assessment.

Existing Biological Environment

General Site Physiography and Surrounding Areas
The subject site has been exposed to widespread and severe levels of human-related disturbances such as long-standing dairy and agricultural-related uses. The site contains existing structures associated with dairy operations (sheds, feedlots, etc.), several residences, cultivated areas, ruderal areas, a detention basin, and multiple abandoned structures and remnant foundations. A vast majority of the site (±99%) is dominated by invasive, non-native and ornamental plant species. Extensive amounts of soil and debris dumping are present, primarily in the southern portion of the site. Existing residential development is located to the south, and agricultural areas are located to the east, north, and west. ***Plate 3*** schematically illustrates on-site features and surrounding land uses. ***Appendices A1-A5*** photographically illustrates existing site conditions.

Botanical Resources

No natural or native plant communities are present on the ±223-acre site, and only a few scattered remnants of native vegetation remain due to long-standing agricultural uses. All on-site areas are disturbance-produced habitats, and as such, have much lower diversity and a higher percentage of non-native plants than do native plant communities. These long-standing agricultural uses have essentially excluded most native shrubs and forbs.

The site supports mostly ruderal plant associations comprised of non-native opportunistic species such as annual grasses and weedy forbs. Plant species present on the site include Russian thistle (*Salsola tragus*), foxtail chess (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), mustard (*Hirschfeldia and/or Brassica* sp.), cheeseweed (*Malva parviflora*), tree tobacco (*Nicotiana glauca*), pigweed (*Chenopodium album*), horehound (Marrubium vulgare), puncture vine (*Tribulus terrestris*), prickly lettuce (*Lactuca serriola*), Bermuda grass (*Cynodon dactylon*), jimson weed (*Datura wrightii*), and golden crownbeard (*Verbesina enceliodes*). In addition, gum trees (*Eucalyptus* sp.) and gum tree windrows are present in several locations. Ornamental species such as mulberry (*Morus* sp.), sweetgum (*Liquidamber* sp.), oleander (*Nerium oleander*), ash (*Fraxinis* sp.), and Mexican fan palm (*Washingtonia robusta*) were recorded on site. Native species recorded included Palmer's pigweed (*Amaranthus palmeri*), fleabane (*Conyza boniarensis*), curly dock (*Rumex crispis*), and spiny cocklebur (*Xanthium spinosum*). ***Appendix B*** presents a list of plant species detected on the project site.

Zoological Resources

Discussed below are common wildlife species observed during field surveys of the project site. Sensitive wildlife species potentially occurring on the project site are discussed in the Sensitive Biological Resources section of this report. ***Appendix C*** presents a list of vertebrate wildlife species detected on the project site.

Invertebrates

Based on review of the focused Delhi Sands flower-loving fly survey effort conducted on ±70-acres of the site in 2001 and 2002 (L&L Environmental, Inc.), 74 insect species were recorded. No *Apiocera* and only

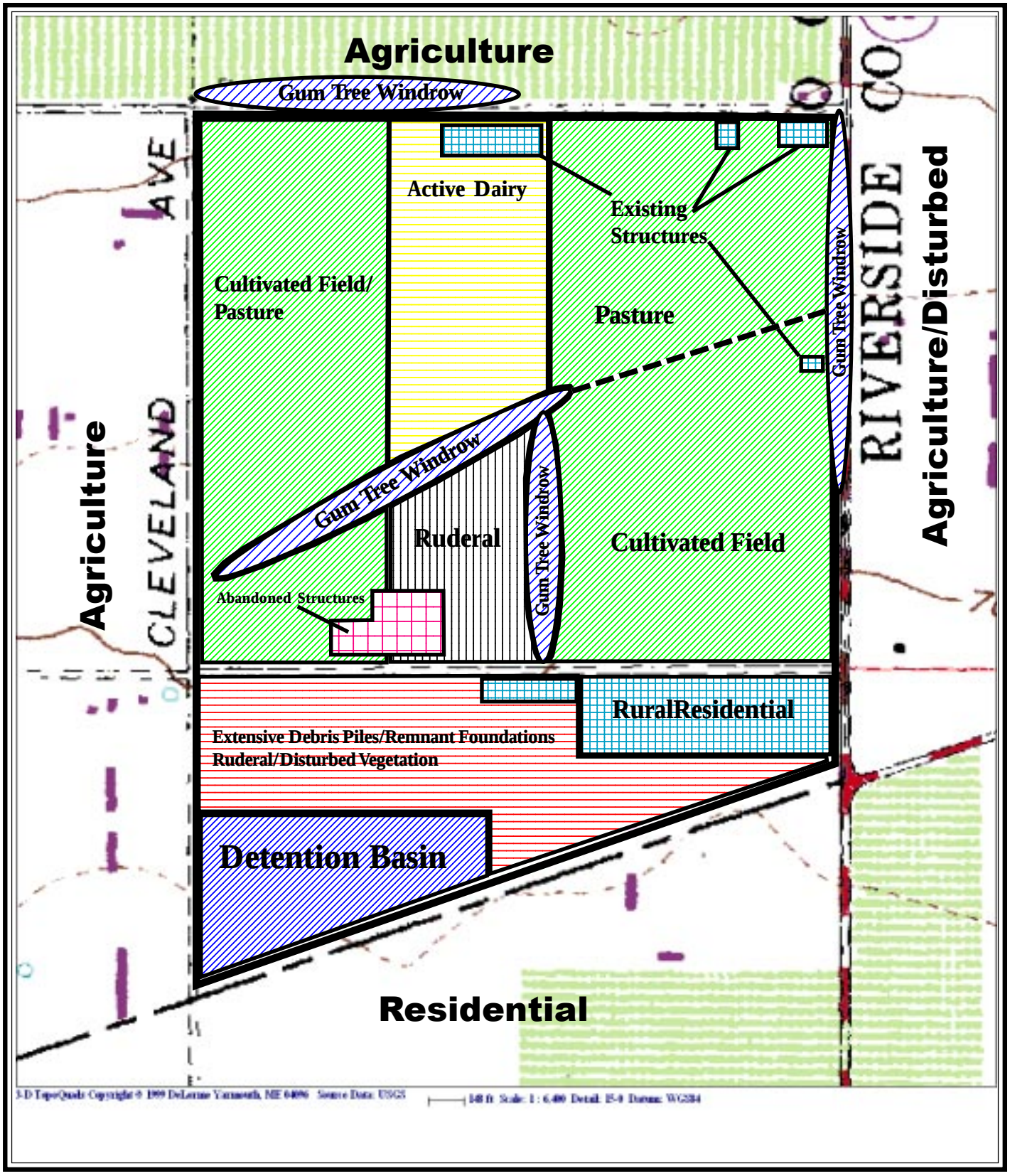

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plate 3

Site Features / Surrounding Land Use Schematic

Legacy Specific Plan Site

a few observations of *Nemomydas* were observed during the survey efforts (potential indicators of DSF habitat). Insect diversity was considered to be moderate due to the presence of nectar sources, although these sources consisted primarily of non-native plant species.

Amphibians and Reptiles

No amphibians were observed on the site during the site survey, and none are expected due to lack of suitable aquatic habitat. Common reptilian species observed during the survey effort included only the western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*).

Birds

Direct observations of avifauna recorded during surveys of the project site included common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), Brewer's blackbird (*Euphagus cyanocephalus*), morning dove (*Zenaida macroura*), rock dove (*Columba livia*), western kingbird (*Tyrannus verticalis*), black phoebe (*Saynoris nigricans*), western meadowlark (*Sturnella neglecta*), European starling (*Sturnus vulgaris*), and house finch (*Carpodacus mexicanus*). The special-status loggerhead shrike (*Lanius ludovicianus*) was also recorded.

Raptors

Raptor (birds of prey) species observed during the field surveys include turkey vulture (*Cathartes* aura) and red-tailed hawk (*Buteo jamaicensis*). The site supports several narrow windrows of gum trees that provide potentially suitable nesting habitat for some raptor species, though no raptor nests were observed. The open ruderal habitats provide some foraging opportunities for raptors. Many raptor species are considered sensitive by resource agencies, and are discussed in the Special-Status Biological Resources section of this report.

Mammals

Mammal species directly observed, or of which sign was detected, included California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), and domestic dog (*Canis familiaris*).

Soils

A review of the Soil Survey of San Bernardino County, Southwestern Part, California (1980) indicates that the site contains Delhi sands (Db) and Hilmar fine sandy loam (Hr). Hr soils are not ordinarily associated with potential DSF habitat. Most of the exposed surface soils present are associated with the large detention basin located in the southwestern portion of the site. An artificial mound of soil debris is located north of the basin, presumably associated with recent excavation of the area. Most of this area now supports consolidated/compacted soils from recent heavy equipment/debris dumping activities. No suitable substrate consistent with potential DSF habitat is present in this area. ***Plate 4*** illustrates project area soils.

Special-Status Biological Resource Evaluation

Discussed in this section are plant and wildlife species potentially present in the study area that have been afforded special recognition by federal or state agencies. The focus of this discussion is on those species that would potentially pose considerable constraints on the proposed project because of their high sensitivity status (listed or proposed for listing as rare, threatened, or endangered) with state and/or federal resource agencies. In addition, plants included on Lists 1, 2, 3, or 4 of the CNPS inventory are also considered of special-status. Vegetation communities that are unique, of relatively limited distribution, or of particular value to wildlife and considered sensitive by state and/or federal resource agencies are also discussed.

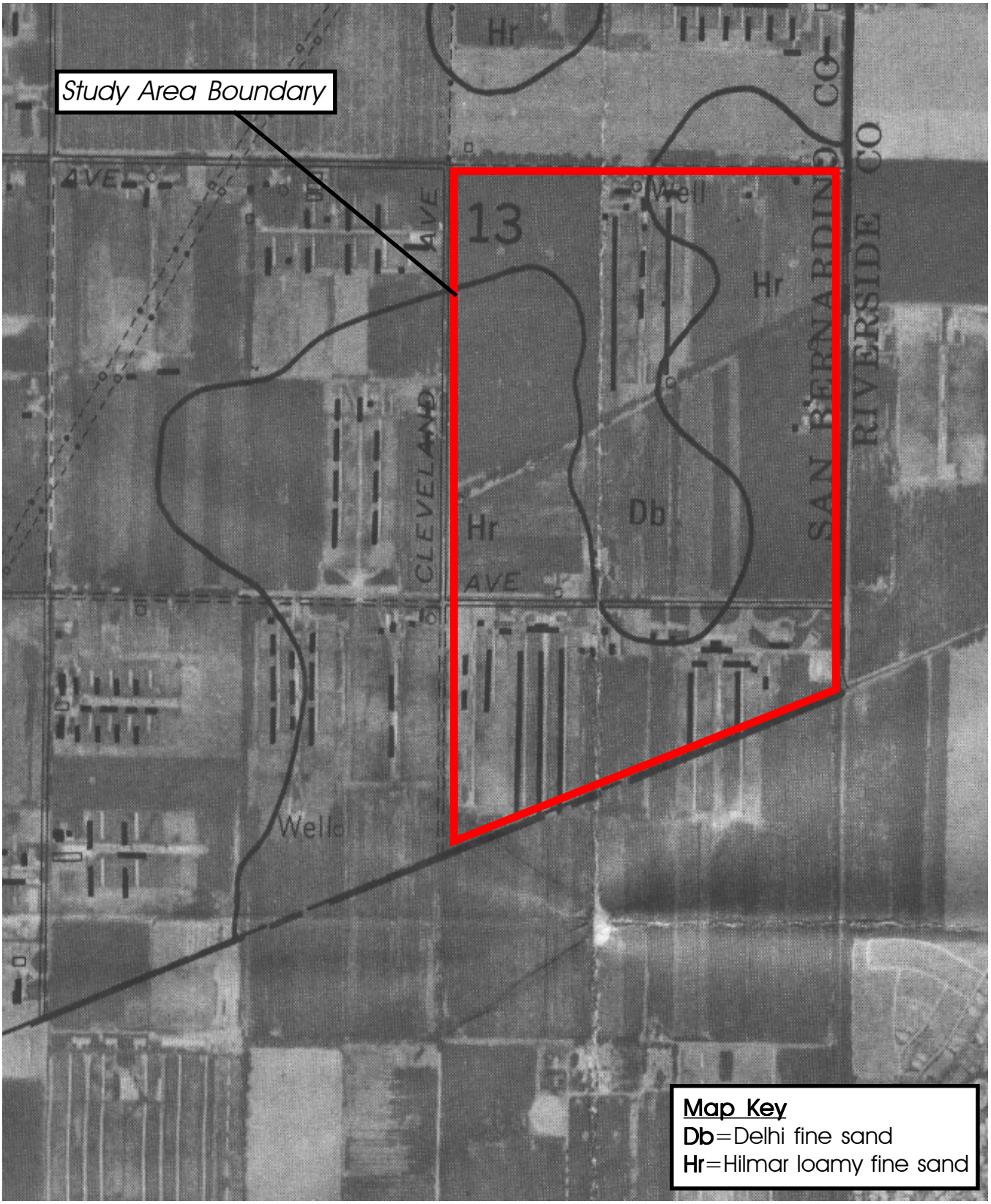

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plate **4**

Project Area Soils

Legacy Specific Plan Site

In general, those species presented in ***Tables 1 and 2*** that are "not expected" or that have a "low occurrence potential" correspond to "less than significant" under CEQA. The occurrence potential of special-status plant and wildlife species is primarily based on habitat types present, occurrence records of sensitive species from the site vicinity, and results of the on-site reconnaissance survey. No focused botanical or zoological surveys were conducted.

Special-Status Plant Species

No special-status plant species were detected on site during the reconnaissance survey of the site, and none are expected due to lack of suitable habitat. Special-status plant species known from the region that potentially occur within the project site are summarized below in ***Table 1***.

Special-Status Wildlife Species

One special-status species was recorded on site; the loggerhead shrike and two other species [burrowing owl (*Athene cunicularia*) and white-tailed kite (*Elanus leucurus*)] were previously recorded (L&L Environmental 2001), but were not recorded during more recent surveys conducted in 2002, 2003, or 2005. Several additional species have a moderate or high occurrence potential, but were not observed during the May 2005 survey. Special-status wildlife species potentially occurring on the project site, but that were not detected during biological surveys of the site, are summarized on the following pages in ***Table 2***.

Table 1

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

Scientific and Common Name	Status			Habitat Requirements	Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Munz's Onion *Allium munzii*	FE	CT	1B	Chaparral, sage scrub, grassland, woodlands with clay soils	March-May	**Not Expected:** suitable habitat not present
San Jacinto Valley crownscale *Atriplex coronata* var. *notatior*	FE	--	1B	Alkali flats, playas	April-August	**Not Expected:** suitable habitat not present
California Orcutt grass *Orcuttia californica*	FE	CE	1B	Meadows, vernal pools	April-June	**Not Expected:** suitable habitat not present
Parish's brittlescale *Atriplex parishii*	FSC	--	1B	Alkali meadows, chenopod scrub, playas	June-October	**Not Expected:** suitable habitat not present
Thread-leaved brodiaea *Brodiaea filifolia*	FE	CE	1B	Vernal pools, scrub, woodland, grasslands with clay soils	March-June	**Not Expected:** suitable habitat not present
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	FSC	--	1B	Playas, vernal pools	February-June	**Not Expected:** suitable habitat not present
Little mouestail *Myosurus minimus* var. *apus*	FSC	--	1B	Vernal pools	March-June	**Not Expected:** suitable habitat not present
Spreading navarretia *Navarretia fossalis*	FT	--	1B	Meadows, vernal pools	April-June	**Not Expected:** suitable habitat not present
Smooth tarplant *Centromadia pungens* ssp. *laevis*	FSC	--	1B	Alkaline grasslands, meadows, playas, scrub habitats	April-September	**Not Expected:** suitable habitat not present
Paniculate tarplant *Deinandra paniculata*	--	--	4	Coastal scrub, valley and foothill grassland; usually vernally mesic	April-November	**Not Expected:** suitable habitat not present
Slender-horned spineflower *Dodecahema leptoceras*	FE	CE	1B	Chaparral, alluvial fan sage scrub; terraces and washes	April-June	**Not Expected:** suitable habitat not present
San Diego ambrosia *Ambrosia pumila*	FPE	--	1B	Chaparral, coastal scrub, grasslands, vernal pools with sandy loam or clay soils (20-415M)	May-September	**Not Expected:** suitable habitat not present
Johnston's rock cress *Arabis johnstoni*	--	--	1B	Chaparral, lower montane coniferous forest; often on eroded clay	February-June	**Not Expected:** suitable habitat not present on site; known from fewer than 10 occurrences in the southern San Jacinto Mountains.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	--	--	1B	Coastal bluff scrub, coastal scrub/ alkaline; 10-200 meters in elevation	April-October	**Not Expected:** suitable habitat not present
Nevin's barberry *Berberis nevinii*	FE	SE	1B	Chaparral, cismontane woodland, coastal scrub, riparian scrub/ sandy or gravelly soils	March-April	**Not Expected:** suitable habitat not present on site; fewer than 1,000 plants likely remain.

Table 1-continued

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

Scientific and Common Name	Status			Habitat Requirements	Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Munz's mariposa lily *Calochortus palmeri* var. *munzii*	--	--	1B	Chaparral, lower montane coniferous forest	June-July	**Not Expected:** suitable habitat not present on site; known from only a few locations in the San Jacinto Mountains.
Vail Lake ceanothus *Ceanothus ophiochilus*	FE	SE	1B	Chaparral (gabbroic or pyroxenite-rich outcrops)	February-March	**Not Expected:** suitable habitat not present on site; known from only three occurrences near Vail Lake.
Many-stemmed dudleya *Dudleya multicaulis*	--	--	1B	Chaparral, coastal scrub, valley and foothill grassland/ often clay soils	April-July	**Not Expected:** suitable habitat not present
Santa Ana River woollystar *Eriastrum densifolium* ssp. *sanctorum*	FE	SE	1B	Coastal scrub (alluvial fan)	June-September	**Not Expected:** suitable habitat not present on site; outside species known range; known only from Santa Ana River.
San Jacinto Mountains bedstraw *Galium angustifolium* ssp. *jacinticum*	--	--	1B	Lower montane coniferous forest	June-August	**Not Expected:** suitable habitat not present on site; known from only three occurrences in Lake Fulmor and Black Mountain area of the San Jacinto Mountains.
Heart-leaved pitcher sage *Lepechinia cardiophylla*	--	--	1B	Closed cone coniferous forest, chaparral, cismontane woodland	April-July	**Not Expected:** suitable habitat not present on site; known in California from fewer than ten occurrences.
San Miguel savory *Satureja chandleri*	--	--	1B	Chaparral, cismontane woodland, coastal scrub, riparian woodland, grasslands/ rocky, gabbroic or metavolcanic soils	March-July	**Not Expected:** suitable habitat not present
Wright's trichocoronis *Trichocoronis wrightii* var. *wrightii*	--	--	2	Meadows and seeps, marshes and swamps, riparian scrub, vernal pools/ alkaline soils	May-September	**Not Expected:** suitable habitat not present
Intermediate mariposa lily *Calochortus weedii* var. *intermedius*	FSC	--	1B	Chaparral, coastal scrub, grasslands; often associated with dry, rocky, open slopes	May-July	**Not Expected:** suitable habitat not present
Plummer's mariposa lily *Calochortus plummerae*	FSC	--	1B	Chaparral, coastal scrub, grasslands; often associated with granitic soils	May-July	**Not Expected:** suitable habitat not present
South Coast saltscale *Atriplex pacifica*	FSC	--	1B	Coastal bluff scrub, playas, chenopod scrub	March-October	**Not Expected:** suitable habitat not present

Table 1-continued

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

Scientific and Common Name	Status			Habitat Requirements	Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Coulter's saltbush *Atriplex coulteri*	--	--	1B	Coastal bluff scrub, coastal scrub, valley/foothill grasslands; alkaline and clay soils	March-October	**Not Expected:** suitable habitat not present
Parry's spineflower *Chorizanthe parryi* ssp. *parryi*	FSC	--	3	Chaparral and coastal scrub; associated with sandy or rocky openings.	April-June	**Not Expected:** suitable habitat not present
Long-spined spineflower *Chorizanthe polygonoides* var. *longispina*	FSC	--	1B	Chaparral, sage scrub, grasslands, often with clay soils	April-July	**Not Expected:** suitable habitat not present
California spineflower *Mucronea californica*	--	--	4	Chaparral, cismontane woodland, coastal dunes, coastal scrub, grasslands with sandy soils	March-August	**Not Expected:** suitable habitat not present
Palmer's grapplinghook *Harpagonella palmeri*	FSC	--	2	Chaparral, grasslands, sage scrub with clay soils	March-April	**Not Expected:** suitable habitat not present
Round-leaved filaree *Erodium macrophyllum*	--	--	2	Cismontane woodland, valley and foothill grassland with clay soils	March-May	**Not Expected:** suitable habitat not present
Graceful tarplant *Holocarpha virgata ssp. elongata*	FSC	--	4	Woodlands, grasslands, scrub habitats	August-November	**Not Expected:** suitable habitat not present
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	--	--	1B	Chaparral and coastal scrub; dry soils	January-July	**Not Expected:** suitable habitat not present
California muhly *Muhlenbergia californica*	--	--	4	Chaparral, coastal scrub, lower montane coniferous forest; moist conditions	July-September	**Not Expected:** suitable habitat not present
Chaparral sand verbena *Abronia villosa* var. aurita	--	--	1B	Chaparral, coastal scrub with sandy soils	January-August	**Not Expected:** suitable habitat not present
Salt spring checkerbloom *Sidalcea neomexicana*	--	--	2	Chaparral, coastal scrub, lower montane coniferous forest; moist conditions	March-June	**Not Expected:** suitable habitat not present
Southern California black walnut *Juglans californica* var. *californica*	--	--	4	Chaparral, cismontane woodland, coastal sage scrub	March-May	**Not Expected:** suitable habitat not present
Vernal barley *Hordeum intercedans*	--	--	3	Coastal dunes, coastal scrub, grasslands (saline flats and depressions)	March-June	**Not Expected:** suitable habitat not present

Table 1-continued

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

TABLE 1 KEY:
[1] Based on review of CNDDB (2005), CNPS (2003) electronic databases, and other pertinent literature sources.

Federal—U.S. Fish and Wildlife Service

FE:	Federally Endangered
FT:	Federally Threatened Species
FPE:	Federally Proposed Endangered
FPT:	Federally Proposed Threatened
FC:	Federal Candidate Species
FSC:	Federal Species of Concern

State—California Department of Fish and Game

CE:	State Endangered
CT:	State Threatened
CR:	State Rare

CNPS-California Native Plant Society

List 1A:	Plants presumed extinct in California.
List 1B:	Plants rare and endangered in California and elsewhere
List 2:	Plants rare and endangered in California, but more common elsewhere
List 3:	Taxa about which more information is needed
List 4:	Plants of limited distribution

Table 2

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Occurrence Potential on the Project Site
INVERTEBRATES				
Riverside fairy shrimp *Streptocephalus wootoni*	FE	--	Swales, vernal pools, and basins within grasslands and sage scrub habitats	**Not Expected:** suitable habitat not present
Vernal pool branchinecta *Branchinecta lynchi*	FT	--	Grassland vernal pools	**Not Expected:** suitable habitat not present
Delhi sands flower-loving fly *Rhaphiomidas terminatus abdominalis*	FE	--	Delhi soils with sparse vegetation	**Not Expected:** suitable habitat not present; not recorded during focused surveys in 2001-2002.
AMPHIBIANS AND REPTILES				
Western spadefoot toad *Scaphiopus hammondii*	--	CSC	Relatively open grasslands, scrublands, and woodlands with fine, loose soil	**Not Expected:** suitable breeding habitat not present
San Diego horned lizard *Phrynosoma coronatum blainvillii*	FSC	CSC	Relatively open grasslands, scrublands, and woodlands with fine, loose soil	**Not Expected:** suitable habitat not present
Orange-throated whiptail *Cnemidophorus hyperythrus beldingi*	FSC	CSC	Relatively open grasslands, scrublands, and woodlands with fine, loose soil	**Not Expected:** suitable habitat not present
Coastal western whiptail *Cnemidophorus tigris multiscutatus*	--	♦	Sage scrub, chaparral, grassland	**Not Expected:** suitable habitat not present
Northern red diamond rattlesnake *Crotalus ruber ruber*	--	CSC	Sage scrub, chaparral, grasslands	**Not Expected:** suitable habitat not present
Southwestern pond turtle *Clemmys marmorata pallida*	--	CSC	Permanent or nearly permanent bodies of water with basking sites	**Not Expected:** suitable habitat not present
San Bernardino ringneck snake *Diadophis punctatus modestus*	FSC	--	Woodlands, shrublands, mesic areas with wood/rock debris	**Not Expected:** suitable habitat not present
San Diego mountain kingsnake *Lampropeltis zonata pulchra*	FSC	CSC	Forests and shrublands	**Not Expected:** suitable habitat not present
Coast patch-nosed snake *Salvadora hexalepis virgultea*	FSC	CSC	Shrublands with low structure and minimum density; friable soils	**Not Expected:** suitable habitat not present
Rosy boa *Lichanura trivirgata*	FSC	--	Desert and chaparral with moderate to dense vegetation and rocky cover	**Not Expected:** suitable habitat not present
BIRDS				
White-tailed kite (nesting) *Elanus leucurus*	MNBMC	CFP	Open vegetation and uses dense woodlands for cover	***High Potential:*** recorded foraging on-site in 2001 by L&L Environmental; no suitable nesting habitat. Not recorded on site in 2002-03, or 2005.

Table 2-continued

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Occurrence Potential on the Project Site
BIRDS-CON'T				
Northern harrier (nesting) *Circus cyaneus*	--	CSC	Coastal salt marsh, freshwater marsh, grasslands, and agricultural fields	***Moderate Potential:*** possibly forages over portions of the site; no suitable nesting habitat present.
Swainson's hawk *Buteo swainsoni*	--	CT	Breeds in stands with few trees such as juniper, riparian areas. Forages over grasslands, agricultural fields supporting rodent populations.	**Low Potential:** may occasionally forage over the site during migration; no suitable nesting habitat present.
Ferruginous hawk (wintering) *Buteo regalis*	FSC, MNBMC	CSC	Grasslands, agricultural fields, and open scrublands	***Moderate Potential:*** possibly forages over the site as seasonal migrant; does not breed in area.
Bald eagle *Haliaeetus leucocephalus*	FT	CE	Ocean shore, lake margins & rivers for both nesting and wintering	**Not Expected:** suitable habitat not present
Golden eagle (nesting & wintering) *Aquila chrysaetos*	--	CSC, CFP	Mountains, deserts, and open country	***Moderate Potential:*** may occasionally forage over the site; no suitable nesting habitat present.
Sharp-shinned hawk (nesting) *Accipiter striatus*	--	CSC	Woodlands; forages over chaparral and scrublands	**Low Potential:** may occasionally forage over the site; no suitable nesting habitat present.
Cooper's hawk *Accipiter cooperii*	--	CSC	Dense stands of live oaks and riparian woodlands.	***Low-Moderate Potential:*** may occasionally forage over the site; suitable nesting habitat limited
Prairie falcon (nesting) *Falco mexicanus*	--	CSC	Grasslands, savannas, rangeland, agricultural fields, and desert scrub; requires sheltered cliff faces for shelter	**Low-Moderate Potential:** may forage over the site in winter; no suitable nesting habitat present
Merlin (wintering) *Falco columbarius*	--	CSC	Open habitats	**Low Potential**: may forage over the site in winter; no suitable nesting habitat present
Burrowing owl (burrow sites) *Athene cunicularia*	FSC, MNBMC	CSC	Grasslands and open scrub	***Moderate-High Potential:*** recorded on-site in 2001; potentially suitable foraging and potential nesting habitat present on site. Not recorded on site in 2002-03, or 2005
Long-eared owl *Asio otus*	--	CSC	Riparian bottomlands to tall willows and cottonwoods; oaks along stream courses	**Not Expected:** suitable habitat not present
Western snowy plover *Charadrius alexandrinus nivosus*	FT (pacific coastal population)	CSC	Sandy beaches, salt pond levees and shores, gravelly or friable soils for nesting	**Not Expected:** suitable habitat not present
Mountain plover (wintering) *Charadrius montanus*	PT	CSC	Agricultural areas, fallow fields, grasslands, prairies	**Low Potential**: may forage over the site in winter; no suitable nesting habitat present on site.
Least Bell's vireo *Vireo bellii pusillus*	FE	CE	Willow dominated riparian habitat with dense understory	**Not Expected:** suitable riparian habitat not present
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	--	Riparian habitats along rivers, streams, or other wetlands usually with standing water	**Not Expected:** suitable riparian habitat not present

Table 2-continued

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	Status State	Habitat Requirements	Occurrence Potential on the Project Site
BIRDS-CON'T				
Yellow warbler *Dendroica petechia*	--	CSC	Riparian thickets and woodlands	**Not Expected:** suitable riparian habitat not present
Yellow-breasted chat *Icteria virens*	--	CSC	Riparian thickets and riparian woodlands with dense understory	**Not Expected:** suitable riparian habitat not present
California horned lark *Eremophila alpestris actia*	--	CSC	Grasslands, disturbed areas, agriculture fields, and beach areas	***High Potential:*** potentially suitable foraging habitat present; no nesting habitat.
California coastal gnatcatcher *Polioptila californica californica*	FT	CSC	Coastal sage scrub in areas of flat or gently sloping terrain	**Not Expected:** suitable habitat not present
Loggerhead shrike *Lanius ludovicianus*	--	CSC	Grasslands with scattered shrubs, trees, fences or other perches	***Observed:*** suitable foraging habitat present
S. California rufous-crowned sparrow *Aimophila ruficeps canescens*	--	CSC	Coastal sage scrub, grasslands	**Not Expected:** suitable habitat not present
Grasshopper sparrow *Ammodramus savannarum*	MNBMC	--	Coastal sage scrub, grassland	**Not Expected:** suitable habitat not present
Bell's sage sparrow *Amphispiza belli belli*	MNBMC	CSC	Coastal sage scrub, chaparral	**Not Expected:** suitable habitat not present
Tricolored blackbird (wintering) *Agelaius tricolor*	--	CSC	Marshes for nesting; forages in fields and scrub habitats	**Not Expected:** suitable habitat not present
MAMMALS				
Long-eared myotis *Myotis evotis*	FSC	--	Found in nearly all brush, woodland, and forest habitats from sea level to at least 9,000 ft.	**Low Potential:** marginal potential foraging and roosting habitat.
Small-footed myotis *Myotis ciliolabrum*	FSC	--	Arid wooded and brushy uplands near water from sea level to at least 9,000 ft.	**Low Potential:** marginal potential foraging and roosting habitat.
Fringed myotis *Myotis thysanodes*	FSC	--	Utilizes open habitats and early successional stages, streams, lakes, and ponds from sea level to at least 9,350 ft.	**Not Expected:** lack of potential foraging and roosting habitat; easily disturbed by human presence.
Long-legged myotis *Myotis volans*	FSC	--	Found in nearly all brush, woodland, and forested habitats from sea level to around 9,000 ft.; a bat primarily of coniferous forests	**Not Expected:** lack of potential foraging and roosting habitat.
Yuma myotis *Myotis yumanensis*	FSC	CSC	Found in a variety of habitats; optimal habitats are open forests and woodlands with sources of water over within to feed	**Low Potential:** marginal potential foraging and roosting habitat.

Table 2-continued

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	 State	Habitat Requirements	Occurrence Potential on the Project Site
MAMMALS-CON'T				
Spotted bat *Euderma maculata*	FSC	CSC	Deserts, scrublands, chaparral, and coniferous woodlands; highly associated with prominent rock features	**Not Expected:** lack of potential foraging and roosting habitat.
Pale big-eared bat *Corynorhinus townsendii pallescens*	FSC (Full Species)	CSC (Full Species)	Utilizes a variety of communities, including conifer and oak woodlands and forests, arid grasslands and deserts, and high-elevation forests and meadows	**Not Expected:** lack of potential foraging and roosting habitat; very sensitive to human disturbances.
Pallid bat *Antrozous pallidus*	--	CSC	Arid habitats, including grasslands, shrublands, woodlands, and forests; prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging	**Low Potential:** marginal potential foraging and roosting habitat.
Western mastiff bat *Eumops perotis*	FSC (ssp. *californicus*)	CSC	Primarily arid lowlands and coastal basins with rugged, rocky terrain, along with suitable crevices for day-roosts; primarily a cliff-dweller	**Low Potential:** marginal potential foraging and roosting habitat. Known to occasionally occur in buildings under certain circumstances
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	--	CSC	Grasslands, shrublands	***Moderate Potential:*** may occasionally utilize agricultural fields.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	--	CSC	Open shrublands, sandy areas	**Not Expected:** suitable habitat not present
Dulzura pocket mouse *Chaetodipus californicus frmoralis*		CSC	Coastal scrub, chaparral, grassland	**Not Expected:** suitable habitat not present
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	FSC	CSC	Grasslands, open sage scrub	**Not Expected:** suitable habitat not present
San Bernardino kangaroo rat *Dipodomys merriami parvus*	FE	CSC	Coastal scrub, chaparral, grassland	**Not Expected:** suitable habitat not present
Stephens' kangaroo rat *Dipodomys stephensi*	FE	CE	Grasslands, open sage scrub	**Not Expected:** suitable habitat not present
San Diego desert woodrat *Neotoma lepida intermedia*	--	CSC	Moderate to dense sage scrub; rocky outcrops	**Not Expected:** suitable habitat not present
Southern grasshopper mouse *Onychomys torridus ramona*	FSC	CSC	Alkali desert scrub, desert riparian areas and a variety of other desert habitats; succulent scrub, wash, riparian, mixed chaparral	**Not Expected:** suitable habitat not present
American badger *Taxidea taxus*	--	♦	Drier open stages of shrub, forest, and herbaceous habitats with friable soils	**Not Expected:** suitable habitat not present

Table 2-continued

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

TABLE 2 KEY:

[1] Based on review of CNDDB (2005) and other pertinent literature sources.
For most taxa the CNDDB is interested in sightings for the presence of resident populations. For some species (primarily birds), the CNDDB only tracks certain parts of the species range or life history (e.g., nesting locations). The area or life stage is indicated in parenthesis after the common name.
Status:

Federal—U.S. Fish and Wildlife Service

FE:	Federally Endangered
FT:	Federally Threatened
FPE:	Federally Proposed Endangered
FPT:	Federally Proposed Threatened
FC:	Federal Candidate for listing as threatened or endangered
FSC:	Federal Species of Concern-*not formally protected under law*
MNBMC:	Migratory Nongame Birds of Management Concern (not shown for federally listed or proposed threatened or endangered species)

State—California Department of Fish and Game

CE:	California Endangered
CT:	California Threatened
CCE:	California Candidate (Endangered)
CCT:	California Candidate (Threatened)
CFP:	California Fully Protected
CP:	California Protected
CSC:	California Special Concern
♦ :	California Special Animal (species with no official federal or state status, but are included on CDFG's Special Animals list)

Special-Status Habitats/Plant Communities

Special-status habitat types are vegetation communities that support concentrations of sensitive plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife (CNDDB 2005). Although sensitive habitats are not necessarily afforded legal protection unless they support protected species, potential impacts to them may increase concerns and mitigation suggestions by resources agencies. No sensitive native habitats were recorded on the subject site due to extensive agricultural uses.

Jurisdictional Resources

The USACOE, RWQCB, and CDFG potentially consider drainages, streambed, and creeks jurisdictional. A formal delineation for either state or federal wetland jurisdiction was not conducted for this analysis. However, on-site resources were generally evaluated for their potential to be considered jurisdictional during the field survey effort. The following discussion is included to provide background information pertaining to the regulation of natural water features by state and federal agencies.

Summary of On-Site Jurisdictional Evaluation
Based on the preliminary field investigation conducted by Ecological Sciences, USAOCE "waters of the United States" per Sections 401-404 of the Federal Clean Water Act and "streambeds" per Section 1600-1603 of the California Fish and Game Code were not observed on the property. No blue-line drainages occur on site based on review of the Corona North USGS quadrangle map. Due to long-standing agricultural activities and placement of detention facilities to retain runoff, the site has essentially been cut off from conveying any extensive flows, and has no significant nexus to navigable waters.

A large dry detention basin is present in the southwest portion of the site presumably is association with a proposed or existing development project. In addition, one open agricultural wastewater detention area (bermed) is present in the central-western portion of site in order to retain agricultural runoff water on site. However, because water to the basin is solely provided by on-site agricultural activities, the detention berm is human-made, created from upland, are not connected to, or adjacent to a natural waterway, this features would not likely be considered jurisdictional by regulatory agencies. Habitat value is low in the open berm due to lack of species and structural diversity. Habitat for sensitive biological resources is not present in this detention area, and it appears to have no wetland or jurisdictional value. Riparian vegetation was not observed.

Wildlife Movement Corridors

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation by human disturbance, or by the encroachment of urban development. Movement corridors are important as the combination of topography and other natural factors, in addition to urbanization, has fragmented or separated large open space areas. The fragmentation of natural habitat creates isolated 'islands' of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. The proposed project site is surrounded by existing residential or agricultural development, and therefore, it is highly unlikely that the subject site occupies an important location relative to regional wildlife movement. As such, project implementation would not be expected to have any substantial effect on local or regional wildlife movement.

Discussion

Significant impacts on biological resources posed by the project were evaluated from criteria stated in the CEQA Statutes and *Guidelines*, Appendix G (2002). These *Guidelines* state that a project may be deemed to have a significant impact on biological resources if it will: (1) substantially affect a rare, threatened, or endangered species of plant or animal or the habitat of such species; (2) interfere

substantially with the movement of any resident or migratory fish or wildlife species; substantially diminish habitat for fish, wildlife, or plants; or (3) conflict with adopted environmental plans and goals in the community where it is located; (4) involve the use, production, or disposal of materials that pose a hazard to animal or plant populations in the area affected. Section 15065(a) of the CEQA *Guidelines* states that a project may have a significant effect on the environment when the project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare, threatened, or endangered plant or animal.

No ***special-status plant species*** were recorded on site during the May 2005 survey. The intent of the botanical survey was to generally evaluate the potential of the site to support sensitive plant species based on existing site conditions and habitat types present. Long-standing agricultural activities have likely altered soil chemistry and other substrate characteristics such that on-site soils may not currently be capable of supporting most sensitive plant species absent a cessation of recurring surface disturbances. Site development would not likely eliminate significant amounts of habitat for special-status plant species, nor reduce population size of sensitive plant species below self-sustaining levels on a local or regional basis (if present).

One special-status wildlife species was recorded on site in 2005; the ***loggerhead shrike***. In addition, several additional sensitive wildlife species such as the ***California horned lark*** and ***San Diego black-tailed jackrabbit*** have a moderate or high occurrence potential in certain agricultural situations. These species were deemed by the Service to be too widespread and common to warrant listing as threatened or endangered, and as such, were removed from formal sensitive species status. At present, they have no state or federal listing status. They are included herein for discussion since they were formerly considered for listing, and because they are relatively common throughout the region. Individuals present within zones of project grading and other development impacts would be displaced by construction activities, if present on site. Given the relative abundance of these species in other areas, the loss of highly disturbed habitats and an undetermined, but expected low number of individuals displaced, would not likely constitute a CEQA-significant adverse impact to these species, nor amount to a measurable impact to the species within southern California or their overall range.

Development of the proposed project would remove disked fields potentially suitable for foraging by several species of raptors (e.g., ***northern harrier, white-tailed kite, ferruginous hawk, golden eagle***) during winter or migration periods. Because most potentially occurring raptor species are very widespread and roam over large areas of foraging territory, these losses would amount to a relatively small, incremental reduction of seasonal foraging habitat and occasional use areas. Accordingly, removal of disked habitats on the site would not likely constitute CEQA-significant adverse impacts to any of the affected species locally or regionally.

Despite that fact that the site has been exposed to long-standing disturbance-related uses, the ***western burrowing owl*** may also occur in less than optimal and/or disturbed conditions (although not observed during the survey conducted in May 2005). While the burrowing owl (and many other potentially occurring avian species) is not currently protected by state or federal endangered species acts, this species is protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) and CDFG Code sections 3503, 3503.5, and 3800 which prohibits take, possession, or destruction of birds, their nests or eggs (in particular raptor species). If it were later determined that active nests would be lost as a result of site-preparation, it could result in adverse impacts and would be in conflict with these regulations. Compliance with the MBTA would be necessary prior to development, however no special permit or approval is typically required in most instances.

In order to avoid violation of the MBTA or CDFG Code sections, specific burrowing owl survey protocol and mitigation guidelines were developed and described in a 1995 CDFG Staff Report on Burrowing Owl

Mitigation (Zarn 1974) to reduce project-related impacts to burrowing owls. General guidelines suggest that project-related disturbances at active nesting territories be reduced or eliminated during the nesting cycle (generally February 1 to August 31). Should eggs or fledglings be discovered on a site, the nest cannot be disturbed (pursuant to CDFG guidelines) until the young have hatched and fledged (matured to a stage that they can leave the nest on their own). Accordingly, construction should take place, as much as possible, outside of the breeding season for owls (generally September 1 to January 31) to avoid potential impacts to this species. If owls must currently be moved away from the disturbance area, passive relocation techniques should be used rather than trapping according to CDFG. At least one or more weeks would be necessary to accomplish this and allow for owls to acclimate to alternate burrows (CDFG 1995). Additional mitigation measures detailed in the 1995 staff report include: (1) preservation of habitat, (2) artificial burrow construction, and (3) provide funding for long-term management and monitoring of protected mitigation lands. Mitigation measures successfully implemented for this species also include giving the Service/CDFG right of first refusal for actively relocating any burrowing owls present. Currently occupied receiving sites may be available where this species has a greater chance of successful long-term relocation.

The general process, for those projects subject to CEQA, begins by the performance of focused surveys to determine if the burrowing owl is foraging or nesting on or adjacent to the site. If surveys confirm that the site is occupied habitat, mitigation measures to minimize impacts to burrowing owls should be incorporated into the CEQA document as enforceable conditions (CDFG 1995). If active owl nests are located, no grading or heavy equipment activity should take place within at least 250 feet of an active nest during the breeding season, and 160 feet during the non-breeding season. However, following project approval, there is no current legal mechanism through which to seek mitigation other than avoidance of occupied burrows or nests (CDFG 1995). Preconstruction surveys within suitable habitat should be conducted 30 days prior to construction activities. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed for owls.

If construction activities involving heavy equipment are proposed during the breeding season of other potentially occurring nesting species (e.g., red-tailed hawk), a pre-activity survey conducted in areas potentially affected (directly or indirectly) by project implementation is recommended prior to development to determine if active nests of protected species are present in the construction zone or within an appropriate buffer area as part of project approval. Results of a pre-activity nesting bird survey would determine the appropriate measures (if necessary) to reduce potentially adverse indirect impacts to those species that potentially breed in the area. If active nests are located, no grading or heavy equipment activity should take place within at least 500 feet of an active listed species or raptor nest, 300 feet of other sensitive bird nests (non-listed), and 100 feet of most common songbird nests. Development activities performed outside of the avian breeding season would generally eliminate the need to conduct pre-activity nesting surveys for most common species known from the site vicinity, and likely ensure that there were no constraints to construction relative to the MBTA/CDFG code. Compliance with the MBTA/CDFG codes would be necessary prior to development, however no special permit or approval is typically required in most instances.

Sensitive biological resources will continue to exist in the region only through land conservation, a cessation of current habitat degrading land management practices and restoration or natural reversion of certain ecologically damaged lands back to an ecological community typical of those known to support special-status species. Development in the region has been cumulatively reducing the amount of open areas. Such conversions have been and will continue to lead to the permanent loss of the amount of land available for sensitive resources. When viewed individually, it may be possible for each project to mitigate potential project-specific impacts through the implementation of habitat replacement programs and the requirements of the regulatory processes to which each project may be subject. We further understand that it is the intent of the City and County to continue to accommodate essential habitat for sensitive biological resources in their long-range development plans.

Conclusion

Results of the reconnaissance-level survey effort indicate that habitats located within the ±223-acre development footprint are considered of a low biological constraint and value. This designation is due to the high level of disturbance due to recent and long-standing agriculture-related activities resulting in low biological diversity on the site, absence of native plant communities, and the overall low potential for special-status species to utilize or reside within areas proposed for development. The loss of disturbed agricultural habitats is not expected to substantially affect special-status resources or cause a population of plant or wildlife species to drop below self-sustaining levels. Because no threatened or endangered species are likely to occur in the study area due to the highly disturbed conditions present in a predominantly degraded environment, construction activities would not likely jeopardize the continued existence of listed species, nor would construction adversely impact designated critical habitat. Likewise, development of the project is also not expected to substantially alter diversity of wildlife in the area because of the current degraded condition of the site. Accordingly, preliminary survey results suggest that no significant impacts to special-status biological resources are expected as a result of project-related activities.

Although no native habitat types are present, and no listed species are expected to occur due to absence of suitable habitat, the potential presence of several special-status species (e.g., those with a moderate or high occurrence potential) may impose some degree of constraint to development depending upon the nature of both direct and indirect impacts on these resources, as well as on the particular species and seasonal timing of construction activities. During permitting procedures, certain measures (generally discussed above) to avoid or further reduce potential project-related impacts to sensitive biological resources may be necessary as part of project approval.

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

Ecological Sciences, Inc.

Scott D. Cameron
Principal Biologist

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View to east along southern property boundary

View to west along southern property boundary

View to north of southern detention basin area

View to north of ruderal and rural residential areas

View to north of culitvated field

View to south of abanonded dairy area

View to north of abandoned dairy/debris dumping area

View to east of debris dumping area

View to southeast of bermed detention area

View to south from along northern property boundary

Appendix B

General Plant Species List[1]

±223-Acre Legacy Specific Plan Site
May 2005

FAMILY Common Name[2]	Scientific Name[2]
ANGIOSPERMS **DICOTYLEDONS**	
AMARANTHACEAE	
Palmer's pigweed	*Amaranthus palmeri*
ANACARDIACEAE	
Oleander*	*Nerium oleander*
Ash*	*Fraxinis* sp.
ASTERACEAE	
Spiny cocklebur	*Xanthium spinosum*
Fleabane	*Conyza boniarensis*
Prickly lettuce*	*Lactuca serriola*
Golden crownbeard	*Verbesina encelioides*
BRASSICACEAE	
Shortpod mustard*	*Hirschfeldia incana*
Black mustard*	*Brassica nigra*
CHENOPODIACEAE	
Lamb's quarters*	*Chenopodium album*
Russian thistle*	*Salsola tragus*
FABACEAE	
Spanish clover*	*Lotus purshianus*
California burclover*	*Medicago polymorpha*
GERANIACEAE	
Filaree*	*Erodium cicutarium*
HAMAMELIDACEAE	
Sweetgum*	*Liquidamber sp.*
LAMIACEAE	
Horehound*	*Marrubium vulgare*
MALVACEAE	
Cheeseweed*	*Malva parviflora*
MOREACEAE	
Mulberry*	*Morus sp.*
MYRTACEAE	
Gum tree*	*Eucalyptus sp.*
POLYGONACEAE	
Curly dock	*Rumex crispus*
SOLANACEAE	
Tree tobacco*	*Nicotiana glauca*
Jimsonweed	*Datura wrightii*

Appendix B-continued

General Plant Species List[1]

±223-Acre Legacy Specific Plan Site

May 2005

FAMILY **Common Name**[2]	**Scientific Name**[2]
ZYGOPHYLLACEAE	
Puncture vine*	*Tribulus terrestris*
MONOCOTYLEDONS	
ARECACEAE	
Mexican fan palm*	*Washingtonia robusta*
POACEAE	
Bermuda grass*	*Cynodon dactylon*
Foxtail chess/red brome*	*Bromus madritensis ssp. rubens*
Ripgut grass*	*Bromus diandrus*
Mediterranean grass*	*Schismus barbatus*
Oat*	*Avena barbata*

KEY:

1 Observed during field surveys conducted between 2002-2003 at the subject ±223-acre site located in San Bernardino County, California. Not necessarily an exhaustive list of plant species.

2 Scientific and common names are from Hickman (1993) and Skinner and Pavlik (1994). Additional common plant names may be taken from Abrams (1944) and Munz (1974).

* introduced species

Appendix C

Common Wildlife Species List[1]

±223-Acre Legacy Specific Plan Site
May 2005

Scientific Name[2]	Common Name[2]
VERTEBRATES	
Reptiles	
Sceloporus occidentalis	Western fence lizard
Uta stansburiana	Side-blotched lizard
Birds	
Casmerodius albus	Great egret
Cathartes aura	Turkey vulture
Buteo jamaicensis	Red-tailed hawk
Falco sparverius	American kestrel
*Columba livia**	Rock dove
Zenaida macroura	Mourning dove
Aeronautes saxatalis	White-throated swift
Calypte anna	Anna's hummingbird
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
*Lanius ludovicianus***	Loggerhead shrike**
Mimus polyglottos	Northern mockingbird
Molothrus ater	Brown-headed cowbird
Euphagus cyanocephalis	Brewer's blackbird
Tyrannus verticalis	Western kingbird
Hirundo rustica	Barn swallow
Sayornis nigricans	Black phoebe
*Sturnus vulgaris**	European starling*
Carpodacus mexicanus	House finch
*Passer domesticus**	House sparrow*
Mammals	
Sylvilagus audubonii	Desert cottontail
Spermophilus beecheyi	California ground squirrel
Thomomys bottae	Botta's pocket gopher
*Canis familiaris**	Domestic dog*

KEY:

1 Observed during reconnaissance surveys conducted by Ecological Sciences in May 2005 on the subject ±223-acre project site located in San Bernardino County, California. Not intended to represent an exhaustive list of vertebrate species.

2 Scientific nomenclature and common names follow Collins et al. (1990); American Ornithologists' Union (1989); and Jones et al. (1992).

** Special-status species

* Introduced species

General Biological Resources Assessment

±185-acre Legacy Specific Plan Site

San Bernardino County, California

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January 2003

General Biological Resources Assessment

185-acre Legacy Specific Plan Site
San Bernardino County, California

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Appendices

Summary

Ecological Sciences, Inc. conducted a general biological resources assessment on the ±185-acre Legacy Specific Plan site located in San Bernardino County, California. Particular emphasis of this analysis was placed on the site's potential to support sensitive (or special-status) biological resources. Accordingly, this report is intended to provide the applicant with biological information regarding potentially suitable habitat to support sensitive species for use in evaluating potential consequences of endangered species act compliance and permitting. This report discusses biological resources either known or expected to occur based on reconnaissance-level field surveys conducted by Ecological Sciences (2002-2003), habitats present (existing site conditions), and review of pertinent literature inclusive of previously conducted general and focused surveys (2001-2002). Potential adverse impacts as a result of project implementation and general measures to reduce project-related impacts are also generally discussed.

Results of the survey effort indicate that areas located within the ±185-acre development footprint are considered of a low biological constraint and value. This designation is due to the high level of disturbance due to recent and long-standing agriculture-related activities resulting in low biological diversity on the site, absence of native plant communities, and the overall low potential for special-status species to utilize or reside within areas proposed for development. Development of agricultural areas would not be expected to substantially affect potentially occurring sensitive plant or wildlife species on the basis on the basis that significance of habitat is it's value to listed or other protected species, which either do not occur, or are not expected to occur in substantial numbers due to extensive site disturbances and absence of suitable habitat. No threatened or endangered species are likely to occur in areas proposed for construction activities due to the highly disturbed site conditions. As such, construction activities would not likely jeopardize the continued existence of listed species, nor would construction adversely impact any designated critical habitat.

While no native habitat communities are present on the site, and no listed species are expected to occur on the site due to absence of suitable habitat, other sensitive biological resources known from the vicinity (e.g., several special-status bird species) may occasionally occur in less than optimal and/or disturbed conditions. Depending upon the species and seasonal timing of construction activities, a pre-activity survey may be necessary prior to construction activities in order to avoid or further reduce impacts to potentially occurring sensitive biological resources.

Introduction

A general biological resource assessment was conducted by Ecological Sciences, Inc. on the 185-acre Legacy Specific Plan site in support of the environmental review process. Biotic resources of the project area are described herein from information compiled through field reconnaissance, pertinent literature and database review, supplemented by existing documentation of biological resources within the project vicinity. Particular emphasis of this analysis was placed on the site's potential to support sensitive (or special-status) biological resources (i.e., those species that have been afforded special protection or recognition by federal, state, or recognized resource conservation organizations) for use in evaluating potential consequences of endangered species act compliance and permitting. In order to meet documentation requirements of reviewing agencies, potential impacts to special-status biological resources must be addressed to demonstrate the applicant's conformance to California Environmental Quality Act (CEQA) and the federal Endangered Species Act (Act) of 1973, as amended. No focused surveys for potentially occurring sensitive biological resources were conducted as a part of this biological analysis. Therefore, conclusions relative to presence or absence of certain sensitive biological resources are primarily based on habitats present.

Project Location

The subject site is located in San Bernardino County, California (**Plate 1**), north of Bellegrave Avenue, west of Hamner Avenue, south of Edison Avenue, and east of Cleveland Avenue. The site occurs on the Corona North USGS 7.5-minute quadrangle map, Township 2 South, Range 7 West, comprising a portion of Sections 13 and 24 (**Plate 2**). An aerial photograph of the area is included as **Plate 3**.

Regulatory Setting

Biological resources within the project site may fall under the jurisdiction of several federal and state agencies, including California Department of Fish and Game (CDFG), Regional Water Quality Control Board (RWQCB), U.S. Army Corps of Engineers (USAOCE), Natural Resources Conservation Service (NRCS), U.S. Fish and Wildlife Service (USFWS or Service), and the County of San Bernardino (County).

Investigative Methods

Biological investigations performed in preparation of this report consisted of reconnaissance-level field surveys conducted in December 2002 and January 2003 by Ecological Sciences, Inc., and compilation, review, and analysis of existing literature regarding sensitive biological resources of the region. Specific methods are described below.

Scientific Literature Compilation and Review

Various data sources were reviewed to evaluate the potential occurrence of special-status species on the project site. Historical occurrence records of special-status plant and wildlife species were obtained from the California Natural Diversity Data Base (CNDDB 2002) for the Corona North California USGS 7.5-minute quadrangle map. This quadrangle map completely encompasses the project site, as well as an appropriate buffer area. To further assist in identification of special-status botanical resources, the California Native Plant Society (CNPS 2001) Electronic Inventory of Vascular Plants in California was also reviewed. In addition, the most current lists of special-status plant and wildlife species maintained by CDFG, USFWS, and CNPS were reviewed to determine the most current sensitivity status of species potentially occurring on the project site.

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plate 1

Regional Site Location

185-acre Legacy Specific Plan Site

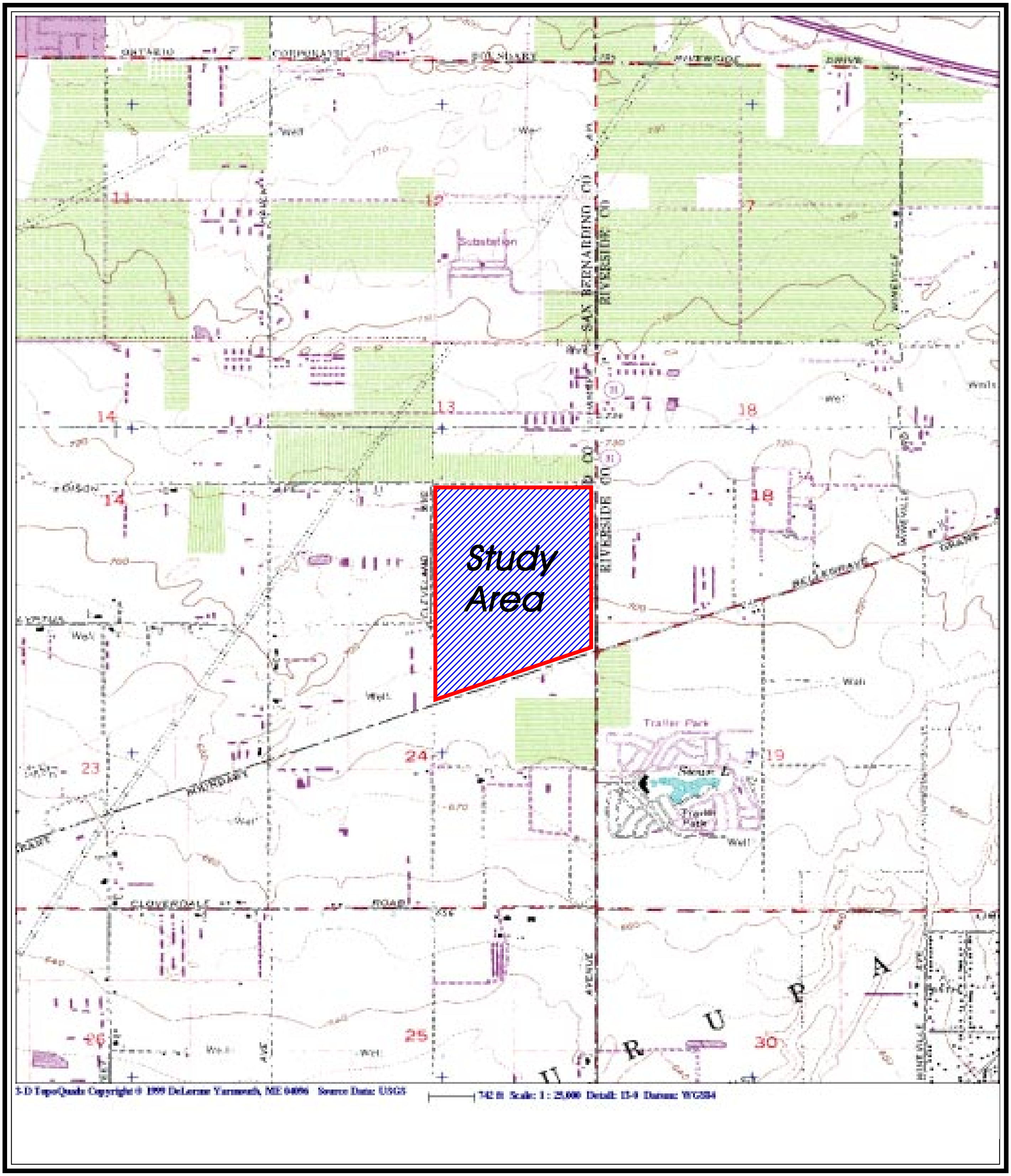

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plate 2

Site Vicinity

185-acre Legacy Specific Plan Site

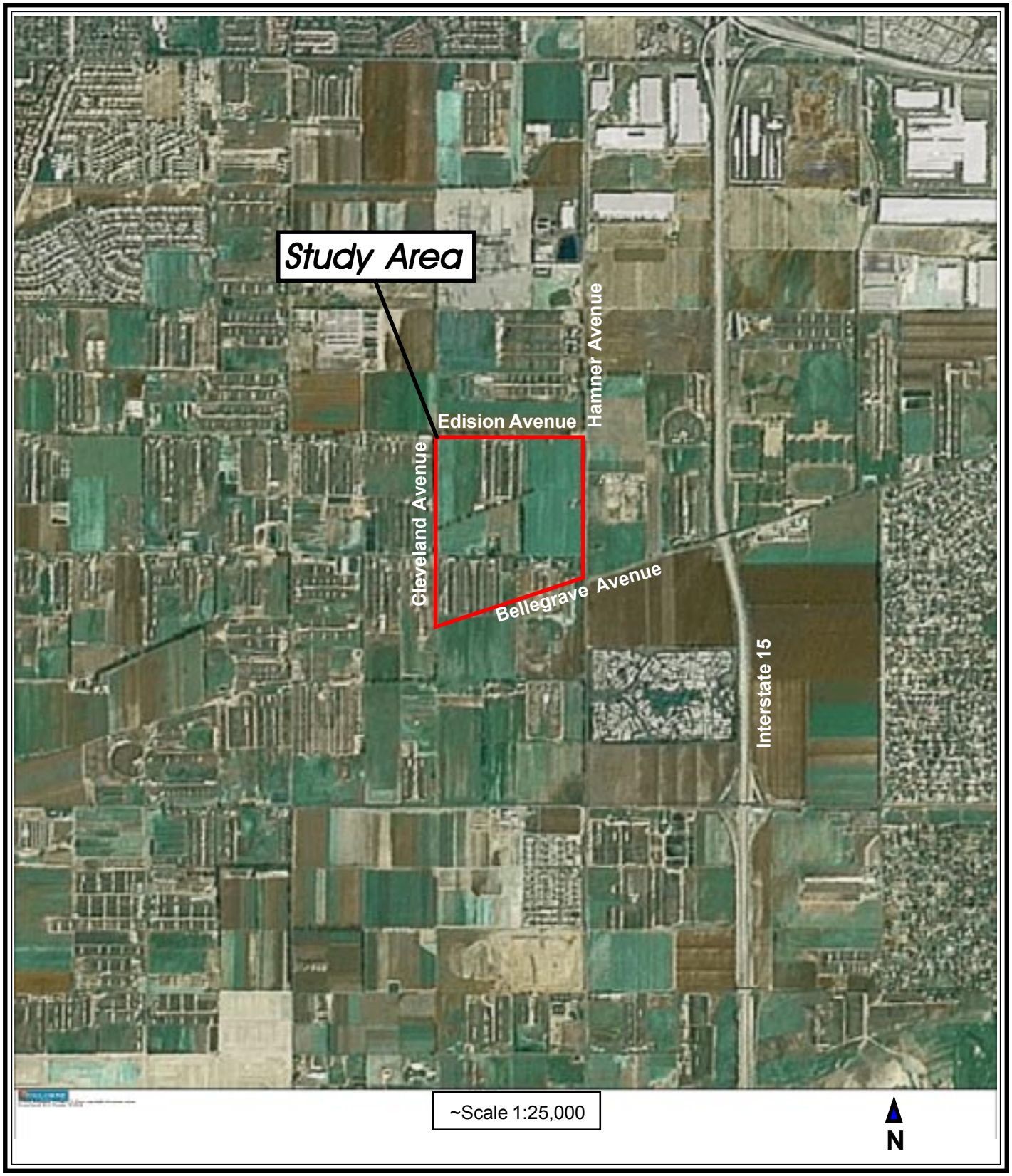

plate 3

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Aerial Photograph of Site Vicinity

185-acre Legacy Specific Plan Site

Other data sources reviewed include: (1) the Federal Register listing package for federally listed endangered or threatened species potentially occurring on the site or in the project vicinity; (2) literature pertaining to habitat requirements of special-status species potentially occurring in the project site; (3) distribution data contained in Ingles (1965); Grinnell and Miller (1944); Garrett and Dunn (1981); Holland (1986); Munz (1974); Stebbins (1985); Hickman (1993); Skinner and Pavlik (1994); and (4) review of a general biological resources report and focused Delhi Sands Flower-loving fly (*Rhaphiomidas terminatus abdominalis*-herein DSF) survey reports prepared for ±70-acres of the subject 185-acre site (L&L Environmental, Inc. 2001-2002). References used for the nomenclature of wildlife include Jennings (1983) for amphibians and reptiles, the American Ornithologists' Union (1989, 1993 and supplements) for birds, and Jones et al (1982) for mammals. Names used to describe plant communities are based on the nomenclature of Holland (1986), where applicable, with modifications to accommodate non-described communities.

Field Surveys

Ecological Sciences, Inc. conducted a reconnaissance-level field survey on December 20, 2002 and January 3, 2003 to evaluate existing biological resources present on the ±185-acre site. Ecological Sciences biologists characterized on-site habitats and evaluated their potential to support sensitive plant and wildlife species. Plant species and vegetation communities were primarily identified by vehicle survey, augmented by walking transects over certain portions of the site. Aerial photographs and topographic maps were used to aid the survey effort. Due to the late seasonal timing of the survey, it was not possible to develop an extensive plant species list.

In addition to species actually detected during the site surveys, potential use of the site by other wildlife was evaluated from habitat analysis, combined with known habitat preferences of locally occurring wildlife species. Analysis of potential wildlife movement corridors associated with the property is based on information compiled from a cursory review of topographic and aerial maps of the area and surrounding land use. Weather conditions at the time of the December survey were relatively clear, with air temperatures of approximately 68 degrees Fahrenheit. Weather conditions at the time of the January survey were clear and warm, with air temperatures of approximately 80 degrees Fahrenheit.

Previous Focused DSF Surveys

In 2001 and 2002, L&L Environmental conducted two consecutive seasons of focused DSF surveys on ±70-acres of the 185-acre site (generally southwest portion). Results of the focused survey effort indicated that the DSF was not present and that no potential DSF habitat occurs on the site.

Existing Biological Environment

General Site Physiography and Surrounding Areas

The subject site has been exposed to widespread and severe levels of human-related disturbances such as long-standing dairy and agricultural-related uses. The site contains existing structures associated with dairy operations (sheds, feedlots, etc.), several residences, cultivated areas, ruderal areas, a detention basin, and multiple abandoned structures and remnant foundations. A vast majority of the site (±99%) is dominated by invasive, non-native and ornamental plant species. Extensive amounts of soil and debris dumping are present, primarily in the southern portion of the site. Existing residential development is located to the south, and agricultural areas are located to the east, north, and west. **Plate 4** schematically illustrates on-site features and surrounding land uses. **Appendices A-A5** photographically illustrate existing site conditions.

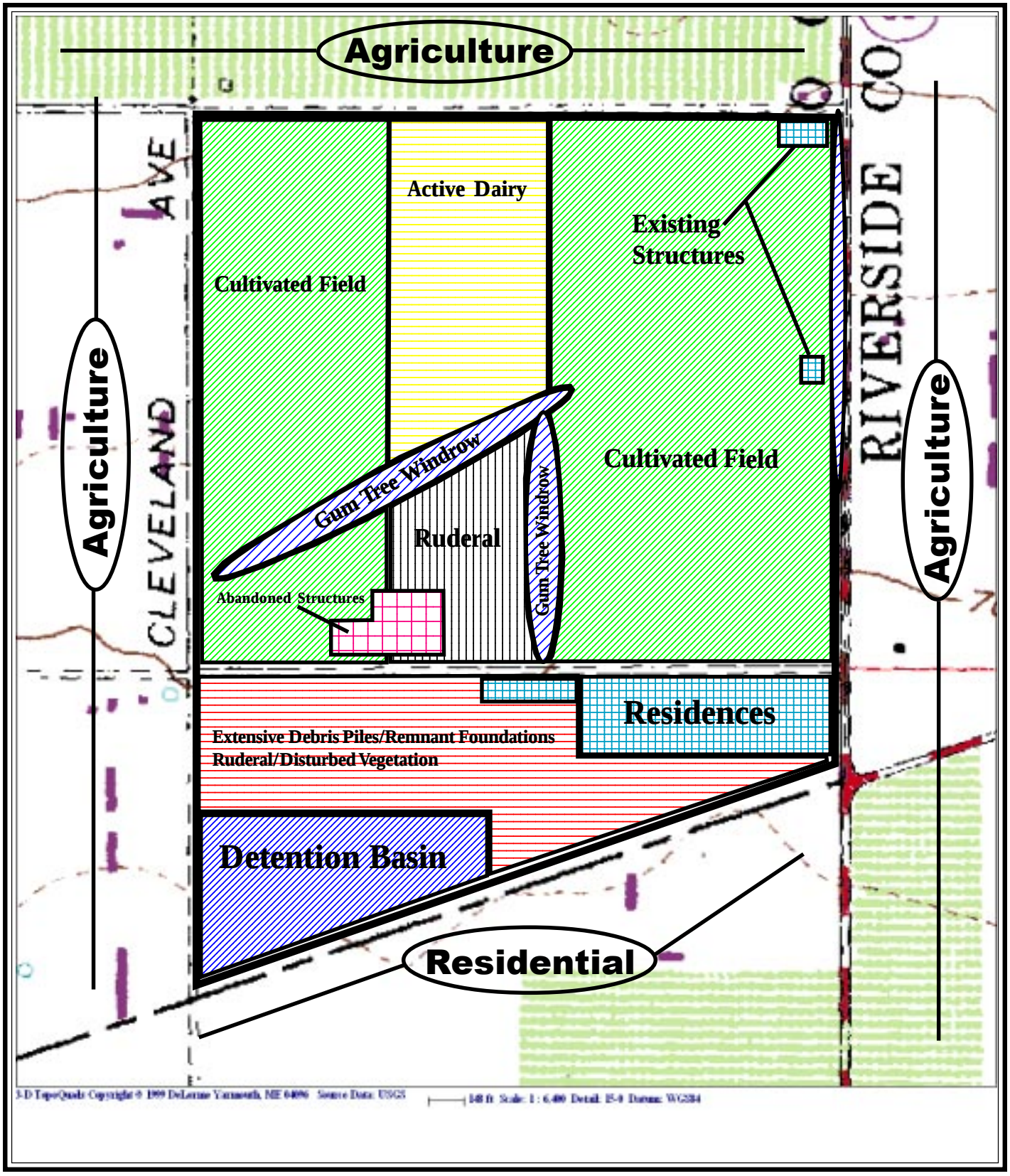

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plate 4

Site Features / Surrounding Land Use Schematic

185-acre Legacy Specific Plan Site

Botanical Resources

No natural or native plant communities are present on the ±185-acre site, and only a few scattered remnants of native vegetation remain due to long-standing agricultural uses. All on-site areas are disturbance-produced habitats, and as such, have much lower diversity and a higher percentage of non-native plants than do native plant communities. These long-standing agricultural uses have essentially excluded most native shrubs and forbs.

The site supports mostly ruderal plant associations comprised of non-native opportunistic species such as annual grasses and weedy forbs. Plant species present on the site include Russian thistle (*Salsola tragus*), foxtail chess (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), mustard (*Hirschfeldia and/or Brassica* sp.), cheeseweed (*Malva parviflora*), tree tobacco (*Nicotiana glauca*), pigweed (*Chenopodium album*), horehound (Marrubium vulgare), puncture vine (*Tribulus terrestris*), prickly lettuce (*Lactuca serriola*), Bermuda grass (*Cynodon dactylon*), jimson weed (*Datura wrightii*), and golden crownbeard (*Verbesina enceliodes*). In addition, gum trees (*Eucalyptus* sp.) and gum tree windrows are present in several locations. Ornamental species such as mulberry (*Morus* sp.), sweetgum (*Liquidamber* sp.), oleander (*Nerium oleander*), ash (*Fraxinis* sp.), and Mexican fan palm (*Washingtonia robusta*) were recorded on site. Native species recorded included Palmers pigweed (*Amaranthus palmeri*), fleabane (*Conyza boniarensis*), curly dock (*Rumex crispis*), and spiny cocklebur (*Xanthium spinosum*). **Appendix B** presents a list of plant species detected on the project site.

Zoological Resources

Discussed below are common wildlife species observed during field surveys of the project site. Sensitive wildlife species potentially occurring on the project site are discussed in the Sensitive Biological Resources section of this report. **Appendix C** presents a list of wildlife species detected on the project site.

Invertebrates

Based on review of the focused DSF survey effort conducted on ±70-acres of the site in 2001 and 2002 (L&L Environmental, Inc.), 74 insect species were recorded. No *Apiocera* and only a few observations of *Nemomydas* were observed during the survey efforts (important indicators of potential DSF habitat). Insect diversity was considered to be moderate due to the presence of nectar sources, although these sources consisted primarily of non-native plant species.

Amphibians and Reptiles

No amphibians were observed on the site during the site survey, and none are expected due to lack of suitable aquatic habitat. Common reptilian species observed during the survey effort included only the western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*).

Birds

Direct observations of avifauna recorded during surveys of the project site included common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), Brewer's blackbird (*Euphagus cyanocephalus*), morning dove (*Zenaida macroura*), rock dove (*Columba livia*), western kingbird (*Tyrannus verticalis*), black phoebe (*Saynoris nigricans*), western meadowlark (*Sturnella neglecta*), European starling (*Sturnus vulgaris*), and house finch (*Carpodacus mexicanus*).

Raptors
Raptor (birds of prey) species observed during the field surveys include turkey vulture (*Cathartes* aura) and red-tailed hawk (*Buteo jamaicensis*). The site supports several narrow windrows of gum trees that provide potentially suitable nesting habitat for some raptor species, though no raptor nests (or nests of any kind) were observed. The open ruderal habitats provide some foraging opportunities for raptors. Many raptor species are considered sensitive by resource agencies, and are discussed in the Special-Status Biological Resources section of this report.

Mammals

Mammal species directly observed, or of which sign was detected, included California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), and domestic dog (*Canis familiaris*).

Soils

A review of the Soil Survey of San Bernardino County, Southwestern Part, California (1980) indicates that the site contains Delhi sands (Db) and Hilmar fine sandy loam (Hr). Hr soils are not ordinarily associated with potential DSF habitat. Most of the exposed surface soils present are associated with the large detention basin located in the southwestern portion of the site. An artificial mound of soil debris is located north of the basin, presumably associated with recent excavation of the area. Most of this area now supports consolidated/compacted soils from recent heavy equipment/debris dumping activities. No suitable substrate consistent with potential DSF habitat is present in this area. **Plate 5** illustrates project area soils.

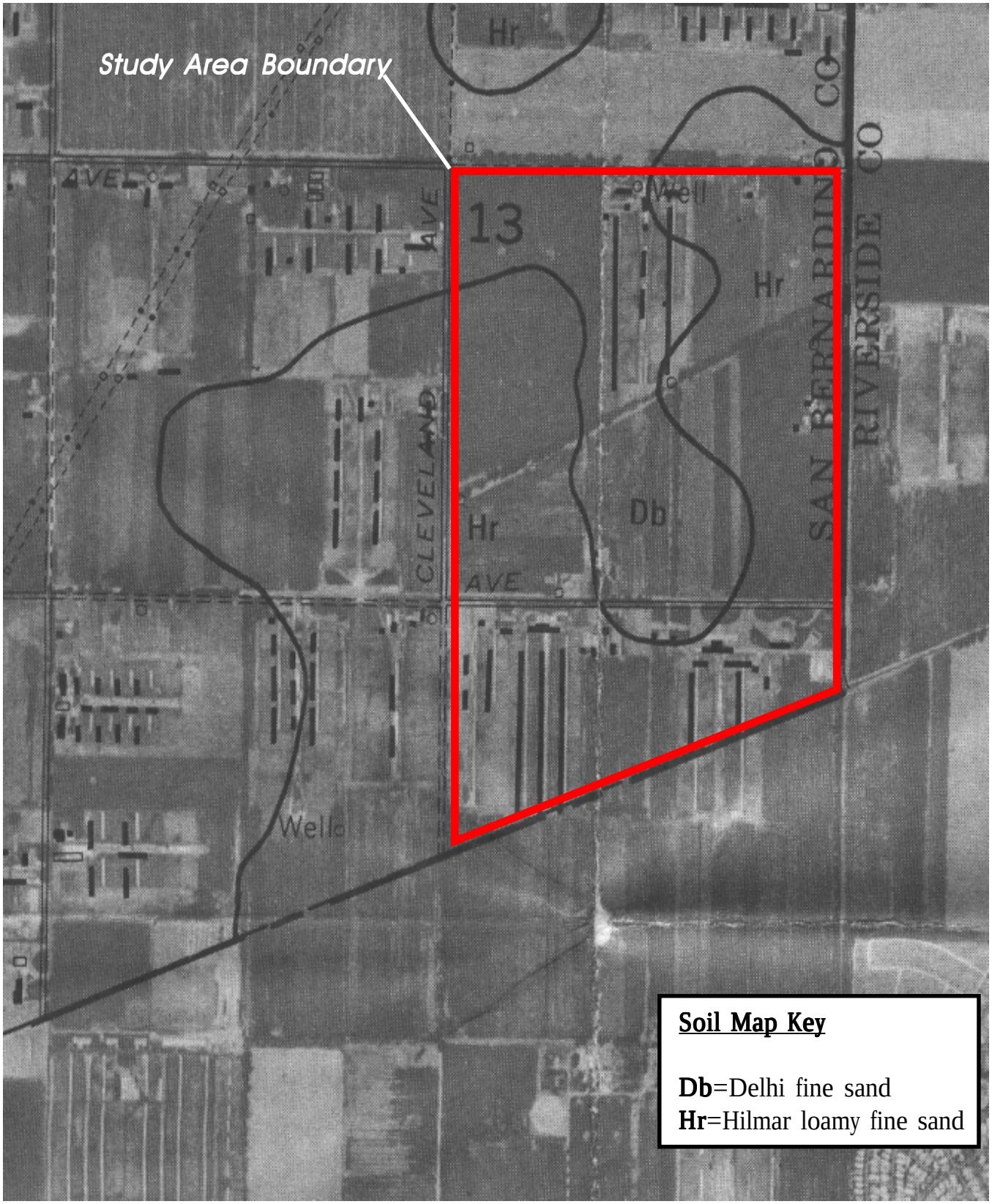
Special-Status Biological Resources

Discussed in this section are special-status plants and wildlife species potentially occurring on the project site based on field surveys, habitat types present, review of pertinent literature, and known geographic ranges. Potentially occurring special-status species have been afforded special recognition by federal, state, or local resource conservation agencies and organizations. Special-status habitats (habitats or plant communities considered rare or unique or that support special-status species) and wildlife movement corridors are also discussed in this section.

Special-Status Plant Species

Plant species that are classified as Endangered or Threatened, proposed for listing as Endangered or Threatened, are Candidate species for listing by federal or state resource agencies, or are considered federal species of concern are considered of special-status. In addition, plants included on Lists 1, 2, 3, or 4 of the CNPS inventory are also considered of special-status.

The potential for special-status plant species known from the site vicinity to occur on the project site is summarized below in **Table 1**. As illustrated in this table, no special-status plants were recorded on the project site, and no such plants are expected to occur due to the high level of recurring surface disturbances and overall absence of suitable habitat on the property due to long-standing agricultural uses. The occurrence potential of special-status plant species on the project site was based on an evaluation of the existing habitat, occurrence records of special-status species in the site vicinity, and results of reconnaissance-level surveys of the site. No focused plant surveys were conducted as part of this analysis. In general, those species that are "not expected" or that have a "low occurrence potential" correspond to "less than significant" under CEQA.



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January 2003

plate 5

Project Area Soils

185-acre Legacy Specific Plan Site

Special-Status Wildlife Species

Special-status wildlife species include those that are state or federally listed as Threatened or Endangered, are proposed for listing as Threatened or Endangered, have been designated as state or federal Candidates for listing, state or federal species of concern, California Fully Protected, or considered a state Special Animal. One special-status species was recorded on site; the loggerhead shrike (*Lanius ludovicianus*), and two other species [burrowing owl (*Athene cunicularia*) and white-tailed kite (*Elanus leucurus*) were recently recorded (L&L Environmental 2001), but were not recorded during more recent surveys conducted in 2002 and 2003. Only the burrowing owl would be expected to breed on the site.

Special-status wildlife species potentially occurring on the project site, but that were not detected during biological surveys of the site, are summarized on the following page in **Table 2**. The occurrence potential of special-status wildlife species was based on an evaluation of existing on-site habitats, occurrence records of sensitive wildlife species in the site vicinity, results of on-site surveys, and pertinent literature review. The majority of these species are not expected to occur on site, or have a low to moderate occurrence potential due to lack of suitable habitat and the extremely disturbed nature of the site from long-standing agricultural uses. No focused surveys were conducted as part of the December 2002 and January 2003 site analysis. In general, those species that are "not expected" or that have a "low occurrence potential" correspond to "less than significant" under CEQA.

Special-Status Plant Communities/Habitats

Plant communities that are considered of special-status include those habitats that support rare, Threatened, or Endangered plant or wildlife species or are diminishing and are of special concern to resource agencies. Communities in which the CDFG has assigned the "very threatened" and "threatened" designation are considered special-status habitats. Although sensitive habitats are not necessarily afforded legal protection unless they support protected species, potential impacts to them may increase concerns and mitigation suggestions by resources agencies. No special-status habitat types were observed on site and none are expected due to long-standing agricultural activities.

Jurisdictional Resources

Regulatory Framework
A formal delineation for either state or federal wetland jurisdiction was not conducted for this analysis. However, based on the preliminary field investigations, USACOE "waters of the United States" per Sections 401-404 of the Federal Clean Water Act and "streambeds" per Section 1600-1603 of the California Fish and Game Code were not observed on the property. A newly constructed detention basin is present in the southwest portion of the site presumably is association with a proposed development project.

Wildlife Movement

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation by human disturbance, or by the encroachment of urban development. Movement corridors are important as the combination of topography and other natural factors, in addition to urbanization, has fragmented or separated large open space areas. The fragmentation of natural habitat creates isolated 'islands' of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. The subject site and surrounding lands are geographically located in an area that is highly degraded from intensive agriculture and residential development, and is not located near any natural open space areas. Accordingly, the project site would not likely be considered an essential component of any regional movement corridor for wildlife species that would serve as a link between large open space areas.

Table 1

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

Scientific and Common Name	Status			Habitat Requirements	Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Munz's Onion *Allium munzii*	FE	CT	1B	Chaparral, sage scrub, grassland, woodlands with clay soils	March-May	**Not Expected:** suitable habitat not present on site.
San Jacinto Valley crownscale *Atriplex coronata* var. *notatior*	FE	--	1B	Alkali flats, playas	April-August	**Not Expected:** suitable habitat not present on site
California Orcutt grass *Orcuttia californica*	FE	CE	1B	Meadows, vernal pools	April-June	**Not Expected:** suitable habitat not present on site.
Parish's brittlescale *Atriplex parishii*	FSC	--	1B	Alkali meadows, chenopod scrub, playas	June-October	**Not Expected:** suitable habitat not present on site.
Thread-leaved brodiaea *Brodiaea filifolia*	FE	CE	1B	Vernal pools, scrub, woodland, grasslands with clay soils	March-June	**Not Expected:** suitable habitat not present on site.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	FSC	--	1B	Playas, vernal pools	February-June	**Not Expected:** suitable habitat not present on site.
Little mouestail *Myosurus minimus* var. *apus*	FSC	--	1B	Vernal pools	March-June	**Not Expected:** suitable habitat not present on site.
Spreading navarretia *Navarretia fossalis*	FT	--	1B	Meadows, vernal pools	April-June	**Not Expected:** suitable habitat not present on site.
Smooth tarplant *Centromadia pungens* ssp. *laevis*	FSC	--	1B	Alkaline grasslands, meadows, playas, scrub habitats	April-September	**Not Expected:** suitable habitat not present on site.
Paniculate tarplant *Deinandra paniculata*	--	--	4	Coastal scrub, valley and foothill grassland; usually vernally mesic	April-November	**Not Expected:** suitable habitat not present on site.
Slender-horned spineflower *Dodecahema leptoceras*	FE	CE	1B	Chaparral, alluvial fan sage scrub; terraces and washes	April-June	**Not Expected:** suitable habitat not present on site.
San Diego ambrosia *Ambrosia pumila*	FPE	--	1B	Chaparral, coastal scrub, grasslands, vernal pools with sandy loam or clay soils (20-415M)	May-September	**Not Expected:** suitable habitat not present on site.
Johnston's rock cress *Arabis johnstoni*	--	--	1B	Chaparral, lower montane coniferous forest; often on eroded clay	February-June	**Not Expected:** suitable habitat not present on site; known from fewer than 10 occurrences in the southern San Jacinto Mountains.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	--	--	1B	Coastal bluff scrub, coastal scrub/ alkaline; 10-200 meters in elevation	April-October	**Not Expected:** suitable habitat not present on site.
Nevin's barberry *Berberis nevinii*	FE	SE	1B	Chaparral, cismontane woodland, coastal scrub, riparian scrub/ sandy or gravelly soils	March-April	**Not Expected:** suitable habitat not present on site; fewer than 1,000 plants likely remain.
Munz's mariposa lily *Calochortus palmeri* var. *munzii*	--	--	1B	Chaparral, lower montane coniferous forest	June-July	**Not Expected:** suitable habitat not present on site; known from only a few locations in the San Jacinto Mountains.

Table 1-*continued*

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

Scientific and Common Name	Status			Habitat Requirements	Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Vail Lake ceanothus *Ceanothus ophiochilus*	FE	SE	1B	Chaparral (gabbroic or pyroxenite-rich outcrops)	February-March	**Not Expected:** suitable habitat not present on site; known from only three occurrences near Vail Lake.
Many-stemmed dudleya *Dudleya multicaulis*	--	--	1B	Chaparral, coastal scrub, valley and foothill grassland/ often clay soils	April-July	**Not Expected:** suitable habitat not present on site.
Santa Ana River woollystar *Eriastrum densifolium* ssp. *sanctorum*	FE	SE	1B	Coastal scrub (alluvial fan)	June-September	**Not Expected:** suitable habitat not present on site; outside species known range; known only from Santa Ana River.
San Jacinto Mountains bedstraw *Galium angustifolium* ssp. *jacinticum*	--	--	1B	Lower montane coniferous forest	June-August	**Not Expected:** suitable habitat not present on site; known from only three occurrences in Lake Fulmor and Black Mountain area of the San Jacinto Mountains.
Heart-leaved pitcher sage *Lepechinia cardiophylla*	--	--	1B	Closed cone coniferous forest, chaparral, cismontane woodland	April-July	**Not Expected:** suitable habitat not present on site; known in California from fewer than ten occurrences.
San Miguel savory *Satureja chandleri*	--	--	1B	Chaparral, cismontane woodland, coastal scrub, riparian woodland, grasslands/ rocky, gabbroic or metavolcanic soils	March-July	**Not Expected:** suitable habitat not present on site.
Wright's trichocoronis *Trichocoronis wrightii* var. *wrightii*	--	--	2	Meadows and seeps, marshes and swamps, riparian scrub, vernal pools/ alkaline soils	May-September	**Not Expected:** suitable habitat not present on site.
Intermediate mariposa lily *Calochortus weedii* var. *intermedius*	FSC	--	1B	Chaparral, coastal scrub, grasslands; often associated with dry, rocky, open slopes	May-July	**Not Expected:** suitable habitat not present on site.
Plummer's mariposa lily *Calochortus plummerae*	FSC	--	1B	Chaparral, coastal scrub, grasslands; often associated with granitic soils	May-July	**Not Expected:** suitable habitat not present on site.
South Coast saltscale *Atriplex pacifica*	FSC	--	1B	Coastal bluff scrub, playas, chenopod scrub	March-October	**Not Expected:** suitable habitat not present on site.
Coulter's saltbush *Atriplex coulteri*	--	--	1B	Coastal bluff scrub, coastal scrub, valley/foothill grasslands; alkaline and clay soils	March-October	**Not Expected:** suitable habitat not present on site.
Parry's spineflower *Chorizanthe parryi* ssp. *parryi*	FSC	--	3	Chaparral and coastal scrub; associated with sandy or rocky openings.	April-June	**Not Expected:** suitable habitat not present on site.

Table 1-*continued*

Special-Status Plant Species Known to Occur in the Site Vicinity[1]

Scientific and Common Name	Status			Habitat Requirements	Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Long-spined spineflower *Chorizanthe polygonoides* var. *longispina*	FSC	--	1B	Chaparral, sage scrub, grasslands, often with clay soils	April-July	**Not Expected:** suitable habitat not present on site.
California spineflower *Mucronea californica*	--	--	4	Chaparral, cismontane woodland, coastal dunes, coastal scrub, grasslands with sandy soils	March-August	**Not Expected:** suitable habitat not present on site.
Palmer's grapplinghook *Harpagonella palmeri*	FSC	--	2	Chaparral, grasslands, sage scrub with clay soils	March-April	**Not Expected:** suitable habitat not present on site.
Round-leaved filaree *Erodium macrophyllum*	--	--	2	Cismontane woodland, valley and foothill grassland with clay soils	March-May	**Not Expected:** suitable habitat not present on site.
Graceful tarplant *Holocarpha virgata ssp. elongata*	FSC	--	4	Woodlands, grasslands, scrub habitats	August-November	**Not Expected:** suitable habitat not present on site.
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	--	--	1B	Chaparral and coastal scrub; dry soils	January-July	**Not Expected:** suitable habitat not present on site.
California muhly *Muhlenbergia californica*	--	--	4	Chaparral, coastal scrub, lower montane coniferous forest; moist conditions	July-September	**Not Expected:** suitable habitat not present on site.
Chaparral sand verbena *Abronia villosa* var. aurita	--	--	1B	Chaparral, coastal scrub with sandy soils	January-August	**Not Expected:** suitable habitat not present on site.
Salt spring checkerbloom *Sidalcea neomexicana*	--	--	2	Chaparral, coastal scrub, lower montane coniferous forest; moist conditions	March-June	**Not Expected:** suitable habitat not present on site.
Southern California black walnut *Juglans californica* var. *californica*	--	--	4	Chaparral, cismontane woodland, coastal sage scrub	March-May	**Not Expected:** suitable habitat not present on site.
Vernal barley *Hordeum intercedans*	--	--	3	Coastal dunes, coastal scrub, grasslands (saline flats and depressions)	March-June	**Not Expected:** suitable habitat not present on site.

TABLE 1 KEY:

[1] Based on review of CNDDB (2002), CNPS (2001) electronic databases, and other pertinent literature sources.

Federal
FE: Federally Endangered
FT: Federally Threatened Species
FPE: Federally Proposed Endangered
FPT: Federally Proposed Threatened
FC: Federal Candidate Species
FSC: Federal Species of Concern

State
CE: State Endangered
CT: State Threatened
CR: State Rare

CNPS
Plants presumed extinct in California.
Plants rare and endangered in California and elsewhere
Plants rare and endangered in California, but more common elsewhere
Taxa about which more information is needed
List 4: plants of limited distribution

Table 2

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	Status State	Habitat Requirements	Occurrence Potential on the Project Site
INVERTEBRATES				
Riverside fairy shrimp *Streptocephalus wootoni*	FE	--	Swales, vernal pools, and basins within grasslands and sage scrub habitats	**Not Expected:** suitable habitat not present on site.
Vernal pool branchinecta *Branchinecta lynchi*	FT	--	Grassland vernal pools	**Not Expected:** suitable habitat not present on site.
Delhi sands flower-loving fly *Rhaphiomidas terminatus abdominalis*	FE	--	Delhi soils with sparse vegetation	**Not Expected:** suitable habitat not present on site; not recorded during focused surveys in 2001-2002.
AMPHIBIANS AND REPTILES				
Western spadefoot toad *Scaphiopus hammondii*	--	CSC	Relatively open grasslands, scrublands, and woodlands with fine, loose soil	**Not Expected:** suitable breeding habitat not present on site
San Diego horned lizard *Phrynosoma coronatum blainvillii*	FSC	CSC	Relatively open grasslands, scrublands, and woodlands with fine, loose soil	**Not Expected:** suitable habitat not present on site.
Orange-throated whiptail *Cnemidophorus hyperythrus beldingi*	FSC	CSC	Relatively open grasslands, scrublands, and woodlands with fine, loose soil	**Not Expected:** suitable habitat not present on site.
Coastal western whiptail *Cnemidophorus tigris multiscutatus*	--	♦	Sage scrub, chaparral, grassland	**Not Expected:** suitable habitat not present on site.
Northern red diamond rattlesnake *Crotalus ruber ruber*	--	CSC	Sage scrub, chaparral, grasslands	**Not Expected:** suitable habitat not present on site.
Southwestern pond turtle *Clemmys marmorata pallida*	--	CSC	Permanent or nearly permanent bodies of water with basking sites	**Not Expected:** suitable habitat not present.
San Bernardino ringneck snake *Diadophis punctatus modestus*	FSC	--	Woodlands, shrublands, mesic areas with wood/rock debris	**Not Expected:** suitable habitat not present on site.
San Diego mountain kingsnake *Lampropeltis zonata pulchra*	FSC	CSC	Forests and shrublands	**Not Expected:** suitable habitat not present on site.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	FSC	CSC	Shrublands with low structure and minimum density; friable soils	**Not Expected:** suitable habitat not present on site.
Northern red diamond rattlesnake *Crotalus ruber ruber*	FSC	CSC	Coastal scrub, chaparral, desert scrub	**Not Expected:** suitable habitat not present on site.
Rosy boa *Lichanura trivirgata*	FSC	--	Desert and chaparral with moderate to dense vegetation and rocky cover	**Not Expected:** suitable habitat not present on site.
BIRDS				
White-tailed kite (nesting) *Elanus leucurus*	MNBMC	CFP	Open vegetation and uses dense woodlands for cover	***High Potential:*** recorded foraging on-site in 2001 by L&L Environmental; no suitable nesting habitat. Not recorded on site in 2002-03.

Table 2-*continued*

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	Status State	Habitat Requirements	Occurrence Potential on the Project Site
BIRDS-CON'T				
Northern harrier (nesting) *Circus cyaneus*	--	CSC	Coastal salt marsh, freshwater marsh, grasslands, and agricultural fields	***Moderate Potential:*** possibly forages over portions of the site; no suitable nesting habitat.
Swainson's hawk *Buteo swainsoni*	--	CT	Breeds in stands with few trees such as juniper, riparian areas. Forages over grasslands, agricultural fields supporting rodent populations.	**Low Potential:** may occasionally forage over the site during migration; no suitable nesting habitat present.
Ferruginous hawk (wintering) *Buteo regalis*	FSC, MNBMC	CSC	Grasslands, agricultural fields, and open scrublands	***Moderate Potential:*** possibly forages over the site as seasonal migrant; does not breed in area.
Bald eagle *Haliaeetus leucocephalus*	FT	CE	Ocean shore, lake margins & rivers for both nesting and wintering	**Not Expected:** suitable habitat not present.
Golden eagle (nesting & wintering) *Aquila chrysaetos*	--	CSC, CFP	Mountains, deserts, and open country	***Moderate Potential:*** may occasionally forage over the site; no suitable nesting habitat present.
Sharp-shinned hawk (nesting) *Accipiter striatus*	--	CSC	Woodlands; forages over chaparral and scrublands	**Low Potential:** may occasionally forage over the site; no suitable nesting habitat present.
Cooper's hawk *Accipiter cooperii*	--	CSC	Dense stands of live oaks and riparian woodlands.	**Low Potential:** may occasionally forage over the site; no suitable nesting habitat present.
Prairie falcon (nesting) *Falco mexicanus*	--	CSC	Grasslands, savannas, rangeland, agricultural fields, and desert scrub; requires sheltered cliff faces for shelter	**Low Potential:** may forage over the site in winter; no suitable nesting habitat present on site.
Merlin (wintering) *Falco columbarius*	--	CSC	Open habitats	**Low Potential**: may forage over the site in winter; no suitable nesting habitat present on site.
Burrowing owl (burrow sites) *Athene cunicularia*	FSC, MNBMC	CSC	Grasslands and open scrub	***High Potential:*** recorded on-site in 2001; suitable foraging and potential nesting habitat present on site. Not recorded on site in 2002-03.
Long-eared owl *Asio otus*	--	CSC	Riparian bottomlands to tall willows and cottonwoods; oaks along stream courses	**Not Expected:** suitable habitat not present on site.
Western snowy plover *Charadrius alexandrinus nivosus*	FT (pacific coastal population)	CSC	Sandy beaches, salt pond levees and shores, gravelly or friable soils for nesting	**Not Expected:** suitable habitat not present.
Mountain plover (wintering) *Charadrius montanus*	PT	CSC	Agricultural areas, fallow fields, grasslands, prairies	**Low Potential**: may forage over the site in winter; no suitable nesting habitat present on site.
Least Bell's vireo *Vireo bellii pusillus*	FE	CE	Willow dominated riparian habitat with dense understory	**Not Expected:** suitable riparian habitat not present on site.
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	--	Riparian habitats along rivers, streams, or other wetlands usually with standing water	**Not Expected:** suitable riparian habitat not present on site.

Table 2-*continued*

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	Status State	Habitat Requirements	Occurrence Potential on the Project Site
BIRDS-CON'T				
Yellow warbler *Dendroica petechia*	--	CSC	Riparian thickets and woodlands	**Not Expected:** suitable riparian habitat not present on site.
Yellow-breasted chat *Icteria virens*	--	CSC	Riparian thickets and riparian woodlands with dense understory	**Not Expected:** suitable riparian habitat not present on site.
California horned lark *Eremophila alpestris actia*	--	CSC	Grasslands, disturbed areas, agriculture fields, and beach areas	***High Potential:*** potentially suitable foraging habitat present; no nesting habitat.
California coastal gnatcatcher *Polioptila californica californica*	FT	CSC	Coastal sage scrub in areas of flat or gently sloping terrain	**Not Expected:** suitable habitat not present on site.
Loggerhead shrike *Lanius ludovicianus*	--	CSC	Grasslands with scattered shrubs, trees, fences or other perches	***Observed:*** suitable habitat present; not expected to nest on site.
S. California rufous-crowned sparrow *Aimophila ruficeps canescens*	--	CSC	Coastal sage scrub, grasslands	**Not Expected:** suitable habitat not present on site.
Grasshopper sparrow *Ammodramus savannarum*	MNBMC	--	Coastal sage scrub, grassland	**Not Expected:** suitable habitat not present on site.
Bell's sage sparrow *Amphispiza belli belli*	MNBMC	CSC	Coastal sage scrub, chaparral	**Not Expected:** suitable habitat not present on site.
Tricolored blackbird (wintering) *Agelaius tricolor*	--	CSC	Marshes for nesting; forages in fields and scrub habitats	**Not Expected:** suitable habitat not present on site.
MAMMALS				
Long-eared myotis *Myotis evotis*	FSC	--	Found in nearly all brush, woodland, and forest habitats from sea level to at least 9,000 ft.	**Low Potential:** marginal potential foraging and roosting habitat.
Small-footed myotis *Myotis ciliolabrum*	FSC	--	Arid wooded and brushy uplands near water from sea level to at least 9,000 ft.	**Low Potential:** marginal potential foraging and roosting habitat.
Fringed myotis *Myotis thysanodes*	FSC	--	Utilizes open habitats and early successional stages, streams, lakes, and ponds from sea level to at least 9,350 ft.	**Not Expected:** lack of potential foraging and roosting habitat; easily disturbed by human presence.
Long-legged myotis *Myotis volans*	FSC	--	Found in nearly all brush, woodland, and forested habitats from sea level to around 9,000 ft.; a bat primarily of coniferous forests	**Not Expected:** lack of potential foraging and roosting habitat.
Yuma myotis *Myotis yumanensis*	FSC	CSC	Found in a variety of habitats; optimal habitats are open forests and woodlands with sources of water over within to feed	**Low Potential:** marginal potential foraging and roosting habitat.

Table 2-*continued*

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

Common Name *Scientific Name*	Status Federal	Status State	Habitat Requirements	Occurrence Potential on the Project Site
MAMMALS-CON'T				
Spotted bat *Euderma maculata*	FSC	CSC	Deserts, scrublands, chaparral, and coniferous woodlands; highly associated with prominent rock features	**Not Expected:** lack of potential foraging and roosting habitat.
Pale big-eared bat *Corynorhinus townsendii pallescens*	FSC (Full Species)	CSC (Full Species)	Utilizes a variety of communities, including conifer and oak woodlands and forests, arid grasslands and deserts, and high-elevation forests and meadows	**Not Expected:** lack of potential foraging and roosting habitat; very sensitive to human disturbances.
Pallid bat *Antrozous pallidus*	--	CSC	Arid habitats, including grasslands, shrublands, woodlands, and forests; prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging	**Low Potential:** marginal potential foraging and roosting habitat.
Western mastiff bat *Eumops perotis*	FSC (ssp. *californicus*)	CSC	Primarily arid lowlands and coastal basins with rugged, rocky terrain, along with suitable crevices for day-roosts; primarily a cliff-dweller	**Low Potential:** marginal potential foraging and roosting habitat. Known to occasionally occur in buildings under certain circumstances
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	--	CSC	Grasslands, shrublands	***Moderate Potential:*** may occasionally utilize agricultural fields.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	--	CSC	Open shrublands, sandy areas	**Not Expected:** suitable habitat not present on site.
Dulzura pocket mouse *Chaetodipus californicus frmoralis*		CSC	Coastal scrub, chaparral, grassland	**Not Expected:** suitable habitat not present on site.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	FSC	CSC	Grasslands, open sage scrub	**Not Expected:** suitable habitat not present on site.
San Bernardino kangaroo rat *Dipodomys merriami parvus*	FE	CSC	Coastal scrub, chaparral, grassland	**Not Expected:** suitable habitat not present.
Stephens' kangaroo rat *Dipodomys stephensi*	FE	CE	Grasslands, open sage scrub	**Not Expected:** suitable habitat not present on site.
San Diego desert woodrat *Neotoma lepida intermedia*	--	CSC	Moderate to dense sage scrub; rocky outcrops	**Not Expected:** suitable habitat not present on site.
Southern grasshopper mouse *Onychomys torridus ramona*	FSC	CSC	Alkali desert scrub, desert riparian areas and a variety of other desert habitats; succulent scrub, wash, riparian, mixed chaparral	**Not Expected:** suitable habitat not present on site.
American badger *Taxidea taxus*	--	♦	Drier open stages of shrub, forest, and herbaceous habitats with friable soils	**Not Expected:** suitable habitat not present on site.

Table 2-*continued*

Special-Status Wildlife Species Known to Occur in the Site Vicinity[1]

TABLE 2 KEY:

[1] Based on review of CNDDB (2002) and other pertinent literature sources.
For most taxa the CNDDB is interested in sightings for the presence of resident populations. For some species (primarily birds), the CNDDB only tracks certain parts of the species range or life history (e.g., nesting locations). The area or life stage is indicated in parenthesis after the common name.
Status:

Federal—U.S. Fish and Wildlife Service

FE:	Federally Endangered
FT:	Federally Threatened
FPE:	Federally Proposed Endangered
FPT:	Federally Proposed Threatened
FC:	Federal Candidate for listing as threatened or endangered
FSC:	Federal Species of Concern-*not formally protected under law*
MNBMC:	Migratory Nongame Birds of Management Concern (not shown for federally listed or proposed threatened or endangered species)

State—California Department of Fish and Game

CE:	California Endangered
CT:	California Threatened
CCE:	California Candidate (Endangered)
CCT:	California Candidate (Threatened)
CFP:	California Fully Protected
CP:	California Protected
CSC:	California Special Concern
♦ :	California Special Animal (species with no official federal or state status, but are included on CDFG's Special Animals list)

Special-Status Wildlife Species Observed On Site

Loggerhead shrike (*Lanius ludovicianus*); *Federal Species of Concern, California Species of Special Concern*. The loggerhead shrike ranges over most of the continental U.S. and Mexico and is a resident species in southern California. It inhabits grasslands, agriculture, chaparral, and desert scrub; it is absent only from the mountainous zones. This species was observed during field surveys conducted in 2002 by Ecological Sciences. However, this species is not expected to nest on site (and no nests were observed).

Special-Status Species with a Moderate or High Occurrence Potential

High Occurrence Potential

Western burrowing owl (*Athene cunicularia hypugea*); *Federal Species of Concern, California Species of Special Concern*. Burrowing owls range across most of western North America. In coastal southern California, they are found in grasslands, agricultural areas, and coastal dunes. It is believed that burrowing owls may occur wherever there are ground squirrel colonies as the owls use squirrel burrows throughout the year. This species was recorded on the project site in 2001 during focused DSF surveys (L&L Environmental 2001) and potentially suitable nesting and foraging habitat occurs on site. To our knowledge, this species has not been observed on site since the initial observation, however, this taxon may occur in less than optimal and/or disturbed conditions at any given time. Moreover, because of the migratory nature of the species and that these owls may utilize multiple burrows throughout the year, burrowing owls have a high occurrence potential if not currently present on site. Site grading and construction could result in the loss of individual owls and eggs or young of this species should grading occur during the breeding season (generally March through August). The loss of owls or active nests would represent an adverse impact without mitigation.

Burrowing owls are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) and CDFG Code sections 3503, 3503.5, and 3800. These sections prohibit take, possession, or destruction of birds, their nests or eggs. As such, mitigation should be proposed prior to initiation of on-site grading activities to ensure that no direct loss of individuals would occur. Specific survey protocol and mitigation guidelines have been developed in a 1995 CDFG Staff Report on Burrowing Owl Mitigation (Staff Report) to reduce project-related impacts to burrowing owls. According to CDFG guidelines, mitigation actions should be conducted from September 1 to January 31, which is prior to the nesting season. However, burrowing owl nesting activity is variable, and as such the time frame should be adjusted accordingly. Preconstruction surveys within suitable habitat should be conducted 30 days prior to construction activities. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed for owls. If non-breeding owls must be moved away from the disturbance area, passive relocation techniques should be used.

The general process for those projects subject to CEQA begins by the performance of focused surveys to determine if burrowing owls are foraging or nesting on or adjacent to the site. If surveys confirm that the site is occupied habitat, mitigation measures to minimize impacts to burrowing owls should be incorporated into the CEQA document as enforceable conditions (CDFG 1995). However, following project approval, there is no legal mechanism through which to seek mitigation other than avoidance of occupied burrows or nests (CDFG 1995). In order to avoid violation of the MBTA or CDFG Code sections, the above-mentioned guidelines suggest that project-related disturbances at active nesting territories be reduced or eliminated during the nesting cycle (February 1 to August 31). Should eggs or fledglings be discovered in any owl burrow, the burrow cannot be disturbed (pursuant to CDFG guidelines) until the young have hatched and fledged (matured to a stage that they can leave the nest on their own). Mitigation measures should include a provision for focused burrowing owl surveys to ensure that no direct loss of adult or young owls would prior to construction activities.

White-tailed kite (*Elanus leucurus*); *California Fully Protected Species*. This species ranges over coastal California eastward to parts of the Caribbean gulf coast. Locally, it nests in riparian woodlands, particularly those comprised of live oaks and western sycamores, and forages over open areas and

grasslands where they feed primarily on small rodents. Loss of nesting and foraging habitats to agriculture and urbanization has reduced population numbers. This species was observed during focused DSF surveys in 2001 (L&L Environmental 2001). No nesting habitat is present on site.

California horned lark *(Eremophila alpestris actia); California Species of Special Concern*. Typical habitats include open grasslands, disturbed areas, agricultural fields, and sandy shores. Geographic distribution includes coastal southern California and the San Joaquin Valley. This taxon is a locally common to abundant winter visitor and breeds locally in open fields and grasslands. Several nearly indistinguishable subspecies of horned lark occur in southern California during the winter, making identification of this subspecies outside of the breeding season virtually impossible. This species was not observed during any of the field surveys. However, because this species is known to utilize agricultural situations in the area, it has a high occurrence potential to forage over the site. No nesting habitat is present.

Moderate Occurrence Potential

Northern harrier *(Circus cyaneus); California Species of Special Concern*. This species inhabits grasslands, marshes, wet meadows, scrub areas, and agricultural lands. Like an owl, the harrier uses its round, sound-reflecting facial ruff to locate prey by sound. It can be seen flying low to the ground as it hunts over open grassland, agricultural fields, and coastal and freshwater marshes. Harriers build flimsy nests on the ground or in thick low-growing vegetation. As with many species, urbanization and agricultural development have led to population declines. This species was not directly observed on site, however potential foraging habitat is present, and therefore this species has a moderate occurrence potential. No suitable nesting habitat is present.

Golden eagle (*Aquila chrysaetos*); *California Species of Special Concern*, *California Fully Protected Species*. Golden eagles occur throughout the U.S., Canada, and much of Mexico. It forages over large areas of grassland, open chaparral, or coastal sage scrub where they prey upon rabbits and ground squirrels, and occasionally on carrion. The nesting population is concentrated in the foothill zone and coastal lowlands in southern California. Although relatively uncommon, the golden eagle has a moderate potential to forage over the property due to the presence of suitable prey species (rabbits and other small mammals) on the site, and because this species is known to occur in the vicinity. However, no suitable nesting habitat is present on the site.

Ferruginous Hawk *(Buteo regalis); Federal Species of Concern and California Species of Special Concern.* This species is principally a winter visitor in interior valleys. Ferruginous hawks favor grasslands and agricultural regions, and important wintering locations include Fish Lake Valley (Mono County), Owens Valley (Inyo County), the Carrizo Plain (San Luis Obispo County), Antelope Valley and other similar locations. Because the site and vicinity exhibit suitable foraging habitat for this species, it has a moderate occurrence potential. However, this species is not expected to nest on the site due to the site's geographic location.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*); *Federal Species of Concern and California Species of Special Concern.* This rabbit occurs in open grassland and areas of sparse shrublands. Loss of habitat is the major threat to this taxon. This species was not observed during the field surveys. However, because this species is known to utilize agricultural situations in the area, it has a moderate occurrence potential.

Potential Constraints Posed by Sensitive Biological Resources

Constraints posed by biological resources upon development of the project site were generally evaluated by ranking the following sensitive biological issues, listed in descending order of significance: (1) a federally or state-listed endangered or threatened species of plant or animal; (2) streambeds, wetlands, and their associated vegetation; (3) habitats suitable to support a federally or state-listed endangered or threatened species of plant or wildlife; (4) species designated as candidates for federal listing; (5) habitat, other than wetlands, considered sensitive by regulatory agencies or resource conservation organizations; and (6) other species or issues of special concern to agencies, resource conservation organizations, or other interest groups.

Thresholds of Significance

Significant impacts on biological resources posed by the project were evaluated from criteria stated in the CEQA Statutes and *Guidelines*, Appendix G (2002). These *Guidelines* state that a project may be deemed to have a significant impact on biological resources if it will: (1) substantially affect a rare, threatened, or endangered species of plant or animal or the habitat of such species; (2) interfere substantially with the movement of any resident or migratory fish or wildlife species; substantially diminish habitat for fish, wildlife, or plants; or (3) conflict with adopted environmental plans and goals in the community where it is located (this site is not part of any existing biological reserve or biological conservation planning area and has not been proposed as part of the potential conservation lands now being analyzed for the region; accordingly this threshold would, therefore, not apply to the project); (4) involve the use, production, or disposal of materials that pose a hazard to animal or plant populations in the area affected. Section 15065(a) of the CEQA *Guidelines* states that a project may have a significant effect on the environment when the project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare, threatened, or endangered plant or animal.

Level of Constraint

The level of constraint that a biological resource would pose to potential development typically depends on the following criteria: (1) the relative value of that resource; (2) the amount or degree of impact to the resource; (3) whether or not impacts to the resource would be in violation of state and/or federal regulations or laws; (4) whether or not impacts to the resource would require permitting by resource agencies; and (5) the degree to which impacts on the resource would otherwise be considered "significant" under CEQA.

Based on the aforementioned criteria, current land use and vegetation types were ranked with respect to relative biological value, both within the site and in comparison to natural communities nearby. Based on this analysis, on-site agricultural resources/disturbed areas have been given a low biological constraint rating based on the degree in which expected impacts to on-site resource would meet the various criteria discussed above. This designation is due to the high level of disturbance due to recent and long-standing agriculture-related activities resulting in low biological diversity on the site, absence of native plant communities, and the overall low potential for special-status species to utilize or reside within areas proposed for development.

Discussion

The potential presence of several special-status biological resources on the project site may impose some degree of constraint to development depending upon the nature of both direct and indirect impacts on these resources. Development of the site would introduce similar urban uses that are already prevalent in a developing area. The loss of agricultural areas would not be expected to substantially affect potentially occurring sensitive plant or wildlife species on the basis that significance of habitat is it's value to listed or other protected species, which either do not occur, or are not expected to occur in substantial numbers due to extensive site disturbances and absence of suitable habitat. Moreover, special-status species either observed on site (**loggerhead shrike**) or with a moderate to high occurrence potential (e.g., **horned lark, black-tailed jackrabbit**) can occur with relatively high frequency and abundance in the region, and are relatively widely distributed throughout southern California. These species were deemed by resource agencies to be too widespread and common to warrant listing as threatened or endangered, and as such, have no current state or federal listing status. They are included herein for discussion since they were formerly considered for listing, and because they are common throughout the region. Project impacts to these species would include a small loss of seasonal foraging habitat locally, which would not likely be considered CEQA-significant.

Despite that fact that the site has been exposed to long-standing and recent disturbances associated with agricultural activities, several sensitive biological resources known from the vicinity may occur in less than optimal and/or disturbed conditions. Raptors (birds of prey) often forage over agricultural lands present in the area. Species such as the **burrowing owl, white-tailed kite**, **golden eagle, northern harrier, and**

ferruginous hawk are known to occur in the vicinity of the site during winter and migration periods. With the exception of the burrowing owl, the above-mentioned potentially occurring sensitive raptor species are not expected to breed in the area. However, some more common species may potentially nest in gum trees (e.g., red-tailed hawk). While most potentially occurring avian species are not protected by state or federal endangered species acts, many are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) and CDFG Code sections 3503, 3503.5, and 3800 which prohibits take, possession, or destruction of birds, their nests or eggs (in particular raptor species). If it were later determined that active nests would be lost as a result of site-preparation, it may be in conflict with these regulations. Development of the proposed project would also remove open fields potentially suitable for foraging by several species of raptors. However, because most potentially occurring raptor species are very widespread and roam over large areas of foraging territory, and open habitat is present in the project vicinity, these losses would amount to a relatively small, incremental reduction of seasonal foraging habitat and occasional use areas. Removal of open areas on the site would not likely constitute CEQA-significant adverse impacts to any of the affected species locally or regionally.

During permitting procedures, certain measures (previously detailed for the burrowing owl and generally described below) may be necessary to avoid or further reduce project-related impacts to potentially occurring sensitive biological resources as part of project approval. If site preparation activities occur during the nesting/breeding season of potentially occurring native bird species, a pre-construction field survey is recommended to determine if active nests of species protected by the MBTA and/or CDFG are present in the construction zone for CEQA compliance. Results of a pre-activity nesting bird survey would determine the appropriate measures to reduce potential adverse project-related impacts to those species that potentially breed in the area. Other potential mitigation measures include avoiding construction activities during the breeding season of potentially occurring avian species (typically February through July or August). Compliance with the MBTA would be necessary prior to development, however no special permit or approval is typically required in most instances.

Conclusion

Results of the reconnaissance-level survey effort indicate that habitats located within the ±185-acre development footprint are considered of a low biological constraint and value. This designation is due to the high level of disturbance due to recent and long-standing agriculture-related activities resulting in low biological diversity on the site, absence of native plant communities, and the overall low potential for special-status species to utilize or reside within areas proposed for development. The loss of disturbed agricultural habitats is not expected to substantially affect special-status resources or cause a population of plant or wildlife species to drop below self-sustaining levels. Construction activities would not likely jeopardize the continued existence of listed species and/or special-status species, nor would construction adversely impact designated critical habitat. Likewise, development of the project is also not expected to substantially alter diversity of wildlife in the area because of the current degraded condition of the site.

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

Ecological Sciences, Inc.

Scott D. Cameron
Principal Biologist

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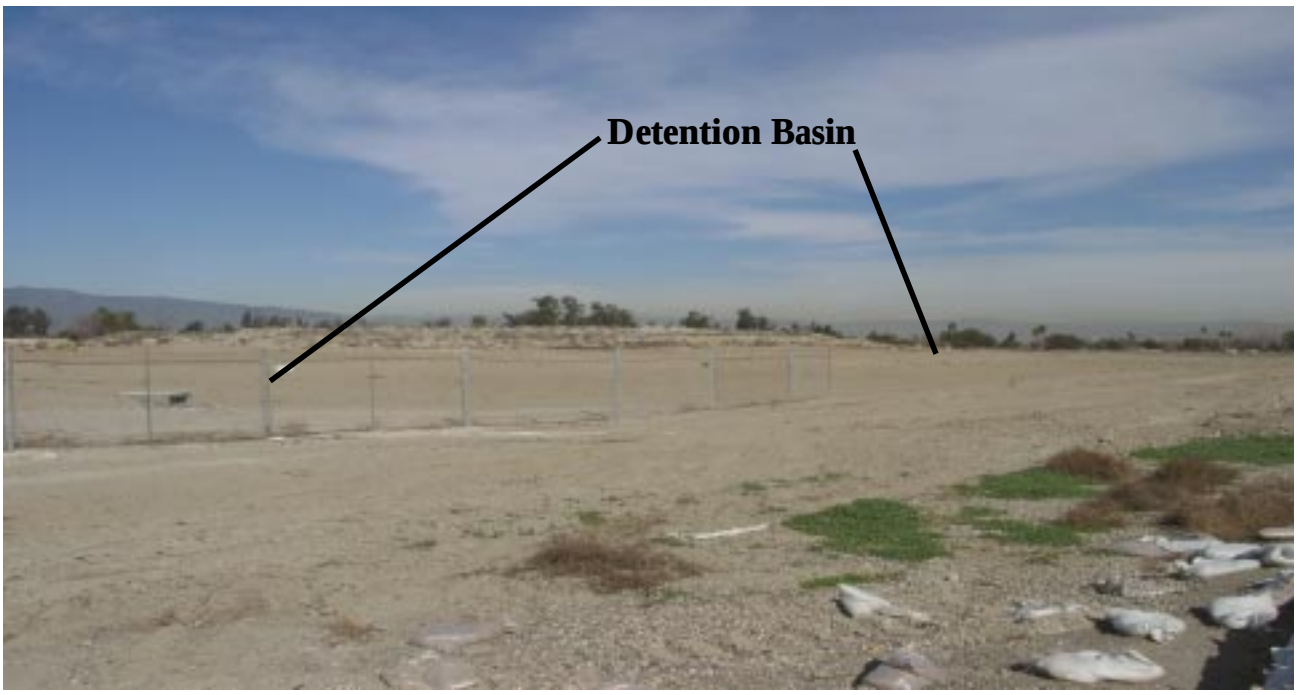
View to southeast from northwest property corner

View to north near central-western portion of site

View to southeast from central-western portion of site

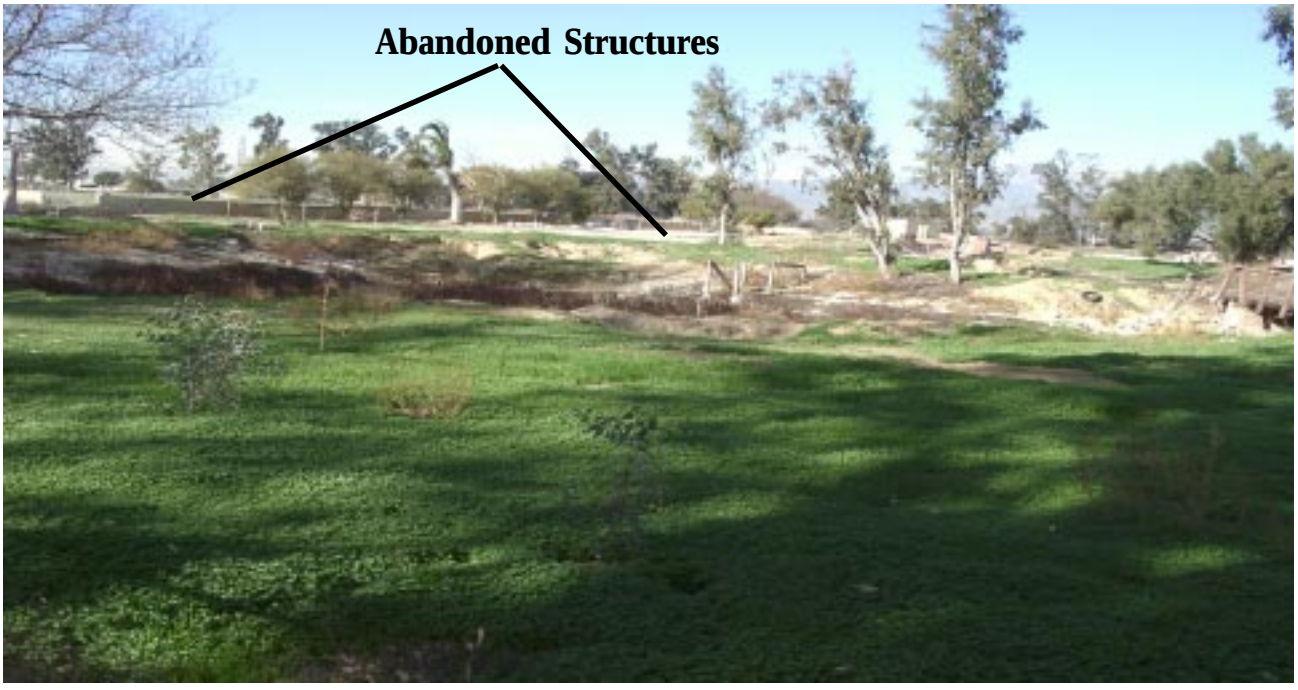
View to west/northwest from southern property boundary

View to north from southern portion of property

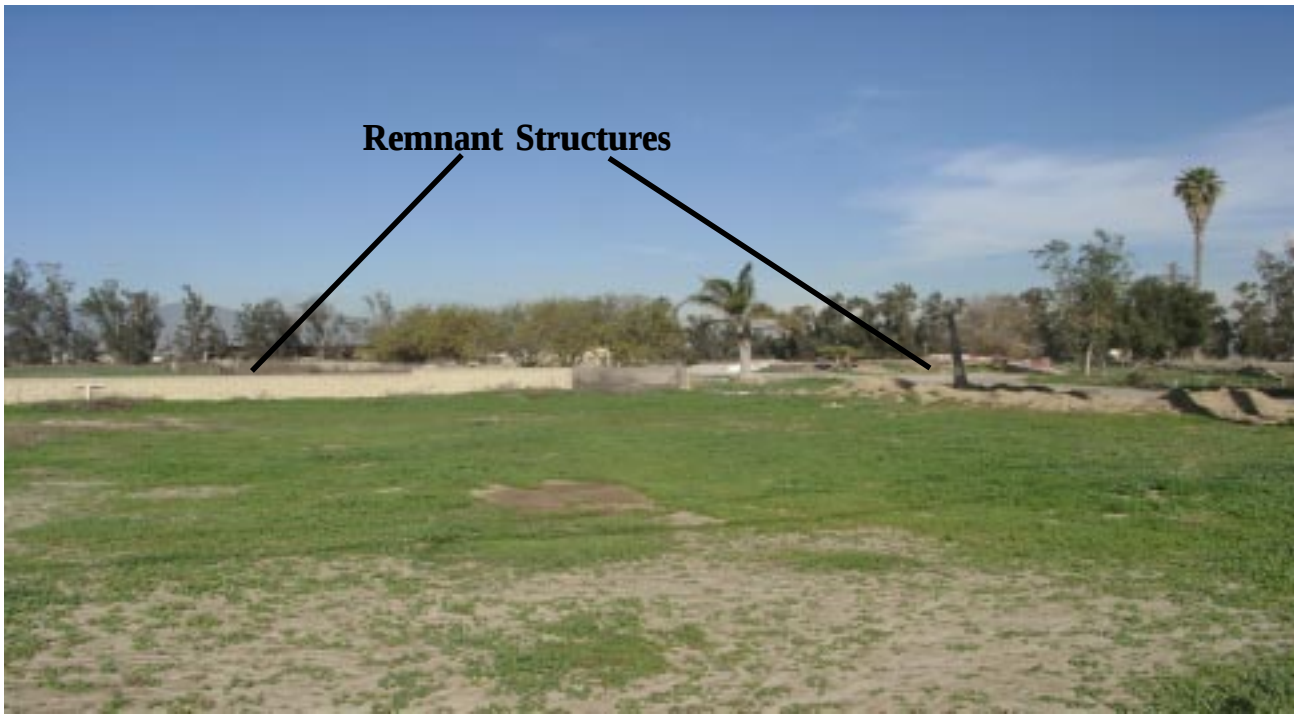


View to east/northeast from southwestern property corner

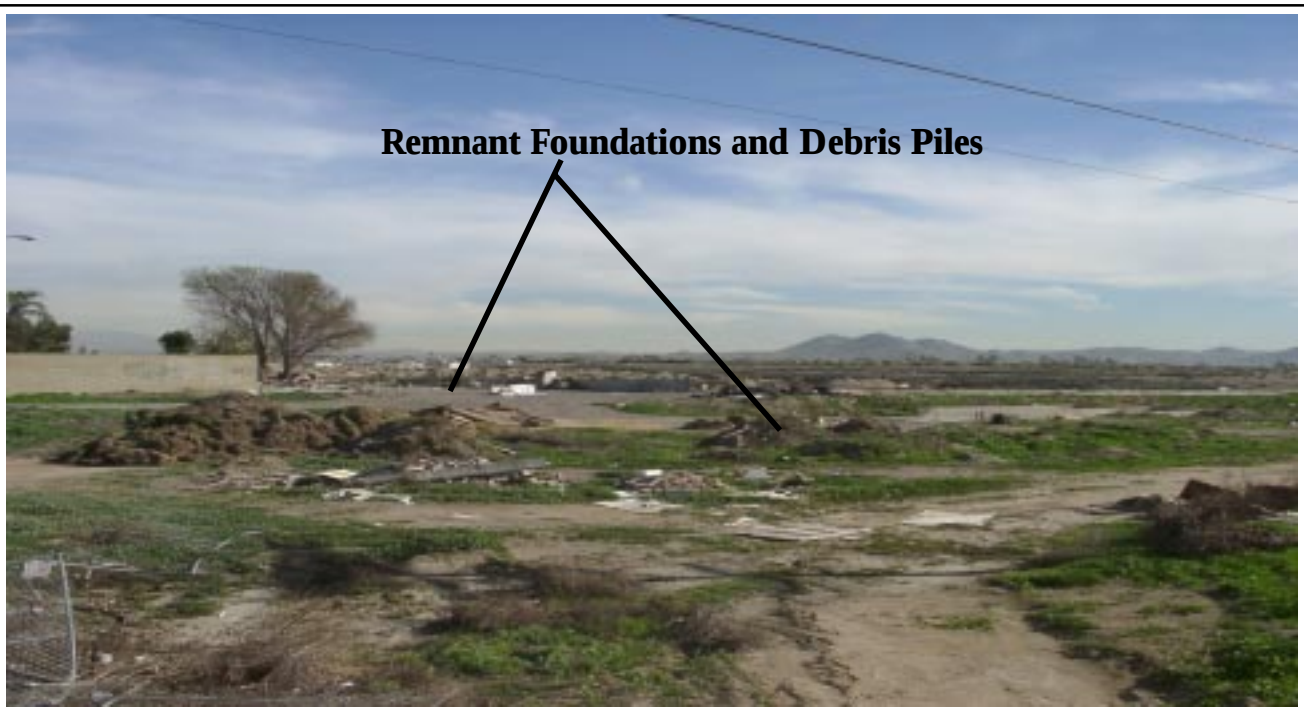
View to north of cultivated field



View to north



View to northeast



View to southeast

Appendix B

General Plant Species List[1]

±185-Acre Legacy Specific Plan Site
January 2003

FAMILY Common Name[2]	Scientific Name[2]
ANGIOSPERMS **DICOTYLEDONS**	
AMARANTHACEAE	
Palmer's pigweed	*Amaranthus palmeri*
ANACARDIACEAE	
Oleander*	*Nerium oleander*
Ash*	*Fraxinis* sp.
ASTERACEAE	
Spiny cocklebur	*Xanthium spinosum*
Fleabane	*Conyza boniarensis*
Prickly lettuce*	*Lactuca serriola*
Golden crownbeard	*Verbesina encelioides*
BRASSICACEAE	
Shortpod mustard*	*Hirschfeldia incana*
Black mustard*	*Brassica nigra*
CHENOPODIACEAE	
Lamb's quarters*	*Chenopodium album*
Russian thistle*	*Salsola tragus*
FABACEAE	
Spanish clover*	*Lotus purshianus*
California burclover*	*Medicago polymorpha*
GERANIACEAE	
Filaree*	*Erodium cicutarium*
HAMAMELIDACEAE	
Sweetgum*	*Liquidamber sp.*
LAMIACEAE	
Horehound*	*Marrubium vulgare*
MALVACEAE	
Cheeseweed*	*Malva parviflora*
MOREACEAE	
Mulberry*	*Morus sp.*
MYRTACEAE	
Gum tree*	*Eucalyptus sp.*
POLYGONACEAE	
Curly dock	*Rumex crispus*
SOLANACEAE	
Tree tobacco*	*Nicotiana glauca*
Jimsonweed	*Datura wrightii*
ZYGOPHYLLACEAE	
Puncture vine*	*Tribulus terrestris*

Appendix B-*continued*

General Plant Species List[1]

±185-Acre Legacy Specific Plan Site
January 2003

FAMILY Common Name[2]	Scientific Name[2]
MONOCOTYLEDONS	
ARECACEAE	
Mexican fan palm*	*Washingtonia robusta*
POACEAE	
Bermuda grass*	*Cynodon dactylon*
Foxtail chess/red brome*	*Bromus madritensis ssp. rubens*
Ripgut grass*	*Bromus diandrus*
Mediterranean grass*	*Schismus barbatus*
Oat*	*Avena barbata*

KEY:

1 Observed during field surveys conducted between 2002-2003 at the subject ±185-acre site located in San Bernardino County, California. Not necessarily an exhaustive list of plant species.

2 Scientific and common names are from Hickman (1993) and Skinner and Pavlik (1994). Additional common plant names may be taken from Abrams (1944) and Munz (1974).

* introduced species

Appendix C

Common Wildlife Species List[1]

±185-Acre Legacy Specific Plan Site
January 2003

Scientific Name[2]	Common Name[2]
VERTEBRATES	
Reptiles	
Sceloporus occidentalis	Western fence lizard
Uta stansburiana	Side-blotched lizard
Birds	
Casmerodius albus	Great egret
Cathartes aura	Turkey vulture
Buteo jamaicensis	Red-tailed hawk
Falco sparverius	American kestrel
*Columba livia**	Rock dove
Zenaida macroura	Mourning dove
Aeronautes saxatalis	White-throated swift
Calypte anna	Anna's hummingbird
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
*Lanius ludovicianus***	Loggerhead shrike**
Mimus polyglottos	Northern mockingbird
Molothrus ater	Brown-headed cowbird
Euphagus cyanocephalis	Brewer's blackbird
Tyrannus verticalis	Western kingbird
Hirundo rustica	Barn swallow
Sayornis nigricans	Black phoebe
*Sturnus vulgaris**	European starling*
Carpodacus mexicanus	House finch
*Passer domesticus**	House sparrow*
Mammals	
Sylvilagus audubonii	Desert cottontail
Spermophilus beecheyi	California ground squirrel
Thomomys bottae	Botta's pocket gopher
*Canis familiaris**	Domestic dog*

KEY:

1 Observed during reconnaissance surveys conducted by Ecological Sciences in December 2002 and January 2003 on the subject ±185-acre project site located in San Bernardino County, California. Not intended to represent an exhaustive list of vertebrate species.

2 Scientific nomenclature and common names follow Collins et al. (1990); American Ornithologists' Union (1989); and Jones et al. (1992).

** Special-status species

* Introduced species

L&L ENVIRONMENTAL, INC.

BIOLOGICAL & CULTURAL INVESTIGATIONS & MONITORING

A GENERAL BIOLOGICAL RESOURCES SURVEY ON THE FORECAST HOMES PROJECT, TRACT 16261, ONTARIO, SAN BERNARDINO COUNTY, CALIFORNIA

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January 2002

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MANAGEMENT SUMMARY

L&L Environmental, Inc. conducted a general biological resources survey on Assessors Parcels 218-252-004, 218-252-005, 218-332-001 and 218-332-002. The purpose of the biological study was to identify on-site biological resources, determine the potential of special status species occurring on-site and to evaluate the effects of the proposed project conceptual design on existing biological resources.

The proposed project, Tract 16261, is the development of 70 acres with single-family residential housing, situated within the City of Ontario. The survey area encompasses four parcels of land separated by Eucalyptus Avenue. The northern half of the project area, Area 1, lies at the northeastern corner of the junction of Eucalyptus and Cleveland Avenues. The southern half, Area 2, is located immediately south of Area 1 and Eucalyptus Avenue.

The project area is heavily disturbed by long-term agricultural, residential and other development. The natural vegetation and soil conditions have been highly altered due to these activities, and now contain mostly non-native grasses and other weedy vegetation. Native habitats are not present, adjacent to or within the survey area.

There are 101 special status species that were identified in the literature review as potentially occurring in the project vicinity. Two (2) of these species were either observed or have a high or moderate potential of occurrence on the project site as permanent residents, while the remainder are low to absent or have a moderate to high potential of foraging on site only. In all, twenty-seven (27) species of plants, one (1) amphibian, two (2) mammals, twenty-two (22) birds were observed on the project site. All species were identified either by direct observation or by vocalization (for birds), and are presented in Appendix A.

Two sensitive species, the white-tailed kite and burrowing owl were observed on the project site. Nesting habitat for both of these species is protected under the Migratory Bird Treaty Act and the burrowing owl is designated a sensitive species by the California Department of Fish and Game (CDFG). The white-tailed kite has only eucalyptus as potential nesting habitat on the project site and no nests were identified. This species was foraging on site when observed.

The burrowing owls observed on the project site, are believed to be nesting within the cement structure in the southwest portion of the retention basin. Detailed data was collected on the presence of the owl on the project site, however a protocol survey, including surveying a 150 meter zone of influence was not conducted and will be required by the CDFG. Mitigation will be

required for at least the one known burrow location, which will include the preservation of at least 6.5 acres on the project site or in the immediate area. If off site mitigation is requested the site will have to be approved by the CDFG and the agency may require additional burrows or acreage be included as compensation for movement of burrows off-site.

Mitigation for impacts to the burrowing owl nests within project area and zone of influence, which will have to be conducted prior to any ground disturbance, should be planned for September 1 through January 31 per the "Burrowing Owl Survey Protocol and Mitigation Guidelines" (1993).

In addition to the burrowing owl survey and mitigation, a final site review must be conducted within 30 days of grading to verify that no additional burrowing owls have inhabited the site, or that the identified bird did not relocate on the project site. During the present survey no other raptor nests or nesting behavior was observed. However, the on-site eucalyptus could potentially be used for nesting by raptors. If construction will occur between February 1 and August 31, the biologist should confirm that no nesting raptors have since inhabited the project site at the same time the final burrowing owl survey is conducted. If active nests are located on site, appropriate measures should be initiated to avoid any impacts until fledging has occurred.

Several bird species were identified as having a moderate or high probability of foraging on site. Open foraging habitat is present in the project vicinity, and as a result reduction in available foraging habitat has generally not been identified as a significant impact under CEQA.

Those species that were identified as occurring or having a high or moderate potential of occurring on the project site, but are not currently listed as threatened or endangered, do not require a permit for incidental take. These species are designated as either Federal or State species of special concern, threatened (by the NDDB), or are known to be regionally rare.

No state or federally listed endangered or threatened species were observed or have a high or moderate potential of occurring on the project site. Although the project site has no delhi sands L&L proceeded with a focused survey during the 2001 season as a precaution to verify the absence of the species on the project site, provide additional data to the USFWS to support a waiver of a two year survey for this species, and to avoid delays in the event a waiver is not provided. The surveys were entirely negative and L&L recommends petitioning the USFWS to release the project from 2002 survey requirements. Further details of this survey are provided in a separate document.

1.0) INTRODUCTION

The following report was written for Forecast Homes, LLC, at the request of Mr. Kevin Manning. It describes the results of a general biological resources survey conducted on the 70 acre Ontario project site.

Our assessment consisted of a general biological survey, which was intended to identify plants and animals on the property, the presence or absence of any sensitive species, and to identify any biological issues that need to be addressed prior to development. The full project area was evaluated during these studies.

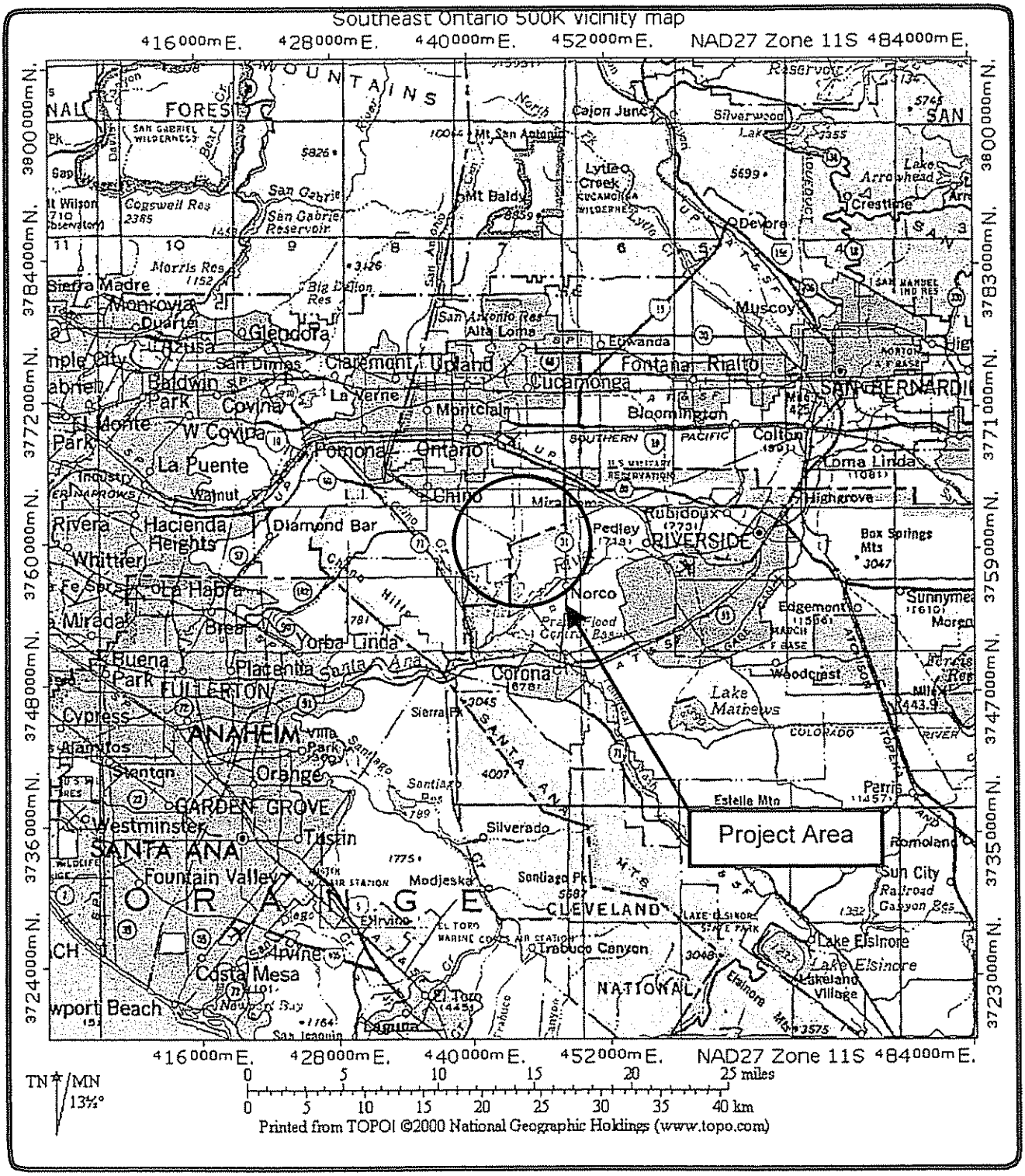
1.1) Project Location

The survey area encompasses properties north and south of Eucalyptus Avenue, totaling approximately 70 acres, in the City of Ontario, southwestern San Bernardino County. The northern half of the project area, Area 1, lies at the northeastern corner of the intersection of Eucalyptus and Cleveland Avenues. This portion of the project area is bounded to the north by pasture lands and an active feed lot and to the west by rural residential units and similarly disturbed empty lots. The southern half, Area 2, is located immediately south of Area 1 and Eucalyptus Avenue. This portion of the project area is bounded to the south by Bellegrave Avenue and the Riverside County line.

The subject property is situated within Sections 13 and 24, Township 2 South, Range 7 West, as shown on a portion of the USGS Corona North 7.5' Topographic Quadrangle (figure 2). Adjacent land, like the survey area, varies, to include such disturbances as actively cultivated in-use agricultural fields, pasture lands, feed lots, fallow fields, rural residential areas, paved and unimproved roads, and other developments (figure 3). The proposed project is the construction of a residential development.

1.2) Vegetation

All areas have been subjected to various human disturbances, mostly in the form of agricultural activities related to the presence of cornfields, feed lots, pastures, or other farm related disturbances. The natural vegetation and soil conditions have been highly altered due to these activities, and now contain mostly non-native grasses and other weedy vegetation. The results of the general biological survey showed that due to previous and ongoing disturbances, native vegetation communities are not present on the Forecast site. A total of twenty-seven (27)



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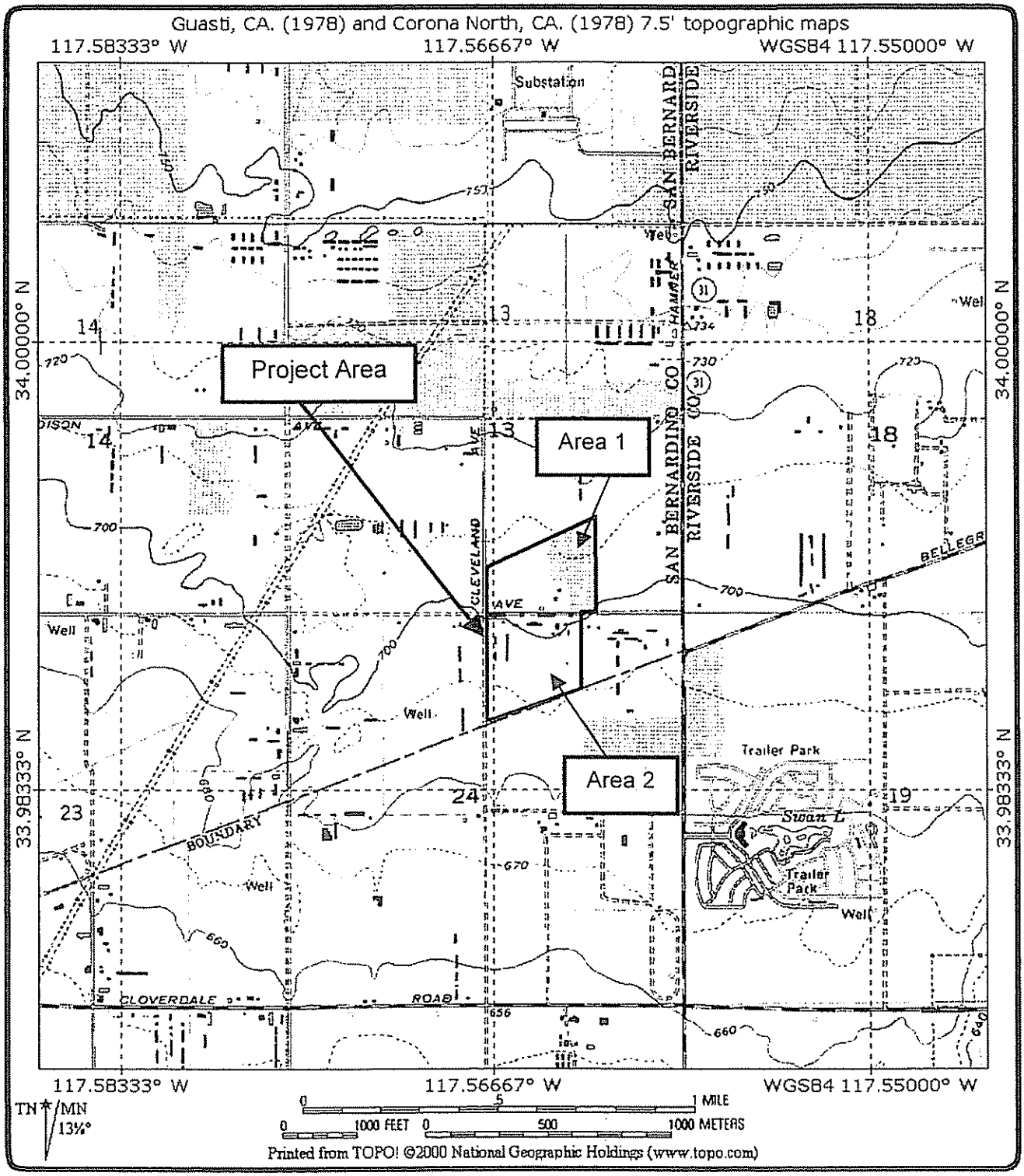
BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

FHG-01-276
January 2002

Figure 1

Project Vicinity Map

Forecast Homes Group, LLC
City of Ontario, California



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BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

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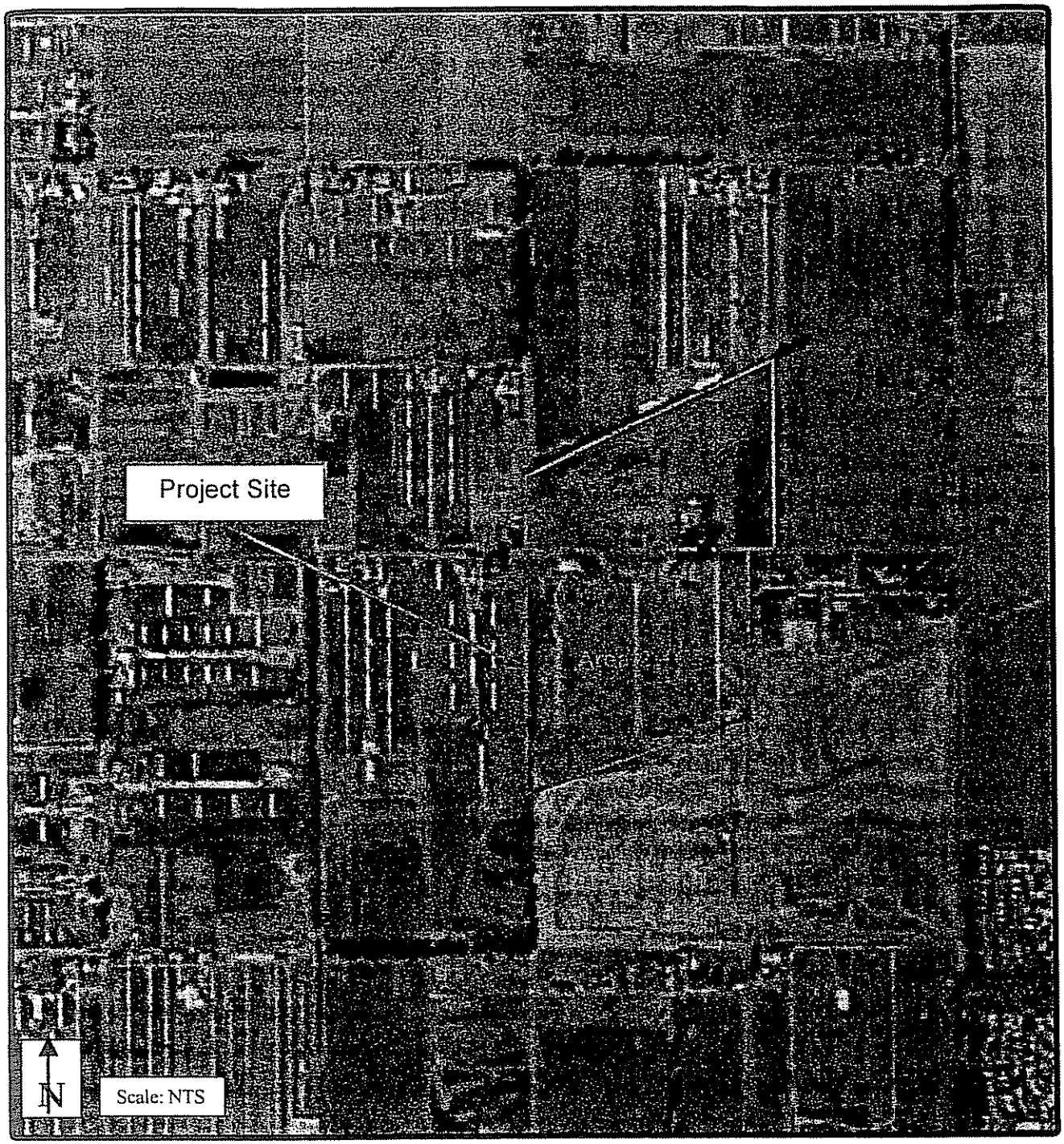
Figure 2

Project Location Map

Forecast Homes Group, LLC
City of Ontario, California



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BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

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Figure 3

USGS Aerial Photograph

(taken 2001: www.airphotousa.com)

Forecast Homes Group, LLC
City of Ontario, California

commonly observed, mostly non-native and ornamental, plant species were detected during the biological surveys.

Disturbed habitat includes large areas of no vegetation or developed areas. Vegetation that does occur include areas that contain mostly non-native plant species including ornamentals and ruderal exotics, including common dandelion (*Taraxacum* sp.), horehound (*Marrubium vulgare*), puncture vine (*Tribulus terrestris*), Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), cheeseweed (*Malva parviflora*), and bermuda grass (*Cynodon dactylon*). Other plant species observed on the subject property include short-pod mustard (*Hirschfeldia incana*), lamb's quarters (*Chenopodium album*), flax-leaf fleabane (*Conyza boniarensis*), Palmer's pigweed (*Amaranthus palmeri*), tree tobacco (*Nicotiana glauca*), golden crown beard (*Verbecinia encelioides*), and spiny cocklebur (*Xanthium spinosum*).

Large eucalyptus trees (some estimated between thirty and fifty years old) can be found bordering the Forecast property at two locations. A row containing approximately ten to fifteen mature trees is present at the northern boundary of Area 1, which separates the Forecast property from neighboring pasture and other agricultural lands. Additional trees can be found along Eucalyptus Avenue at the northeast corner of Area 2.

Non-native ornamental landscaping is present on both Areas 1 and 2 of the Forecast site, mostly in association with two onsite rural residential units present along Eucalyptus Avenue. Trees such as mulberry (*Morus* sp.), gumtree (*Eucalyptus* sp.), liquidamber (*Liquidamber* sp.). oleander (*Nerium oleander*), ash (*Fraxinis* sp.), and Mexican fan palm (*Washingtonia robusta*) were observed.

Developed areas include lands that have been altered due to the placement of permanent structures and paved roads, thereby preventing the growth of vegetation. On the Forecast site developed areas include two residential units along Eucalyptus Avenue, various farm buildings and shade structures, old foundations and abandoned feed bins and associated paved areas.

1.3) Soils

Area 2 contains a large retention basin (estimated at 8 to 10 acres) in the southern portion, and immediately north of the basin is an artificial mound (also estimated at 8 to 10 acres), which contains consolidated and unconsolidated soils. No delhi sands occur on the project site.

2.0) REGULATORY ENVIRONMENT

2.1) Federal Endangered Species Act

The United States Fish and Wildlife Service (USFWS), under the auspices of the Federal Endangered Species Act (FESA) of 1973 (as amended), manage and protect species listed as endangered or threatened. Endangered species are defined as species, "in danger of extinction throughout all or a significant portion of its range", while a threatened species is defined as, "likely to become endangered in the foreseeable future".

"Take" of listed species is prohibited under Section 9 of FESA. The term "Take" includes the direct killing, harming, harassing, and/or destruction of habitat that may be important for the species survival and recovery. Harm is further defined as significant habitat alteration that results in death or injury to listed species by significantly impairing behavior patterns, such as breeding, feeding, or sheltering. The USFWS can issue a permit for take of listed species incidental to otherwise lawful activities. Procedures for obtaining a permit for incidental take are identified under Section 7 of FESA for federal properties or where federal actions are involved, and are identified under Section 10 of FESA for non-federal actions.

2.2) California Department of Fish and Game (CDFG)

2.2.1) California Endangered Species Act

California Endangered Species Act (CESA) definitions of endangered and threatened species parallel those defined in the federal Act. Endangered species are in serious danger of becoming extinct, and threatened species are likely to become an endangered species in the foreseeable future according to Sections 2062 and 2067, respectively, of the CDFG Code. Candidate species are species that are under formal review by CDFG for addition to the endangered or threatened species list (Section 2067). Prior to being considered for protected status, the CDFG designates a species as being of special concern. Species of special concern are those for which CDFG has information indicating that the species is declining.

2.2.3) California Natural Diversity Database

The California Natural Diversity Database (NDDB) is a database of sensitive species and vegetative communities, which ranks the overall condition of species (or community) on global (throughout its range) and state (within California) levels. Additionally, subspecies and varieties are assigned a ranking for the global condition of that subspecies or variety. The ranking is

numerical ranging from one (1) to five (5), with one (1) indicating very few remaining individuals or little remaining habitat, and five (5) indicating a demonstrably secure to ineradicable population condition. State ranks may also include a threat assessment ranging from one (1) (very threatened) to three (3) (no current threats known).

2.3) California Native Plant Society

The California Native Plant Society (CNPS) has cataloged California's rare and endangered plants into lists according to their population distributions and viability. These lists are numbered and indicate the following: (1A) presumed extinct in California; (1B) rare or endangered in California and elsewhere; (2) rare or endangered in California, but more common elsewhere; (3) more information is needed to establish species standing, and (4) plants of limited distribution that bear watching.

2.4) California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires identification of environmental effects from discretionary projects. Significant effects are to be mitigated by avoidance, minimization, rectification, or compensation whenever possible.

Effects to all state and federally listed species are considered significant under CEQA. In addition to formally listed species, Section 15380(d) of CEQA considers effects to species that are demonstrably endangered or rare as important or significant within CEQA terms. These definitions can include: State designated species of special concern, federal candidate and proposed species, NDDB tracked species, and California Native Plant Society 1B and 2 plants.

2.5) Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) is an international treaty that makes it unlawful to take, possess, buy, sell, purchase, or barter, any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game (CDFG) Code prohibit the take, possession, or destruction of birds, their nests or eggs. The MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (1 February to 31 August, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young), or the loss of habitat upon which the birds depend could be considered, "take", and constitute a violation of the MBTA.

3.0) METHODS AND PERSONNEL

3.1) General Biological Survey Methods

Pertinent literature was reviewed to identify local occurrences and habitat requirements of special status species occurring in the region. Literature reviewed included compendia provided by resource agencies (CDFG 1999a, 1999b; USFWS 1993, 1994, 1996, 1999), California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994), and California Natural Diversity Database (NDDB) reports for the USGS Corona North and Guasti 7.5' minute topographic quadrangle maps (CDFG). Special status species occurring on either of the USGS topographic quadrangles are listed in Appendix A, Table 1, along with brief descriptions of their habitats, geographic ranges, agency status, and probability of occurring on the site. Other special status plants and animals known from the general area, but not reported in the NDDB are also included.

L&L biologist, Mr. Guy Bruyea, visited the project area on September 29, and October 1 and 2, 2001, for the purpose of describing vegetation and habitat, to evaluate probabilities that special status plants or animals might occur on-site. Mr. Bruyea conducted this survey over multiple days in order to gather supplemental nesting information on the burrowing owl observed on the project site. In addition, Mr. Bruyea conducted a focused delhi sands flower-loving fly survey on the project site during the 2001 season, which is being submitted under a separate cover. Relevant general biological data gathered from these visits is also incorporated in this document. All noted vegetative habitat types within the project boundaries were visited on foot and all species seen were recorded in field notes. Plants of uncertain identity were collected and subsequently identified from keys, descriptions and illustrations in Hickman (1993), Parker (1999), and. Sawyer and Todd (1995). These procedures provide a general assessment of habitat and vegetation on a site and act as a tool used to determine the probability of special status species occurring on site, but often cannot provide conclusive presence or absence determinations for special status plants or animals.

4.0) GENERAL BIOLOGICAL RESOURCES SURVEY RESULTS

4.1) Literature Review Results: Sensitive Species and Habitats

4.1.1) Definition of "Special Status"

Certain plants and animals have been listed as threatened or endangered under State or Federal Endangered Species Acts. Other species have not been formally listed, but declining populations or habitat availability indicates a reason for concern for their long-term viability. These species are included in lists compiled by resource management agencies or private conservation organizations. In this report, the term, "special status species", refers to all species included in one (1) or more compendia or formal list of threatened or endangered species. Appendix A, Table 1 lists special status species occurring in regions defined by the two (2) quadrangle maps noted above, and briefly describes their habitat, distribution, agency status, and probability of occurring at the project site.

There are 101 sensitive species identified as potentially occurring in the project vicinity. Of these, none have a high or moderate potential of occurrence, with the exception of two species, the white-tailed kite and burrowing owl, which were observed during the biological survey. In addition to those species, five (5) birds and three (3) bat species have a high to moderate potential for seasonal or foraging use of the project area. The remainder of the potential on-site special status species was judged to be "Low" or "None/Absent" on the basis of habitat, geography and elevation. The following section contains a brief discussion of the life history, listing status and probability of occurrence for each special status species occurring or potentially occurring in the project vicinity.

The "probability" assessments noted below are based on known habitat requirements for each species, site proximity to known occurrences, review of literature on range, consultation with local resource managers, and professional experience. If suitable habitat characteristics were present on-site and/or the species has been observed nearby, the probability of occurrence is listed as "High." If less than optimal habitat characteristics are present, the probability is listed as "Moderate". The probability for occurrence is "Low" or "Absent", when a species is considered unlikely to occur on the proposed project site because its historic range does not overlap, or appropriate or suitable habitat does not occur within the proposed project boundary. The species listed below consist of those that may potentially be found during a biological survey.

4.1.2) Sensitive Plant Species

Species: **Chaparral sand verbena *(Abronia villosa* var. *aurita)***
Federal Status: **None**
State Status: **3.1**

Chaparral sand verbena occurs only in sandy, mostly alluvial fans and benches, below about 5,000 feet in elevation. The species occurs in the Inland Empire and the adjacent Colorado Desert and interior San Diego County. This species blooms from February to July. The project site contains poorly suitable habitat for this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Munz's onion *(Allium munzii)***
Federal Status: **Endangered**
State Status: **Threatened**

Munz's onion is a perennial herb that occurs only in Riverside County. The species occurs on clayey soils in grassy openings of shrublands and woodlands, from 1000 to 3500 feet in elevation. The blooming period for this onion is from March through May. Munz's onion is known from fewer than ten (10) occurrences, and is threatened by urbanization, mining, agriculture and non-native plant invasion. Suitable habitat for this species does not occur on-site as there is a lack of clay soils and the site is below the elevational range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **San Diego ambrosia *(Ambrosia pumila)***
Federal Status: **None**
State Status: **S1.1**

This species has green to straw colored stems with lobed wing leaves. Habitat for this species is vernal pools, roadside pools and grasslands in southwestern Riverside County (Murietta and Lake Elsinore areas), San Diego County and Baja California. This species blooms from June to September. No suitable habitat for this species occurs on the project site and the site is north of the geographic range of this species. This species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Braunton's milk vetch *(Astragalus brauntonii)***
Federal Status: **Endangered**
State Status: **S2.1**

This chaparral is possibly restricted to carbonate soils, usually following fire or soil disturbance. The species blooms from February to June. This species occurs in scattered locations in the southern California foothills, Ventura County, Orange County, and Los Angeles County. The species was not observed during the general biological survey. No suitable habitat for the species occurs on the project site. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Jeager's milkvetch *(Astragalus pachypus* var. *jeageri)***
Federal Status: **None**
State Status: **S1.1**

This perennial is robust, rigid, bushy and has sparse leaves. Its petals are white or cream colored. Habitat for this species found on open sites in arid grasslands and shrublands. It is distributed along the northwestern margin of the Sonoran Desert and in the San Jacinto Mountain foothills. This species blooms from December to June. Only poorly suitable habitat for this species occurs on-site, and this species was not observed during the general biological survey. The project site is likely outside of this species' geographic range. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **San Jacinto Valley saltbush *(Atriplex coronata* var. *notatior)***
Federal Status: **Endangered**
State Status: **S1.1**

This shrubby member of the salt-tolerant goosefoot family (*Chenopodiaceae* sp.) is found in alkali sinks, and among saltbush scrub. It is endemic to the Perris and Elsinore Basin areas of Riverside County. The blooming season runs from May to August. Suitable habitat for this species does not occur on-site and the site is outside of the species geographic range. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Coulter saltbush *(Atriplex coulteri)***
Federal Status: **None**
State Status: **S2.2**

This perennial has multiple erect stems with grey-scaly leaves. Habitat for this species is coastal dunes, grasslands, shrublands, and desert shrublands. Locally, they are generally found in alkaline clay bottomland soils. Coulter saltbush is distributed in southern California and

Baja California. This species blooms from March to October. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Pacific saltbush (*Atriplex pacifica*)**
Federal Status: **None**
State Status: **S2.2**

This species occurs in coastal bluffs and saltbush scrub. It occurs in the Channel Islands and along the coast of southern California and uncommonly in the San Jacinto Valley. The species blooms between March and October. No suitable habitat for this species occurs on the site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Davidson's smallscale (*Atriplex serenana* var. *davidsonii*)**
Federal Status: **None**
State Status: **S2?**

These annual herbs are members of the goosefoot family (*Chenopodiaceae* sp.) and are found blooming from March through October. The species are found on coastal bluffs in saltbush scrub. Its range includes the Channel Islands and coastal southern California. Suitable habitat for these species does not occur on-site and the species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Parish's smallscale (*Atriplex parishii*)**
Federal Status: **None**
State Status: **S1.1**

This rare annual herb occurs in alkali sink and saltbush scrub. Its range is in the Central Valley of California. The blooming period for this plant is June through October. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Nevin's barberry (*Berberis nevinii*)**
Federal Status: **Endangered**
State Status: **Endangered**

This species has flat to wavy leaves, which are generally crowded on short lateral stems. It has a small, circular reddish fruit. Habitat for this species is coastal sage scrub, chaparral or oak

woodland, usually below about 2000 feet. It is distributed in scattered locations in Los Angeles, San Bernardino, Riverside and San Diego Counties. This species bloom in spring, but can be identified year-round. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Thread-leaved Brodiaea (*Brodiaea filifolia*)**
Federal Status: **Threatened**
State Status: **Endangered**

This perennial herb is a member of the lily family (*Liliaceae*) and is found blooming from March through June. It is found in vernal pools and alkali sink in the inland valleys, often on upland heavy clay soils nearer to the coast, with scattered locations in southern California foothills and valleys. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Catalina mariposa lily (*Calochortus catalinae*)**
Federal Status: **None**
State Status: **S3.2**

This flower is white, tinged lilac, purple–spotted with hairs near the base. It is usually found in heavy soil within open grassland or shrubland. It is distributed from the southern central coast to the southern coast of California below 700m. It also occurs on the Channel Islands. This bulb blooms in the spring. No suitable habitat for this species occurs on the project site. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Plummer's mariposa lily *(Calochortus plummerae*)**
Federal Status: **None**
State Status: **S3.2**

This pale pink-rose flower with hair at the base, is found in dry, rocky chaparral and forests. It is distributed in the southern California mountains, foothills and valleys below 5500 feet. This bulb blooms from May to July. Suitable habitat for this species does not occur on-site and this species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Weed's mariposa lily *(Calochortus weedii* var. *intermedius)***
Federal Status: **None**
State Status: **S2.2**

This member of the lily family (*Liliaceae*) has cream to dark yellow, purple, or brown flowers. It grows in chaparral, coastal sage scrub, and valley grassland communities. It is found on sandy or clay soils, below about 6200 feet in elevation, in coastal southern and central California. The flowering season is June through August. No suitable habitat for this species occurs on the project site and this species was not observed during the biological survey. The probability that this species occurs on-site is **low**.

Species: **Buck's jewelflower (*Caulanthus heterophyllus* var. *pseudosimulans*)**
Federal Status: **None**
State Status: **S2S3**

This yellow to cream colored flower sometimes has reddish or blush sepal. It is an annual occurring in open dry scrub or chaparral, especially following fire or other disturbances. It is found to about 4500 feet in elevation. The blooming period is in late winter. Its distribution includes the southern California mountains and foothills. No suitable habitat for this species occurs on the project site. The species was not observed during the general biological survey and the probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Ramona spineflower (*Chorizanthe leptotheca*)**
Federal Status: **None**
State Status: **S3.2**

This herb flowers white to red or yellow and blooms from May to June. Ramona spineflower occurs in alluvial fan and/or granitic soils (Skinner and Pavlik, 1994) from approximately 1000 to 6000 feet in elevation. The species can be found in San Bernardino, Riverside and San Diego Counties. Suitable habitat for this species does not occur on-site, and the site is below the elevatonal range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Parry's Spineflower *(Chorizanthe parryi* var. *parryi*)**
Federal Status: **None**
State Status: **S2.1**

A white-flowered annual herb, this blooms from April through June. Parry's spineflower occurs in sandy openings on dry slopes and flats in coastal or desert scrub communities below 4000 feet in elevation. Its range includes San Bernardino, Los Angeles, and Riverside Counties.

Poorly suitable habitat for this species occurs on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **low**.

Species: **Long-spined spineflower *(Chorizanthe polygonoides* var. *longispina)***
Federal Status: **None**
State Status: **S2.2**

This herbaceous plant has white to rose-colored flowers. It is often found on clay soils in shrublands, and grasslands below 4600 feet in elevation. The blooming season is April to July. The long-spined spineflower is found in western Riverside and San Diego Counties, south to Baja California. Suitable habitat (clay soils) for this species does not occur on-site, in that the only potentially suitable soils have been disturbed by agricultural activities, and the species was not observed during the general biological survey. The project site is likely outside of this species geographic range. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **White-bracted spineflower *(Chorizanthe xanti* var. *leucotheca)***
Federal Status: **None**
State Status: **S1S2.2**

This species is found in desert shrubland and pinyon-juniper woodland, from about 1,000 to 4,000 feet in elevation. The species occurs in East San Bernardino and the North San Jacinto Mountains. The blooming season is from June to October. The project site is seemingly outside of the range of this species. Suitable habitat does not occur on-site, and the site is below the elevational range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area

Species: **Small-flowered morning-glory *(Convolvulus simulans)***
Federal Status: **None**
State Status: **S3.2**

This annual has diffusely branched stems with pinkish to bluish, bell-shaped flowers. This species is found in shrublands and grasslands in western-central and southwestern California. It is located in clay or serpentine soils. This species blooms from March to June. Suitable habitat (clay soils) for this species does not occur on-site, and the species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Tecate cypress *(Cupressus forbesii)***
Federal Status: **None**
State Status: **S1.1**

This species is found in chaparral at elevations from about 1,400 to 5,000 feet. The species occurs in Orange County, San Diego County, and Baja California; one large population of the species is found at Coal Canyon and Gypsum Canyon. This species can be identified blooming year round. Suitable habitat for this species does not occur on-site, and the site is well below the elevational range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Slender-horned spineflower *(Docecahema leptocerus)***
Federal Status: **Endangered**
State Status: **Endangered**

The slender-horned spineflower inhabits open alluvial benches in the valleys and canyons of the San Fernando and Santa Ana River Valleys, as well as western Riverside County. It blooms from April to June. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Many–stemmed dudleya (*Dudleya multicaulis*)**
Federal Status: **None**
State Status: **S2.1**

This yellow flowered herb is found in heavy soils, often clayey within grasslands or shrublands, below about 2000 feet in elevation. It is distributed in southwestern California. It blooms from May to June. Suitable habitat for this species (clay soils) does not occur on-site, in that the only potentially suitable soils have been disturbed by agricultural activities. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Santa Ana River woollystar *(Eriastrum densifoloium* ssp. *sanctorum)***
Federal Status: **Endangered**
State Status: **Endangered**

This species is found in shrublands, alluvial fans, and plains. The species is endemic to the Santa Ana River watershed from Orange County to San Bernardino County. The blooming season is from May to September. No suitable habitat for this species occurs on the project site and the site is on the margin of this species' geographic range. This species was not observed

during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Round-leaved filaree *(Erodium macrophyllum)***
Federal Status: **None**
State Status: **S2.1**

This species occurs in clay soils and open places in shrubland or grassland at elevations below about 3,500 feet. The species is found in the Central Valley, south to north Mexico, and east to Utah. The blooming season for this species is from March to May. The only potentially suitable soils for the species on-site have been disturbed by agricultural activities. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Palmer's grappling-hook *(Harpagonella palmeri* var. *palmeri)***
Federal Status: **None**
State Status: **S3.2**

The Palmer's grappling-hook, a member of the borage family, is a shrub with stems three (3) – thirty (30) cm-long. This plant lives on dry clay soils in chaparral, coastal sage scrub, and valley grassland. It blooms from March to April. Palmer's grappling-hook is found in southwestern California through Baja California, Arizona, and Sonora. Suitable habitat (clay soils) for this species does not occur on-site, in that the only potentially suitable soils have been disturbed by agricultural activities, and the species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Smooth tarplant (*Hemizonia laevis*)**
Federal Status: **None**
State Status: **S2.1**

This yellow-flowered, annual herb occurs in seasonally wet, low elevation grassland, as well as fallow fields and drainage ditches. It blooms from April through September. Its distribution includes southwestern Riverside County with a few sites in nearby interior valleys. Potentially suitable habitat for this species occurs on-site, although the site is likely outside of the geographic range of this species. The species was not observed during the general biological survey and the probability that this species occurs on-site is **low**.

Species: **San Diego tarplant, paniculate tarplant *(Hemizonia paniculata)***
Federal Status: **None**
State Status: **3.2**

The species is found in open spaces in coastal sage scrub, on roadsides, etc. at elevations below approximately 2,000 feet. This species occurs in San Diego and Riverside Counties. It blooms between May and November. Poorly suitable habitat for this species occurs on-site, although the site is likely outside of the geographic range of this species. This species was not observed during the general biological survey, and the probability that this species occurs on-site is **low**.

Species: **Vernal barley (*Hordeum intercedens*)**
Federal Status: **None**
State Status: **S3S4**

This annual plant has long-spreading hairy leaves of pale green. Habitat for this species is vernal pools, saline and alkaline flats below approximately 3300 feet in elevation. It is distributed in the San Joaquin Valley, Owens Valley and other southern California valleys. This species blooms from March to June. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Coulter goldfields (*Lasthenia glabrata* ssp. *coulteri*)**
Federal Status: **None**
State Status: **S2.1**

This yellow-flowered, annual herb occurs in coastal salt marshes and inland saline playas and pools. It blooms from February through June. Its distribution includes the South Coast ranges, from Santa Barbara to Baja California, with inland sites in Kern County, deserts and western Riverside County. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Heart-leaved pitcher sage *(Lepechinia cardiophylla)***
Federal Status: **None**
State Status: **S2.2**

The species occurs in chaparral and conifer-oak forests at elevations of about 1,900 to 4,000 feet. This species in endemic to the Santa Ana Mountains. The blooming season for this species is from April to July. Suitable habitat for the species does not occur on the project site and the project site is below the elevational range of this species. The species was not

observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)**
Federal Status: **None**
State Status: **SH (error)**

This white flowered annual is found in dry soils and shrublands (chaparral and coastal sage scrub) areas below about 1700 feet in elevation. Robinson's peppergrass blooms from January to July. This species is distributed from Los Angeles County, inland to Riverside and San Bernardino Counties, then south to Baja California. Suitable habitat for this species does not occur on the project site. The species was not observed during the general biological survey, but the probability that this species occurs on-site is **low**.

Species: **Parish's desert thorn (*Lycium parishii*)**
Federal Status: **None**
State Status: **S2S3**

This shrub bears purple flowers and a red berry fruit (Hickman 1993). Parish's desert thorn is found on arid slopes and sand flats below about 3300 feet in elevation. It can be found in the low deserts of Riverside and San Diego Counties, Arizona and Sonora, as well as the interior valleys of Riverside County. Poor habitat for this species occurs on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Small-flowered microseris *(Microseris douglasii varl platycarpha)***
Federal Status: **None**
State Status: **S3.2**

The small-flowered microseris is an annual, with yellow or white flowers, and gray fruit. It is found in woodland, grassland, usually on clay soils in valley bottoms, below about 3300 feet in elevation. It blooms from March to April. The plant is found in Los Angeles, Orange, Riverside, and San Diego Counties. Suitable habitat (clay soils) for this species does not occur on-site, and the project site is likely outside of the range of this species. This species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **California spineflower (*Mucronea californica*)**
Federal Status: **None**
State Status: **S3.2?**

This flower is white to pink in coloration, and is found in sandy soils in many habitats. This species is distributed from San Luis Obispo to the San Diego coast and inland to San Bernardino and Kern Counties, below 4500 feet in elevation. It blooms in from April to July. Potentially suitable habitat for this species occurs on-site, but the species was not observed during the general biological survey. The probability that this species occurs on-site is **low**.

Species: **Little mousetail (*Myosurus minimus* var. *apus*)**
Federal Status: **None**
State Status: **S2.2**

The little mousetail is an annual plant with a thread-like leaf. The species occurs in wet places, such as vernal pools and marshes. It is distributed in lower elevation interior valleys of Riverside, San Bernardino, San Diego, and possibly Butte County, as well as Baja California. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Spreading navarretia (*Navarretia fossalis*)**
Federal Status: **Threatened**
State Status: **S2.1**

The spreading navarretia is a spreading plant with white flowers. Habitat for this species is vernal pools, usually in saltbush shrublands. It is distributed in Los Angeles County (Liebre Mountains), Riverside and San Diego Counties and Baja California. This species blooms from April to June. Suitable habitat for this species does not occur on-site and the project site is likely outside of the geographical range of this species. The species was not observed during the general biological survey and the probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **California Orcutt grass (*Orcuttia californica*)**
Federal Status: **Endangered**
State Status: **Endangered**

California Orcutt grass is generally prostrate, and sometimes forms mats. Habitat for this species is vernal pools below about 2000 feet in elevation. It is distributed in Riverside County, Los Angeles (now extinct) and San Diego Counties, as well as northern Baja California. This species blooms from May to June. Suitable habitat for this species does not occur on-site and the project site is likely outside of the range of this species. The species was not observed

during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Santiago Peak phacelia *(Phacelia suaveolens* ssp. *keckii)***
Federal Status: **None**
State Status: **S1.3**

This species is found in chaparral and Coulter pine woodland at an elevation of about 4,000 to 5,300 feet. The species is known to occur only from the Santiago Peak area of the Santa Ana Mountains. The species blooms from May to June. Suitable habitat for the species does not occur on-site, the site is outside of the geographic range and well below the elevational range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Fish's milkwort *(Polygala cornuta* var. *fishiae)***
Federal Status: **None**
State Status: **S3.3**

The species occurs in chaparral and woodland below elevations of about 3,600 feet. This species can be found in Santa Barbara County, south to Northern Baja California, and inland to western Riverside County (Corona area). The blooming season for this species is from May to August. No suitable habitat for this species occurs on-site and the site is on the margin of the range of this species. The species was not observed during the general biological survey, and the probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Engelmann oak (*Quercus engelmannii*)**
Federal Status: **None**
State Status: **S3.2**

This tree is evergreen, with a narrowly furrowed trunk. The bark is grayish, and leaves are bluish green. Habitat for this species is woodlands, mostly in the foothills of Orange, western Riverside and San Diego Counties as well as the southeastern San Gabriel Mountain foothills of Los Angeles County. No suitable habitat for this species occurs on-site, and the species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Coulter's matilija poppy (*Romneya coulteri*)**
Federal Status: **None**
State Status: **S3.2**

This tall herbaceous perennial has gray-green-glaucous leaves and very large crinkled white flowers. This species occurs in shrublands and is often associated with natural disturbances (i.e., fire, flooding and scouring), and typically blooms from May to July. The species is distributed through southwestern California, and is found below 4000 feet in elevation. No suitable habitat for this species occurs on-site. This species was not observed during the biological survey and the probability it occurs on site is **low**.

Species: **San Miguel savory *(Satureja chandleri)***
Federal Status: **None**
State Status: **S3.2?**

The species occurs in shrublands, woodlands, grasslands, and often in rocky places, generally at elevations of about 1,100 to 2,300 feet. The species is found in the mountains of San Diego County, southwestern Riverside County, and sometimes in the inland valley margins. The blooming season for this species is from March to May. No suitable habitat for this species occurs on-site, the project site is outside of the geographic range and below the elevational range of this species. The species was not observed during the general biological survey, and the probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Rayless ragwort (*Senecio aphanactis*)**
Federal Status: **None**
State Status: **S1.2**

This slender annual has generally yellow to orange flowers. It occurs in alkaline flats below approximately 1300 feet in elevation. Its distribution includes those parts of western California south from Solano County, and Baja California. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Salt spring checkerbloom (*Sidalcea neomexicana*)**
Federal Status: **None**
State Status: **S2S3**

This uncommon perennial is a member of the mallow family (*Malvaceae*), and is found blooming from March through June. This species is found in alkali playas, brackish marshes, chaparral, coastal sage scrub, lower montane forests, and Mojavean desert scrub habitat. Suitable habitat

for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)**
Federal Status: **None**
State Status: **S1.1**

Wright's trichocoronis has few branches and white flowers. Habitat for this species is alkaline meadows, marshes and vernal pools. It is distributed in the San Joaquin (now extinct) and San Jacinto Valleys of southern California. This species blooms from May to September. Suitable habitat for this species does not occur on-site. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

4.1.3) Sensitive Reptile and Amphibian Species

Species: **Western spadefoot (*Scaphiopus hammondii*)**
Federal Status: **None**
State Status: **S3?**

The western spadefoot is a greenish, grayish, or brownish toad with a teardrop shaped spade on each hind foot (Jennings and Hayes 1994). The western spadefoot breeds in quiet streams, ephemeral ponds, and vernal pools. During the dry season, the western spadefoot lives beneath the surface in burrows dug out with their spades. The range of this species is from western California and the Central Valley through Baja California. No suitable habitat for this species occurs onsite. This species was not observed during the general biological survey, and the probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Arroyo southwestern toad *(Bufo microscaphus californicus)***
Federal Status: **Endangered**
State Status: **S2S3**

The arroyo southwestern toad is found in alluvial washes, desert margins, and scattered locations in southern California. The active season for this species is from late winter to spring. Suitable habitat for this species does not occur on-site and the species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **California red-legged frog *(Rana aurora draytonii)***
Federal Status: **Threatened**
State Status: **S2S3**

The California red-legged frog is found in pools in low-gradient foothill and valley streams, especially intermittent streams, at elevations up to about 4,000 feet. The only existing southern California populations of this species are found in Ventura County and the Santa Rosa Plateau in Riverside County. The active season for this species is in the spring. Suitable habitat for this species does not occur on-site, and the project site is outside of the range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Southwestern pond turtle (*Clemmys marmorata pallida*)**
Federal Status: **None**
State Status: **S2**

The southwestern pond turtle has a low carapace. The species' color is olive, dark brown, or blackish, occasionally without pattern but usually with a network of spots, lines, or dashes of brown or black (Stebbins 1985). This turtle is aquatic and inhabits permanent, or nearly permanent ponds, marshes, rivers, streams, and irrigation ditches with rocky or muddy bottoms and substantial aquatic vegetation (Stebbins 1985). The turtle inhabits such water sources in many different habitat types, typically below 6000 feet. Suitable habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **San Diego banded gecko (*Coleonyx variegatus abbotti*)**
Federal Status: **None**
State Status: **S2S3**

The San Diego banded gecko is distinguished from all other lizards, except its close relatives by the soft pliable skin, vertical pupils and movable eyelids. This gecko has brown bands on body and tail over an ink to pale yellow background. It can be found around rock outcrops in shrubland areas. This species occurs in southwestern California through much of northern Baja California. It is found at elevations up to 5000 feet. No suitable habitat for this species occurs on-site, and it was not observed during the general biological survey. The probability that this species occurs on-site is **low-none**.

Species: **San Diego horned lizard (*Phrynosoma coronatum blainvillei*)**
Federal Status: **None**
State Status: **S2S3**

The San Diego horned lizard is a spiny, flattened lizard characteristically found in coastal sage scrub, low elevation chaparral, annual grassland, oak and riparian woodlands, and coniferous forests (Jennings and Hayes 1994). Lowlands near sandy washes and scattered shrubs are especially preferred. The San Diego horned lizard is active from spring to summer. The range of this species extends south from Los Angeles County to northwestern Baja California. No suitable habitat for this species occurs on-site, and it was not observed during the field surveys. The probability that this species occurs on-site is **low-none**.

Species: **Coastal western whiptail (*Cnemidophorus tigris multiscutatus*)**
Federal Status: **None**
State Status: **S2S3**

The coastal western whiptail is a slender, long-tailed, spotted lizard found in sparsely vegetated arid and semi-arid habitats, and in woodlands, streamside growth, and drier forests (Stebbins 1985). The range of this species is from southwestern California through Baja California. No suitable habitat for this species occurs on-site and it was not observed during the general biological survey. The probability that this species occurs on-site is **low**.

Species: **Orange-throated whiptail (*Cnemidophorus hyperythrus)***
Federal Status: **None**
State Status: **S2**

The orange-throated whiptail is a slim-bodied, long-tailed lizard, with stripes and an orange throat. Head coloration ranges from yellow-brown to olive-gray. It is a diurnal animal. This species lays eggs from June to July (Stebbins, 1985). The orange-throated whiptail is found in low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. This species occurs in southern California from coastal Orange, extreme southeast Los Angeles, and western Riverside Counties through Baja California. No suitable habitat for this species occurs on-site and the project site is on the margin of this species range. The species was not observed during the general biological survey. The probability that this species occurs on-site is **low**.

Species: **California silvery legless lizard (*Anniella pulchra pulchra*)**
Federal Status: **None**
State Status: **S3**

The California silvery legless lizard is a snakelike limbless burrowing lizard that occurs from central California to northern Baja California. The lizard is about the size of a pencil and

exhibits a number of fossorial (burrowing) adaptations including a shovel-shaped snout, inset lower jaw, and a lack of external ear openings (Stebbins 1985). Habitat for this lizard includes sparsely vegetated washes, beaches, chaparral, and certain woodlands. According to Stebbins (1985) presence of bush lupine is often an indicator of suitable habitat for this species. Legless lizards require loose soil (such as sand, loam, or leaf litter) for burrowing and are mostly commonly found in washes, beach sand dunes, and loose alluvium near streams. No suitable habitat for this species occurs on-site and it was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Coastal rosy boa (*Lichanura trivergata roseofusca*)**
Federal Status: **None**
State Status: **S3S4**

The coastal rosy boa is a heavy-bodied snake that inhabits rocky chaparral-covered hillsides. This species is attracted to permanent and intermittent streams. Although it may be active at dusk, this boa is mainly a nocturnal species. The range of the rosy boa is from Los Angeles County through northwestern Baja California. No suitable habitat for this species occurs on-site, and the species was not observed during the field surveys. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **San Bernardino /San Diego ringneck snake (*Diadophis punctatus* ssp *modestus and similis*)**
Federal Status: **None**
State Status: **S2 / S2?**

This species is typically a slender olive, brownish, blue-gray, or nearly black snake with a dark head and a conspicuous yellow, orange, or cream neckband. It occurs in relatively rocky areas within valley and foothill, mixed chaparral and grassland habitats. This species ranges from western San Diego County through Riverside, southwestern San Bernardino, Ventura and Los Angeles Counties to Baja, California. No suitable habitat for this species occurs on-site, and the species was not observed during the biological survey. The probability that this species occurs on-site is **low-none**.

Species: **Coast patch-nosed snake (*Salvadora hexalepis virgultea*)**
Federal Status: **None**
State Status: **S2S3**

The coast patch-nosed snake is a slender snake with a broad yellow or beige, dark-bordered mid-dorsal stripe, a brown head (top) and a large patchlike rostral (Stebbins 1985). This snake is an active diurnal resident of shrublands exhibiting open sandy areas. The coast patch-nosed

snake can be found from Santa Barbara County through southwestern California to Baja California. Poorly suitable habitat for this species occurs on-site, and the species was not observed during the biological survey. The probability that this species occurs on-site is **low**.

Species: **Two-striped garter snake *(Thamnophis hammondii)***
Federal Status: **None**
State Status: **S2**

The two-striped garter snake occurs in or near perennial fresh water and adjacent riparian habitat, usually around pools in streams. The range of this species extends throughout southwestern California and northwestern Baja California. The active season for this species is from spring to summer. No suitable habitat for this species occurs on-site, and the species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **San Diego Mountain kingsnake *(Lampropeltis zonata pulchra)***
Federal Status: **None**
State Status: **S1S2**

The San Diego mountain kingsnake is found in forests and shrublands. The range of the species extends from the Santa Monica Mountains through the Santa Ana Mountains and the mountains of San Diego County. The active season for this species is from spring to summer. No suitable habitat for the species occurs on-site, and the project site is likely outside of the range of this species. The species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Red diamond rattlesnake (*Crotalus ruber ruber*)**
Federal Status: **None**
State Status: **S2?**

The red diamond rattlesnake is a brick red to pinkish relative of the western diamondback (*C. atrox*) rattlesnake. The species ranges from southwestern California to Baja California (Stebbins 1985). It occurs in desert scrub, thorn scrub, coastal sage scrub and chaparral habitats below roughly 4000 feet in elevation. No suitable habitat for this species occurs on-site, and the species was not observed during the biological survey. The probability that this species occurs on-site is **low-none**.

4.1.4) Sensitive Bird Species

Species: **White-tailed kite *(Elanus leucerus)***
Federal Status: **None**
State Status: **S3**

The white-tailed kite breeds in woodlands and riparian forests from spring to summer. The species forages over open terrain. It occurs along the Pacific Coast in California, North Baja, and Oregon. Poorly suitable nesting habitat for this species occurs on-site, however suitable foraging habitat does, and this species was **observed** during the general biological survey on two separate visits, within the southern portions of Area 2 on the Forecast site.

Species: **Northern harrier (*Circus cyaneus*)**
Federal Status: **None**
State Status: **S3** (nesting)

This long-tailed, owl-faced hawk, inhabits coastal and river marshes, wet meadows, agricultural lands, and shrubby areas where prey items are plentiful. The species typically flies low over the terrain. Northern harriers are migratory throughout North America and are more plentiful in southern California during the winter. Wintering harriers are most often observed around marshes, grasslands, and agricultural fields, but can also be seen foraging over slopes with scrub habitats, including chaparral. Suitable nesting habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area. The probability of this species foraging on-site is **moderate**.

Species: **Golden eagle (*Aquila chrysaetos*)**
Federal Status: **None**
State Status: **S3**

This large, brown eagle can be found over much of western North America, and ranges from sea level to 13,500 feet. The extent of an area need by a typical breeding pair in southern California averages approximately 25 square miles (Terres 1980). Foraging habitat for the golden eagle typically consists of shrublands and grasslands. This eagle typically nests on cliff ledges, but will also use trees, especially in mountainous or open, hilly areas. Suitable nesting habitat for this species does not occur on-site, and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **low**. Foraging is expected, but foraging activities will probably be infrequent and the probability of occurrence is rare, therefore it is considered **low-moderate**.

Species: **Bald eagle (*Haliaeetus leucocephalus*)**
Federal Status: **Threatened**
State Status: **Endangered**

Adult bald eagles have white heads and tails, and large yellow beaks. Year-old bald eagles are mostly dark, with blotchy white on the underwing and tail (National Geographic Society :NGS, 1987). These birds roost and breed in large, open-branched trees usually near major rivers or lakes. Bald eagle habitat is widespread, but scattered over most of North America, especially coastal regions. Suitable habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area, except as an incidental winter flyover.

Species: **Ferruginous hawk (*Buteo regalis*)**
Federal Status: **None**
State Status: **S3S4** (wintering)

This large, reddish brown hawk is an uncommon, but regular, migrant and winter visitor to Southern California. Ferruginous hawks hunt for small mammals in agricultural fields, grasslands and desert scrub from October through March and then migrate to the northern plains to breed. Suitable nesting habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **low**. The probability of this species foraging on-site is **high**.

Species: **Sharp-shinned hawk (*Accipiter striatus*)**
Federal Status: **None**
State Status: **S3** (nesting)

This long-winged, short-tailed hawk is fairly common to southwestern Riverside County during the winter and during migration periods. They prefer to nest and hunt in forests and woodlands. During the winter, sharp-shinned hawks will also utilize scrub habitat for foraging. Suitable nesting habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **low**. The probability of this species foraging on-site is **low**.

Species: **Cooper's hawk *(Accipiter cooperii)***
Federal Status: **None**
State Status: **S3** (nesting)

This short-winged, long-tailed hawk is an uncommon resident of woodlands throughout southern California. Habitats occupied by this hawk include woodlots, wilderness forests, and open areas of chaparral and sage scrub. Nesting Cooper's hawks use mountain canyons and lowland riparian woodlands of broad-leaved trees, such as cottonwood, sycamore, oak and willow. In

fall and winter, the resident population is augmented by northern birds, some of which winter in southern California, others migrate further to Mexico and Central America. Suitable nesting habitat for this species does not occur on-site, and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **low**. The probability of this species foraging on-site is **low-moderate**.

Species: **Merlin (*Falco columbarius*)**
Federal Status: **None**
State Status: **S3**

This small, darkly streaked falcon is an uncommon migrant and winter visitor to southern California. It is an unusual wintering species in southern California deserts and valleys. This species breeds in northern North America and Eurasia. Suitable nesting habitat for this species does not occur on-site, and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area. The probability of this species foraging on-site is **low**.

Species: **Prairie falcon (*Falco mexicanus*)**
Federal Status: **None**
State Status: **S3** (nesting)

This moderately sized light brown falcon occurs over much of the western United States and inhabits arid, open land. Its nests are usually on high cliff faces, on ledges, or in caves. The prairie falcon is a year-round resident over much of its range, although some birds move into open lands away from nesting areas during the fall and winter months. Suitable nesting habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area. The probability of this species foraging on-site is **low**.

Species: **Western snowy plover (*Charadrius alexandrius nivosus*)**
Federal Status: **None**
State Status: **S2** (nesting)

This pale bird has a thin dark bill, with a partial breast band and a dark ear patch. It inhabits gravel or sand beaches, alkali sinks, playas (e.g., Salton Sea), and basins in the intermountain region in west Texas, and locally near Lake Elsinore. No suitable habitat for this species occurs on site and the species was not observed during the field surveys. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **California yellow-billed cuckoo *(Coccyzus americanus occidentalis)***
Federal Status: **None**
State Status: **Endangered**

The California yellow-billed cuckoo is grayish-brown above, and white below, with a bold black and white undertail pattern. It nests in dense riparian forests within California. No suitable habitat for this species occurs on site and the species was not observed during the field surveys. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Burrowing owl (*Athene cunicularia*)**
Federal Status: **None**
State Status: **S2** (burrow sites)

This small, brown, diurnal (active during the daytime) ground owl (Terres 1980) is found in open, dry grassland, desert or shrubland areas. Burrowing owls usually nest in burrows abandoned by rodents. The range of this species is increasingly uncommon in southern California. The range of this species is throughout the western United States and Mexico. The burrowing owl was **observed** during the field surveys.

Species: **Long-eared owl (*Asio otus*)**
Federal Status: **None**
State Status: **S3**

This slender owl has long, close-set ear tufts. It is boldly streaked and barred on the breast and belly, with a rusty facial disk (NGS, 1996). This owl breeds and roosts in riparian forests or other dense forests. It forages at night over open fields or marshes. By day, they roost in trees close to the trunk. This species is becoming increasingly rare during breeding season in southern California. It occurs throughout North America and Eurasia. Suitable breeding habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area. The probability of this species foraging on-site is **low**.

Species: **Southwestern willow flycatcher *(Empidonax traillii extimus)***
Federal Status: **Endangered**
State Status: **Endangered – S1** (nesting)

The plumage of this bird is brownish-olive on top with a pale olive breast. This bird breeds in willow riparian forests and its range extends through most of the southwestern United States and northern Baja California. Suitable habitat for this species does not occur on-site. The species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **San Diego (coastal) cactus wren *(Campytorhynchus bruneicapillus couesi)***
Federal Status: **None**
State Status: **S2?**

This moderate sized bird is distinguished by its dark crown, streaked back, heavily barred wings and tail and broad white eyebrow [NGS, 1997]. The coastal cactus wren is an obligate year-round resident of arid hillsides and valleys and desert communities through southern California into northwestern Baja California. This species builds its nests in cholla cactus species, opuntia cactus species, Prickly pear and/or thorny bushes. The spines of these species are used for protection. The species was not observed during the field surveys, nor was its typical habitat seen as occurring on-site. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Loggerhead shrike (*Lanius ludovicianus*)**
Federal Status: **None**
State Status: **S4**

This black-masked, gray and white songbird occurs throughout much of North America in open woodland or shrubland areas where small trees, shrubs, and fences can provide suitable perches. Agricultural fields containing small trees or large shrubs are also used for nesting, perching and foraging. This species is widespread in North America. Suitable habitat for this species occurs on-site, but this species was not observed during the biological survey. The probability that nests of this species occur on-site is **low**. The probability of this species foraging on-site is **high**.

Species: **Coastal California gnatcatcher (*Polioptila californica californica*)**
Federal Status: **Threatened**
State Status: **S2**

A small, gray songbird, the coastal California gnatcatcher (CAGN) is an obligate year-round resident of sage scrub communities from southern Ventura County southward to Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, into Baja California. This species is strongly associated with coastal sage scrub communities in its various success ional stages. The species will also utilize chaparral, grassland, and riparian plant communities where they occur adjacent to, or intermixed with coastal sage scrub. The breeding season of the CAGN extends from about 15 February to 31 August. No suitable habitat for this species occurs on-site, and this species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Least Bell's vireo *(Vireo bellii pusillus)***
Federal Status: **Endangered**
State Status: **Endangered – S2**

This bird is grayish above, and whitish below, with faint white wing bars. It has short wings and its song is a series of fast scolding notes. This bird is found in riparian forests and willow scrub. The range of the species is from northern Mexico, Baja California and southern California. Suitable habitat for this species does not occur on-site. The species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Yellow warbler *(Dendroica petechia)***
Federal Status: **None**
State Status: **S2**

The yellow warbler breeds in willow and cottonwood riparian habitat. The species occurs in much of North America, but is becoming increasingly rare in Southern California. The species' active season is between spring and summer. Suitable habitat for this species does not occur on-site, and the species was not observed during the general biological survey. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Yellow-breasted chat *(Icteria virens)***
Federal Status: **None**
State Status: **S3**

The yellow-breasted chat breeds in dense riparian habitat. The species occurs in much of the United States, and winters from South to Central America. It is becoming increasingly rare in Southern California. The active season for this species is from spring to summer. Suitable habitat for this species does not occur on-site, and the species was not observed during the general biological survey. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Tricolored blackbird (*Agelaius tricolor*)** nesting colony
Federal Status: **None**
State Status: **S2**

The male of the species is glossy black and has dark red shoulder patches broadly tipped with white. The females usually lack any red on the shoulder and their plumage is a sooty-brown. This species inhabits coastal and river marshes, wet meadows, agricultural lands, and shrubby areas where prey items are plentiful. The tricolored blackbird breeds colonially in freshwater marshes, and is nomadic among marshes and fields in winter. This species is almost completely

endemic to California. Suitable habitat for this species does not occur on-site and this species was not observed during the general biological survey. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)**
Federal Status: **None**
State Status: **S2S3**

This reddish-orange-capped sparrow is a common resident of sparse, mixed chaparral and scrub habitats. The species favors rocky, brushy slopes. The rufous-crowned sparrow is monogamous and nests on or near the ground or in scrubby bushes. This species is active year-round. The range of this species is from southern California to northwestern Baja California (NGS 1987). No suitable habitat for this species occurs on-site, and the species was not observed during the field surveys. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Bell's sage sparrow (*Amphispiza belli belli*)**
Federal Status: **None**
State Status: **S2?**

This gray, white, and black sparrow is found in coastal sage scrub and chaparral vegetative communities throughout the coastal slope of California. This bird builds a cup-shaped nest in shrubs or in a depression on the ground. The range of this species includes southern and central California to northwestern Baja California. Suitable habitat for this species occurs on-site, but this species was not observed during the general biological survey. The probability that this species occurs on-site is **none**, thus the species is considered **absent** from the project area.

4.1.5) Sensitive Mammal Species

Species: **San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)**
Federal Status: **None**
State Status: **S3?**

This rabbit has distinctive long legs, very long ears, and a black (or partially black) tail. They tend to be active in the daytime and feed on many herbs and grasses, including cultivated crops. Breeding in this species can occur any time of the year. Distribution of the San Diego black-tailed jackrabbit is from western California through northwestern Baja California. Poor habitat for this species occurs on-site, and the species was not observed during the general biological survey. The probability of this species occurring on-site is **low-moderate**.

Species: **Northwestern San Diego pocket mouse (*Chaetodipus falax falax)***
Federal Status: **None**
State Status: **S2S3**

The northwestern San Diego pocket mouse is medium-sized and brownish, with a stripe on its back. It has external, fur-lined pouches that it uses to carry food from forage sites to its nesting area. This mouse has white spiny hairs on its sides and back, and black spiny hairs on its rump. This species, like other mice adapted to a dry environment, is primarily nocturnal. The northwestern San Diego pocket mouse is found in the open shrublands and sandy areas of southwestern California and northwestern Baja California. Poorly suitable habitat for this species occurs on-site. The species was not observed during the field surveys. The probability that this species occurs on-site is **low-moderate**.

Species: **Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)**
Federal Status: **None**
State Status: **S1?**

The Los Angeles pocket mouse has external fur-lined cheek pouches and a long, kangaroo-rat style tail. It is nocturnal, spending daylight hours in burrows, and is not often detected, except by trapping surveys. This little-studied mouse occupies the inland valleys of southern California. Its range includes Los Angeles, southwestern San Bernardino and western Riverside Counties. The species inhabits annual grasslands, coastal sage scrub, and alluvial sage scrub habitats at lower elevations. It is adapted to arid and semi-arid regions, gaining all of its water requirements from dietary seeds and insects. No suitable habitat for this species occurs on-site. The species was not observed during the field surveys. The probability that this species occurs on-site is **low**.

Species: **San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*)**
Federal Status: **Endangered**
State Status: **S1**

Species: **Stephens' kangaroo rat (*Dipodomys stephensi*)**
Federal Status: **Endangered**
State Status: **Threatened – S2**

The Stephens' kangaroo rat (SKR) and San Bernardino kangaroo rat (SBKR) are small, nocturnal mammals that are burrowing, grain-eating kangaroo rats found in arid and semi-arid regions of North America. Their breeding season typically lasts from January to September. The SKR geographical range covers western Riverside, southern San Bernardino, and northern San Diego Counties. The SBKR's geographical range covers fluvial systems from the San Bernardino Valley in San Bernardino County to the Menifee Valley in Riverside County (USFWS, 1998). Extremely poor habitat for this species occurs on-site and the site is likely

outside of the range of these species. The species' were not observed during the field surveys. The probability that they occur on-site is **low-none**.

Species: **Southern grasshopper mouse (*Onychomys torridus ramona*)**
Federal Status: **None**
State Status: **S3S4**

The southern grasshopper mouse is a heavy-bodied mouse with a buff to cinnamon dorsum, white belly and thick tail (Jameson and Peeters, 1988). This species occurs in arid cismontane lowlands and seem to favor compact soils with a sparse growth of perennial grasses. The species is distributed from Los Angeles through San Diego Counties, and northwestern Baja California. No suitable habitat for this species occurs on-site, and this species was not observed during the field surveys. The probability this species occurs on-site is **low**.

Species: **San Diego desert wood rat (*Neotoma lepida intermedia*)**
Federal Status: **None**
State Status: **S3S4**

The San Diego desert wood rat is a relatively small, pale gray wood rat, with a distinctly bi-colored tail and large naked ears (Jameson and Peeters, 1988). This species occurs in and around rocky outcrops in a variety of habitats, although it is typically found in arid shrublands. It ranges from San Luis Obispo to San Diego Counties, and northwestern Baja California. No suitable habitat for this species occurs on-site, and this species was not observed during the general biological survey. The probability that this species occurs on-site is **low**.

Species: **Pallid bat (*Antrozous pallidus*)**
Federal Status: **None**
State Status: **S3**

This medium sized bat has buff or sand colored fur. The species is found in rock outcrops of open shrublands, mostly below 6,000 feet in elevation. This species occurs in California, excepting the high mountains, southwestern North America and throughout the interior of Oregon, and Washington. Hibernation occurs in winter. The activity period is during the warm seasons. No suitable habitat for this species occurs on-site, and the species was not observed during the general biological survey. The probability that this species roosts on-site is **none**, and the probability of this species foraging on-site is **moderate**.

Species: **California mastiff bat (*Eumopos perotis californicus*)**
Federal Status: **None**
State Status: **S3**

This large bat with truncate ears has short, dull gray or dark brown fur. With rare exceptions, the California mastiff bat is located in lowland areas, central and southern California, southern Arizona, New Mexico, southwest Texas, and northern Mexico. Roosting occurs in deep rock crevices, with foraging over wide areas. The activity period is year-round. No suitable habitat for this species occurs on-site, and the species was not observed during the general biological survey. The probability of this species roosting on-site is **low-none**, and the probability that this species forages on site is **moderate.**

Species: **Townsend's big-eared bat (*Plecotus townsendii pallescens*) (*Corynorhinus t. pallescens*)**
Federal Status: **None**
State Status: **S2S3**

This medium sized bat is light brown in color with very long ears. It is located in many habitats throughout California and western North America. Scattered populations can also be found in the eastern North America. The species' day roosts occur in caves, tunnels, and mines. They feed primarily on moths, and their activity period is year-round. No suitable roosting habitat occurs on the project site, and the species was not observed during the field surveys. The probability that this species roosts on-site is **low-none**, and the probability that the species forages on site is **moderate**.

4.1.6) Sensitive Invertebrate Species

Species: **Vernal pool branchinecta (*Branchinecta lynchi*)**
Federal Status: **Threatened**
State Status: **S2S3**

This species is found in grassland vernal pools in the Central Valley, central and southern Coast Ranges and western Riverside County of southern California. The activity period is December through early May. Suitable habitat for this species does not occur on the site, and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **California linderiella (*Linderiella occidentalis*)**
Federal Status: **None**
State Status: **S2S3**

This species is found in vernal pools in the eastern Central Valley to western Riverside County. The activity period is in the spring. Suitable habitat for this species does not occur on the site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

Species: **Riverside fairy shrimp (*Streptocephalus woottoni*)**
Federal Status: **Endangered**
State Status: **S1**

This species is found in vernal pools near the City of Murrieta (Riverside County), Miramar and Otay Mesa (San Diego County), one (1) site in Orange County, and two (2) sites in Baja California. The activity period is in the spring. Suitable habitat for this species does not occur on-site and the species was not observed during the field surveys. The probability that nests of this species occur on-site is **none**, thus the species is considered **absent** from the project area.

4.1.7) Sensitive Fish Species

Species: **Arroyo chub *(Gila orcutti)***
Federal Status: **None**
State Status: **S2**

The arroyo chub occurs along pacific coastal streams including the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, Santa Margarita rivers, and Malibu, San Juan and Topanga creeks. The species prefers slow-moving or backwater sections of warm to cool streams with mud or sand substrates. The species feeds heavily on aquatic vegetation and associated invertebrates. Suitable habitat for this species does not occur on-site and the species was not observed during the field surveys. This species was determined to be **absent** from the project site.

Species: **Santa Ana speckled dace (*Rhinichthys osculus* "subspecies 3")**
Federal Status: **None**
State Status: **S1**

The Santa Ana speckled dace generally lives in permanent streams and rivers with cool, flowing rocky-bottomed washes. Shallow cobble, runs and gravel riffles are preferred. The species also thrives in warm permanent streams, large lakes, small mountain lakes, outflows of desert springs and warm intermittent streams. The range of this species in southern California includes the San Gabriel, Los Angeles and Santa Ana river drainages, but was rare in the

lowlands. The species is now restricted to the headwaters of the San Gabriel and Santa Ana river systems, occupying only remnants of its former range in this area. Suitable habitat for this species does not occur on-site and the species was not observed during the field surveys. This species was determined to be **absent** from the project site.

Species: **Santa Ana sucker (*Catostomus santaanae)***
Federal Status: **Threatened**
State Status: **S1**

The Santa Ana sucker generally lives in small, shallow streams less than seven meters in width with currents ranging from swift in the canyons to sluggish in bottomlands. This species appear to be more abundant where the water is cool, clean and clear, although this species can tolerate seasonally turbid water. The range of this species includes the San Gabriel, Los Angeles and Santa Ana river drainages, but is now restricted to the headwaters of the San Gabriel river system, Big Tujunga Creek and portions of the Santa Ana river. Suitable habitat for this species does not occur on-site and the species was not observed during the field surveys. This species was determined to be **absent** from the project site.

4.2) Field Survey Results

This section summarizes the results of the field survey and the effects of the proposed project to sensitive biological resources identified in this report. The effects and recommendations identified are based on the literature review and L&L's biological knowledge of the species and habitats in the site vicinity. The information in this section should serve as a planning tool for making decisions about the future development of the project site.

Results of the general biological survey showed that due to long-term, previous and ongoing disturbances, native vegetation communities are not present on the Forecast site. All seventy (70) acres of the project site is considered ruderal and disturbed.

Two sensitive species, the white-tailed kite and burrowing owl, were observed on the project site. Neither of these species is designated as threatened or endangered by the state or federal agencies. No additional sensitive species were identified as having a high or moderate potential of occurring on-site.

4.2.1) Plants

Twenty-seven (27) plant species were identified on the project site. No plants associated with unique soils or springs were observed. Topography and land uses on the alluvial soils preclude formation of vernal pools, and no suitable habitat for vernal pool plants, or animals is present. No upland or bottomland clay soils (e.g., Bosanko or Willows soils), which might harbor species specialized to such soils, are found on the site. No exposed clays were noted during the field survey.

Based on field surveys and habitat evaluations, we conclude that no state or federally listed threatened or endangered plant species have a moderate or high potential of occurring on the project site. Impacts to these plants, if they were to occur, would not meet criteria for mandatory findings of significance under the CEQA guidelines, and are routinely considered less than significant by lead agencies throughout the region.

4.2.3) Wildlife

4.2.3.1) Amphibians and Reptiles

One (1) reptile species, the side-blotched lizard (*Uta stansburiana*), and no amphibian species were observed during the surveys (Appendix A). Two (2) of the special status amphibians known from the region are listed as *Threatened*, *Endangered*, or is a candidate for listing, however the habitat on site is not suitable to support these species. None of the other sensitive reptiles and amphibians were determined to have a high or moderate potential of occurring on the project site.

4.2.3.2) Birds

Twenty-two (22) species of birds were observed during the general biological survey (Appendix A). Two special status bird species were observed during the general biological survey, the white-tailed kite (*Elanus leucerus*) and burrowing owl (*Athene cunicularia hypugea).* The white-tailed kite has no available nesting habitat on the project site and was observed foraging on site.

The burrowing owl was observed on the project site on multiple occasions. All burrowing owl sightings were of a single bird with the exception of the October 2, 2001 sighting, which included two owls. All sightings occurred in Area 2 within or immediately adjacent to the retention basin at the extreme southern portion of the site near Bellegrave Avenue. All observations identified

the burrowing owls in association with the western portion of the retention basin, either next to an eroded area on the northwestern wall of the basin, within the basin itself or on a cement drainage structure at the southwest portion of this basin. Cast pellets, molted feathers, prey remains and other signs usually associated with burrowing owl residents at the drainage entrance and cement structure at the southwest portion of the retention.

Five of the special status bird species known from the region are listed as *Threatened*, *Endangered*, or is a candidate for listing. None of these species are have a high or moderate potential of occurring on the project site. Impacts to the nests of migratory birds, including the burrowing owl, are regulated and nesting habitat does occur on the project site.

Several special status raptors, northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), Ferruginous hawk (*Buteo regalis*), Cooper's hawk (*Accipiter cooperii*) and loggerhead shrike (*Lanius ludovicianus*), are expected to forage over the project site, either during winter or during the breeding seasons, but do not have nesting habitat on the project site. Adjacent to the project, extensive open agricultural land, which provides similar foraging habitat still exists, and reduction in available foraging habitat has generally not been identified as a significant impact relative to CEQA.

4.2.3.3) Mammals

Two (2) mammals were observed during the survey (Appendix A), the cottontail rabbit (*Sylvilagus audubonii*) and a domestic dog (*Canis domesticus*). No special status mammals were noted during the General biological survey. One of the special status mammal species known from the region is listed as *Threatened*, *Endangered*, or is a candidate for listing. No open grassland, habitat for the SKR, occurs and the project site appears to be just outside the historic range of this species. The project site is well outside of the Riverside County Habitat Conservation Plan for this species.

Several special status bat species occur in the region, though they have not been recorded in the project vicinity. Due to poor knowledge of bat distribution, it is difficult to evaluate the probability that any of these may forage in the area. No potential bat roosts were noted in the project area.

4.2.3.4) Invertebrates

Although no invertebrate species were documented during the surveys, an extensive list of seventy-four species was created during the delhi sands flower-loving fly surveys (Appendix A). Three (3) species of sensitive fairy shrimp occur in vernal pools in the general region, but do not occur on this site due to the absence of suitable habitat. Habitat onsite for the delhi sands flower-loving fly is also absent, with the exception of the one area of unconsolidated soils in the southern portion of Area 2, which would provide only very poor habitat for this species. A focused survey was conducted during the 2001 season, and a separate report prepared outlining the negative results.

4.2.3.5) Fish

Three (3) species of special status fish were noted during the general biological survey. No habitat occurs on site for any fish species.

5.0) CONCLUSIONS

The purpose of conducting these surveys was to identify and characterize potential biological, determine the presence or absence of special status species, and to evaluate the effects of the proposed project conceptual design on biological. The proposed project consists of the development of a single-family residential community. This information is needed since construction could result in adverse effects upon biological resources. The information in this section should serve as a planning tool for making informed decisions about the future development of the project site.

Two (2) sensitive species, the white-tailed kite and burrowing owl, were observed on site. None of the other sensitive species identified as either occurring or having a high or moderate potential of occurring on the project site, with the exception of five (5) bird and three (3) bat species, which were identified as having a low potential of nesting on the project site, but a high or moderate potential of foraging on site or stop at the site during migration.

Those species that were observed or identified as occurring or having a high or moderate potential of occurring on the project site, but are not currently listed as *Threatened* or *Endangered*, do not require a permit for incidental take. These species are designated as either Federal or State species of special concern, threatened (by the NDDB), or are known to be regionally rare.

Due to multiple factors, including, the status of the delhi sands flower-loving fly and the fact that the site is mapped as having Delhi sands series on site, a one season focused survey for this species was conducted as a precaution and a separate report submitted outlining the negative results. That report should be used to provide the U.S. Fish and Wildlife Service (USFWS) with supplemental data intended to clear the project site from further surveys. It is possible that the USFWS may contest this position and require the full two-year survey.

The burrowing owl observed on the project site, was identified as nesting within the cement structure in the southwest portion of the retention basin. Detailed data was collected on the presence of the observed owl on the project site, however a protocol survey, including a 150 meter zone of influence was not conducted and will be required by the California Department of Fish and Game prior to the development of the site.

Although mitigation requirements will be detailed in the burrowing owl report, the following minimum mitigation, resulting from our knowledge that at least one occupied burrow occurs on-site, should be expected. The following information has been provided for planning and informational purposes.

Mitigation will be required for at least the one known burrow location, which will include the preservation of at least 6.5 acres on the project site or in the immediate area. If off site mitigation is requested the site will have to be approved by the CDFG and the agency may require additional burrows or acreage be included as compensation for movement of burrows off-site.

Mitigation involves the creation of burrows at a minimum ratio of 2:1 for occupied burrows, and these burrows should be located centrally within the 6.5 acre parcel. A biologist will monitor these burrows daily, for one week, to identify if the burrows are being utilized. Following creation of the burrows, one-way doors must be placed in the burrows on the proposed project site, including those that are unoccupied. After one week the burrows can be collapsed according to protocol to prevent future occupation. A mitigation report and monitoring program must be submitted to the CDFG and approved, and finally the land must be retained in a long-term conservation easement.

The client should be aware that the "Burrowing Owl Survey Protocol" states the following:

> "Occupied burrows should not be disturbed during the nesting season, from February 1 through August 31, unless the Department of Fish and Game verifies that the birds have not begun egg-laying and incubation or that the juveniles from those burrows are foraging independently and capable of independent survival at an earlier date."

Therefore, mitigation for impacts to the burrowing owl nests within project area and zone of influence, which will have to be conducted prior to any ground disturbance, should be planned outside of this period.

In addition to the burrowing owl survey and mitigation, a final site review must be conducted within 30 days of grading to verify that no additional burrowing owls have inhabited the site, or that the identified bird did not relocate on the project site. During the present survey no other raptor nests or nesting behavior was observed. However, the on-site eucalyptus could potentially be used for nesting by raptors. If construction will occur between February 1 and August 31, the biologist should confirm that no nesting raptors have since inhabited the project

site at the same time the final burrowing owl survey is conducted. If active nests are located on site, appropriate measures should be initiated to avoid any impacts until fledging has occurred. The client should be prepared for the fact that additional mitigation will be required if additional birds and or nests are located during the focused study or the 30 day preconstruction survey.

Several bird species were identified as having a moderate or high probability of foraging on site. Open foraging habitat is present in the project vicinity, and as a result reduction in available foraging habitat has generally not been identified as a significant impact under CEQA.

Those species that were identified as occurring or having a high, moderate or low-moderate potential of occurring on the project site, but are not currently listed as threatened or endangered, do not require a permit for incidental take. These species are designated as either federal or state species of special concern, threatened (by the NDDB), or are known to be regionally rare. Impacts to these plants or wildlife species, if they were to occur, would not meet criteria for mandatory findings of significance under the CEQA guidelines, and are routinely considered less than significant by lead agencies throughout the region.

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Table 1: NDDB Special Status Species List (101)

Special Status Species	Habitat and Distribution	Season	Status Designation	Occurrence Probability
PLANTS (n=47)		**Flowering**		
Abronia villosa var. *aurita* Chaparral sand verbena	Sand, mostly broad alluvial fans and benches, below about 5000 ft. elev., "Inland Empire" and adj. Colorado Des. and interior San Diego Co.	Feb. - July	Fed: none Ca: 3.1 CNPS: List 1B R-E-D:2-3-3	**Absent** (survey results, (poor habitat)
Allium munzii (A. fimbriatum var. munzii) Munz's onion	Upland clay soils, gen. in shrublands and woodlands; endemic to W Riv. Co., about 1000 - 3500ft. in elevation	March - May	Fed: **END** Ca: 1.1 **THR** CNPS: List 1B R-E-D: 3-3-3	**Absent** (no suitable soils, below elev. range)
Ambrosia pumila San Diego ambrosia	Vernal pools, roadside pools, grasslands; SW Riv. Co. (Murietta and Lk Elsinore areas), SD Co., Baja Calif.	June - Sept.	Fed: None Ca: S1.1 CNPS: List 1B R-E-D: 3-3-2	Absent (no suitable habitat, field survey)
Astragalus brauntonii Braunton's milk vetch	Scattered locations in S Ca. foothills, Ventura, LA, Orange Cos.; chaparral, possibly restricted to carbonate soils	Feb - June	Fed: **END** Ca: S2.1 CNPS: List 1B R-E-D:3-3-3	**Absent** (no hab, out of geog. range, field survey)
Astragalus pachypus var. jeageri Jeager's milkvetch	Open sites in arid grasslands and shrublands; NW margin of Sonoran Desert, San Jacinto Mtn. foothills; nearest record near Temecula	Dec. - June	Fed: None Ca: S1.1 CNPS: List 1B R-E-D: 3-3-3	**Absent** (poor hab, out of geog. range, field survey)
Atriplex coronata var. *notatior* San Jacinto Valley saltbush	Alkali sink, saltbush scrub; endemic to Perris and Elsinore Basin areas, Riverside Co.	May - August	Fed: **END** Ca: S 1.1 CNPS: List 1B R-E-D:3-3-3	**Absent** (no hab, out of geog. range, field survey)
Atriplex coulteri Coulter saltbush	Coastal dunes, grasslands, and shrublands, desert shrublands, generally in alkaline or clay soils; southern California and Baja Calif.	March - October	Fed: None Ca: S2.2 CNPS: List 1B R-E-D:2-2-2	**Absent** (no suitable habitat)
Atriplex pacifica Pacific saltbush *Atriplex serenana* var. *davidsonii* Davidson's saltscale	Correct identification is uncertain; coastal bluffs, saltbush scrub; Channel Islands, coastal S Calif., also very uncommon in San Jacinto Val near Lakeview (Riv. Co.).	March - October	Fed: None Ca: S 2.2 CNPS: List 1B R-E-D:3-2-2 Fed: None Ca: S2? CNPS: List 1B R-E-D:3-2-2	**Absent** (no suitable habitat)
Atriplex parishii Parish's smallscale	Alkali sink, saltbush scrub; Central Valley; presumed extinct until recent rediscovery in San Jacinto Valley	June - October	Fed: None Ca: S1.1 CNPS: List 1B R-E-D:3-3-2	**Absent** (no suitable habitat)
Berberis nevinii (*Mahonia nevinii*) Nevin's barberry	Coastal sage scrub, chaparral, oak woodland, usually below 2000 ft.; scattered locns in LA, San Bern, Riverside, and San Diego Cos.	Spring; (can be IDd all year)	Fed: **END** Ca: 2.2, **END** CNPS: List 1B R-E-D:3-3-3	**Absent** (no suit. habitat, field survey)
Brodiaea filifolia Thread-leaved brodiaea	Vernal pools and alkali sink in inland valleys; also upland clay soils near coast; scattered locns in S Ca. foothills and valleys below ±2000 ft.	May - June	Fed: **THR** Ca: S2.1 **END** CNPS: List 1B R-E-D:3-3-3	**Absent** (no suitable habitat)

Special Status Species	**Habitat and Distribution**	**Season**	**Status Designation**	**Occurrence Probability**
Calochortus catalinae Catalina mariposa lily	Coastal CA, Santa Cruz Co. to SD Co. and Channel Islands; shrubland, woodland, grassland, often in heavy soil, below about 2300 ft. elev.	spring	Fed: None Ca: S3.2 CNPS: List 4 R-E-D:1-2-3	**Absent** (no suitable habitat)
Calochortus plummerae Plummer's mariposa lily	Chaparral, forest, below about 5500 ft. elev.; widespread but uncommon throughout S Ca. mtns., foothills, and valleys, incl. N Sta Ana Mts	May - July	Fed: None Ca: S3.2 CNPS: List 1B R-E-D:2-2-3	**Absent** (no suitable habitat)
Calochortus weedii var. *intermedius* Weed's mariposa lily	Chaparral, coastal sage scrub, valley grassland, sandy or clay soils, below about 6200 ft. elev.; coastal S and cent. Ca. Cos.	June - Aug.	Fed: None Ca: S2.2 CNPS: List 1B R-E-D:2-2-3	**Low** (no suitable habitat)
Caulanthus heterophyllus var. *pseudosimulans* Buck's jewelflower	Coastal sage scrub, sometimes chaparral or woodl. to about 4500 ft.; open areas, esp. post-fire; interior S Ca. mountains and foothills	April - June	Fed: None Ca: S2S3 CNPS: None	**Absent** (no suitable habitat)
Chorizanthe leptotheca Ramona spineflower	E Peninsular Ranges, including Gavilan Plateau, about 1000-6000 ft. elev.; SB, Riv, SD Cos.; granitic soils and alluvial fans	May - June	Fed: None Ca: S3.2 CNPS: List 4 R-E-D:1-2-2	**Absent** (no suitable habitat, below elev. range)
Chorizanthe parryi var. *parryi* Parry's spineflower	LA, San Bernardino, and Riverside Cos.; "sandy places, gen in coastal or desert scrub," about 1000-4000 ft. elev.	April - June	Fed: None Ca: S2.1 CNPS: List 3 R-E-D:?-2-3	**Low** (small area of poorly suitable habitat)
Chorizanthe polygonoides var. *longispina* Long-spined spineflower	Shrublands and grasslands below about 4600 ft. elev.; often on clay soils; W Riv. Co., SD Co., and N Baja Ca.	April - July	Fed: None Ca: S2.2 CNPS: List 1B R-E-D:2-2-2	**Absent** (no habitat, field survey, no clay soils)
Chorizanthe xanti var. *leucotheca* White-bracted spineflower	Desert shrubland, pinyon-juniper woodland, about 1000-4000 ft. elev.; E San Bernardino and N San Jacinto Mts. CNPS Electronic Inventory record in Corona area.	April-June	Fed: None Ca: S1S2.2 CNPS: List 1B R-E-D:2-2-3	**Absent** (no suit. hab, margin of geo. range, below elev. range)
Convolvulus simulans Small-flowered morning-glory	Shrublands and grasslands, W cent. and SW Calif., seeps in clay or serpentine soils	March - June	Fed: None Ca: S3.2 CNPS: List 4 R-E-D:1-2-2	**Absent** (no suitable habitat)
Cupressus forbesii Tecate cypress	Chaparral, about 1400-5000 ft. elev.; Orange Co., San Diego Co., and Baja Calif.; one large population at Coal / Gypsum Canyons.	Can be ID'd year-around	Fed: None Ca: S1.1 CNPS: List 1B R-E-D:3-3-2	**Absent** (no suit. hab, below el. range field survey)
Dodecahema leptocerus (= *Chorizanthe leptocerus, Centrostegia leptocerus*) Slender-horned spine-flower	Open, sandy alluvial benches in valleys and canyons; San Fernando Vally, Santa Ana River Valley, W Riverside Co.	April - June	Fed: **END** Ca: 1.1 **END** CNPS: List 1B R-E-D:3-3-3	**Absent** (no suitable habitat)
Dudleya multicaulis Many-stemmed dudleya	Heavy soils, often clay, in grassland or shrubland, SW Calif., below about 2000 ft. elev.	May - June	Fed: None Ca: S2.1 CNPS: List 1B R-E-D:1-2-3	**Absent** (no habitat, field survey)

Special Status Species	**Habitat and Distribution**	**Season**	**Status Designation**	**Occurrence Probability**
Eriastrum densifoloium ssp. *sanctorum* Santa Ana River woollystar	Shrubland, alluvial fans and plains; endemic to Santa Ana River watershed, Orange Co. to San Bern. Co.	May - Sept.	Fed: **END** CA: S1.1 **END** CNPS: List 1B R-E-D:3-3-3	**Absent** (no suitable habitat, margin of range)
Erodium macrophyllum Round-leaved filaree	Clay soils, open places in shrubland or grassland, below about 3500 ft. elev.; Central Valley south to N Mexico and east to Utah	March - May	Fed: None Ca: S2.1 CNPS: List 2 R-E-D:2-3-1	**Absent** (no habitat, field survey, no clay soils)
Harpagonella palmeri var. *palmeri* Palmer's grappling-hook	Dry clay soils in chaparral, coastal sage scrub, valley grassland; southwestern CA through Baja Calif, AZ, and Sonora	March - April	Fed: None Ca: S3.2 CNPS: List 4 R-E-D:1-2-1	**Absent** (no habitat, field survey, no clay soils)
Hemizonia laevis (=*H. pungens* ssp. *laevis, Centromadia pungens* ssp. *laevis*) Smooth tarplant	Seasonally wet low elev. grassland, fallow fields, drainage ditches; primarily SW Riv. Co. but a few sites in interior valleys of LA, SB., SD Cos.	April - Sept	Fed: None Ca: 2.1 CNPS: List 1B R-E-D:2-3-3	**Low** (potential hab, likely out of range)
Hemizonia paniculata (= *Deinandra paniculata*) San Diego tarplant, paniculate tarplant	Open places in coastal sage scrub, roadsides, etc.; San Diego & Riv. Cos (where common ±throughout W Co.); below ±2000 ft.	May - Nov	Fed: None Ca: 3.2 CNPS: List 4 R-E-D:1-2-2	**Low** (field survey, hab poorly suit. at best)
Hordeum intercedens Vernal barley	Vernal pools, saline and alkaline flats, below about 3300 ft. el.; San Joaquin Val, valleys in S CA, Owens Val	March - June	Fed: None Ca: S3S4 CNPS: List 3 R-E-D: ?-2-2	**Absent** (no suitable habitat)
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	Coastal salt marsh, inlnd saline playas, vernal pools; coastal from Santa Barbara to Baja CA, scattered inland sites; Kern Co., deserts, W Riv. Co.	Feb - June	Fed: None Ca: S2.1 CNPS: List 1B R-E-D:2-3-2	**Absent** (no suitable habitat)
Lepechinia cardiophylla Heart-leaved pitcher sage	Chaparral and conifer-oak forests, about 1900 - 4000 ft. elev.; endemic to Santa Ana Mts.	April - July	Fed: None Ca: S2.2 CNPS: List 1B R-E-D:3-2-2	**Absent** (no suitable habitat, below elev. range)
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	Chaparral & coastal sage scrub below about 1700 ft. elev.; Los Angeles Co, inland to Riverside & San Bernardino Cos, S to Baja Calif	January - July	Fed: None Ca: SH (err) CNPS: List 1B R-E-D:3-2-2	**Low** (field survey, no suitable hab)
Lycium parishii Parish's desert thorn	Arid slopes and sand flats, below about 3300 ft. elev.; low desert (Riv. and San Diego Cos., Ariz., Sonora) and interior valleys (Riv Co.).	March - April	Fed: None Ca: S2S3 CNPS: List 2 R-E-D:2-1-1	**Low** (field survey; poor habitat)
Microseris douglasii var. *platycarpha* Small-flowered microseris	Woodland, grassland, usually clay soils in valley bottoms, below about 3300 ft. elev.; LA, Orange, Riv., San Diego Cos.	March - April	Fed: None Ca: S3.2 CNPS: List 4 R-E-D:1-2-2	**Absent** (no suit. hab, likely out of geog. range)
Mucronea californica (*Chorizanthe californica*) California spineflower	Sandy soils, many habitats, below about 4500 ft. elev.; San Luis Obispo to San Diego Cos., inland to San Bernardino and Kern Cos.	April - July	Fed: None Ca: S3.2? CNPS: List 4 R-E-D:1-2-3	**Low** (small area of poor habitat)

Special Status Species	**Habitat and Distribution**	**Season**	**Status Designation**	**Occurrence Probability**
Myosurus minimus var. *apus* Little mousetail	Vernal pools, alkaline marshes; low elev. interior valleys of Riv., San Bern., San Diego Cos., Baja Calif., possibly Butte Co.	March - May	Fed: None Ca: S2.2 CNPS: List 3 R-E-D:2-3-2	**Absent** (no suitable habitat)
Navarretia fossalis Spreading navarretia	Vernal pools, usually in saltbush shrublands; LA Co. (Liebre Mts.), Riverside, San Diego Cos., Baja	Apr. - June	Fed: **THR** Ca: S2.1 CNPS: List 1B R-E-D:2-3-2	**Absent** (no suit. hab, likely out of geog. range)
Orcuttia californica California Orcutt grass	Vernal pools below about 2000 ft. elev.; west. Riv. Co., LA (now extinct) and SD Cos., N Baja Calif.	May - June	Fed: **END** Ca: 2.1**END** CNPS: List 1B R-E-D:2-3-2	**Absent** (no suit. hab, likely out of geog. range)
Phacelia suaveolens ssp. *keckii* Santiago Peak phacelia	Chaparral and Coulter pine woodland, about 4000 - 5300 ft. elev., known only from Santiago Pk area of the Santa Ana Mts	May - June	Fed: None Ca: S1.3 CNPS: List 1B R-E-D:3-1-3	**Absent** (no suit. hab, out of geog. range, below elev. range)
Polygala cornuta var. *fishiae* Fish's milkwort	Chaparral and woodl. below about 3600 ft. elev.; Santa Barbara Co., south to N Baja Calif. and inland to W Riverside Co. (Corona area)	May - August	Fed: None Ca: S3.3 CNPS: List 4 R-E-D:1-1-2	**Absent** (no suit. hab, margin of geog. range)
Quercus engelmannii Engelmann oak	Woodlands, mostly in foothills of Orange, W Riverside, and San Diego Cos, also SE San Gabriel Mtn foothills (LA Co)	Spring (can be ID'd all year)	Fed: None Ca: S3.2 CNPS: List 4 R-E-D:1-2-2	**Absent** (field survey)
Romneya coulteri Coulter's matilija poppy	Shrublands, often associated with natural disturbance (i.e., fire, stream-banks); LA, Orange, San Diego, and Riverside Cos. below about 4000 ft.	May - July	Fed: None Ca: 3.2? CNPS: List 4 R-E-D:1-2-3	**Low** (no suitable habitat)
Satureja chandleri San Miguel savory	Shrublands, woodl., grassl., often in rocky places, about 1100-2300 ft. el; mtns of SD Co. and SW Riv. Co., sometimes inland valley margins	March - May	Fed: None Ca: S3.2? CNPS: List 4 R-E-D:2-2-2	**Low** (no suit. hab, margin of geog. range below elev. range)
Senecio aphanactis Rayless ragwort	Alkaline flats below about 1300 ft. elev.; W Calif. (from Solano Co. south) and Baja Calif.	Jan - April	Fed: None Ca: S1.2 CNPS: List 2 R-E-D:3-2-1	**Absent** (no suitable habitat)
Sidalcea neomexicana Salt spring checkerbloom	Alkaline playas; SW Calif., Baja Calif., SW US, mainl. Mexico	March - June	Fed: None Ca: S2S3 CNPS: List 2 R-E-D:2-2-1	**Absent** (no suitable habitat)
Trichocoronis wrightii var. *wrightii* Wright's trichocoronis	Alkaline meadows, marshes, vernal pools; San Joaquin Valley (now extinct), San Jacinto Valley, disjunct to Texas	May - Sept	Fed: None Ca: S 1.1 CNPS: List 2 R-E-D:3-3-1	**Absent** (no suitable habitat)

General references: Boyd et al. 1995, CDFG 2000, 2001, CNPS 2001, Hickman 1993, Lathrop & Thorne 1978, Munz 1974, Skinner & Pavlik 1994, US FWS 1999.

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
REPTILES AND AMPHIBIANS (N=15)				
Scaphiopus hammondii Western spadefoot toad	Breeds in quiet streams and vernal pools, burrows beneath sand during dry season; western Calif., Central Valley through Baja Calif.	Late winter - spring	Fed: none Ca: S3?	**Absent** (no suitable habitat)
Bufo microscaphus californicus Arroyo southwestern toad	Alluvial washes, often xeric areas; desert margins and scattered locn's in cismontane s Calif.; no records from Santa Ana River watershed	Late winter - spring	Fed: **END** Ca: S2S3	**Absent** (no suitable habitat, no local records)
Rana aurora draytonii California red-legged frog	Pools in low-gradient foothill and valley streams (esp. intermittent) to ±4000 ft.; only extant S CA pops are in Ventura Co. and Santa Rosa Plateau (Riv. Co.)	Spring	Fed: **THR** Ca: S2S3	**Absent** (no suitable hab, out of geogr. range)
Clemmys marmorata pallida Southwestern pond turtle	Perennial ponds, streams, irrigation ditches; coastal S and cent. Ca., NW Baja Calif., below ±4800 ft. elev. (a few higher elev. introduced popns)	Year-around	Fed: None Ca: S2	**Absent** (no suitable habitat)
Coleonyx variegatus abbotti San Diego banded gecko	Rock outcrops in shrublands, to 5000 ft. elev.; SW Calif. through much of N Baja Calif.	Spring - summer	Fed: none Ca: S2S3	**Low-none** (no suitable habitat)
Phrynosoma coronatum ssp. *blainvillei* San Diego horned lizard	Forest, shrubland or grassland with sandy areas; W Calif. from LA Co. S through Baja Calif., below ±6000 ft. elev.	Spring - summer	Fed: none Ca: S2S3	**Low-none** (no suitable habitat)
Cnemidophorus tigris multiscutatus Coastal western whiptail	Woodlands, shrublands; SW Calif. through much of Baja Calif. , below ±7500 ft. elev.	Spring - summer	Fed: none Ca: S2S3	**Low** (no suitable habitat)
Cnemidophorus hyperythrus Orange-throated whiptail	Coastal sage scrub, chaparral; Orange Co., extreme SE LA Co., W Riv. Co., through Baja Calif.	Spring - summer	Fed: none Ca: S2	**Low** (no suitable habitat, margin of geog. range)
Anniella pulchra pulchra California silvery legless lizard	Various habitats, mainly shrublands, below about 6000 ft. elev.; much of Calif. (excl. deserts) from Bay area to N Baja Calif.	Spring - fall	Fed: None Ca: S3	**Absent** (no suitable habitat)
Lichanura trivirgata roseofusca Coastal rosy boa	Rocky, chaparral-covered hillsides; LA Co. through nw Baja Calif.	Spring - summer	Fed: none Ca: S3S4	**Absent** (no suitable habitat)
Diadophis punctatus ssp. *modestus* or *similis* San Bernardino or San Diego ringneck snake	Open relatively rocky areas in woodland, shrubland, and - grasslands; much of SW So. Calif.	Spring - summer	Fed: none Ca: S2 / S2?	**Low-none** (no suitable habitat)

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
Salvadora hexalepis virgultea Coast patch-nosed snake	Shrublands, usually with open sand; Sta. Barb. Co. through SW Calif., to NW Baja Calif.	Spring - summer	Fed: none Ca: S2S3	**Low** (small area of poor hab, isolated)
Thamnophis hammondii Two-striped garter snake	In or near perennial fresh water and adjacent riparian habitat, usually about pools in streams; SW Calif and NW Baja Calif.	Spring - summer	Fed: none Ca: S2	**Absent** (no suitable habitat)
Lampropeltis zonata pulchra San Diego Mtn kingsnake	Forests and shrublands; Santa Monica Mts through Santa Ana Mts and mts of San Diego Co	Spring - summer	Fed: none Ca: S1S2	**Absent** (no suit. hab, likely out of geog. range)
Crotalus ruber ruber Red diamond rattlesnake	Coastal sage scrub, chaparral, desert scrub; SW Calif., Baja Calif.	Spring - summer	Fed: SOC Ca: S2?	**Low-none** (no suitable habitat)

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
BIRDS (N=23)				
Elanus leucerus **White-tailed kite**	Breeds in woodlands and riparian forests, forages over open terrain; Pacific Coast (Calif., N Baja, Oregon)	Spring - summer	Fed: none Ca: S3 (nesting)	Nesting: **Low** Foraging: **Observed**
Circus cyaneus **Northern harrier**	Breeds colonially in grasslands and wetlands; forages over open terrain; N America and Eurasia	Winter; rare in summer	Fed: none Ca: S3 (nesting)	Nesting: **Absent** Foraging: **Moderate**
Aquila chrysaetos **Golden eagle**	Nests in remote trees and cliffs; forages over shrublands and grass-lands; breeds throughout W N America, winters to E coast	Year-around	Fed: none Ca: S3 (year-around)	Nesting: **Low** Foraging: **Low-moderate**
Haliaeetus leucocephalus Bald eagle	Breed in large trees, usually near major rivers or lakes; winters more widely; wide but scattered distribution in N America; esp. coastal regions	Winter	Fed: **THR** Ca: S2 **END**	**Absent** (except as incidental winter flyover)
Buteo regalis **Ferruginous hawk**	Forages over grassland and shrub-land; winters in W and SW N Amer. (breeds in Great Basin and N plains)	Winter	Fed: none Ca: S3S4 (wintering)	Nesting: **Low** Winter: **High**
Accipiter striatus **Sharp-shinned hawk**	Nests and hunts in forests and woodlands, also forages in open areas; throughout N America, parts of S America. Winters locally, nesting range generally to N	Winter	Fed: none Ca: S3 (nesting only)	Nesting: **Low** Winter: **Low**
Accipiter cooperii **Cooper's hawk**	Nests and hunts in forests and woodlands occasionally forages in open areas; most of US, Central and S America	Year-around	Fed: none Ca: S3 (nesting only)	Nesting: **Low** Foraging: **Low-moderate**

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
Falco columbaris Merlin	Uncommon wintering species in S Calif. desert and valleys (breeds in northern N America and Eurasia)	Winter	Fed: none Ca: S3	Nesting: **Absent** Winter: **Low**
Falco mexicanus Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	Fed: none Ca: S3 (nesting only)	Nesting: **Absent** Foraging: **Low**
Charadrius alexandrius nivosus (interior population) **Western snowy plover**	Gravel or sand beaches, alkali sinks, playas (e.g., Salton Sea); basins in Intermountain region, w. Texas; reported locally near Lake Elsinore	Year-around	Fed: none Ca: S2	**Absent** (no suitable habitat)
Coccyzus americanus occidentalis **California yellow-billed cuckoo**	Nests in dense riparian forest; rare and local in Calif.; subspecies not recognized as distinct by some authors	Summer	Fed: none Ca: **END** S1	**Absent** (no suitable habitat)
Athene cunicularia hypugea **Burrowing owl** (burrow sites)	Nests in rodent burrows, usually in grasslands; forages in open hab; increasingly uncom. in S Ca.; occurs W US and Mex; sparse in desert scrub but comm. around irrigated lands	Year-around	Fed: none Ca: S2 (burrow sites)	Nesting: **Observed** Foraging: **Observed**
Asio otus **Long-eared owl**	Breeds & roosts in riparian forests or other dense forest; forages at night over open lands; increasingly rare breeding in S Calif.; occurs through N America and Eurasia	Year-around	Fed: none Ca: S3	Nesting: **Absent** Foraging: **Low**
Empidonax traillii extimus **Southwestern willow flycatcher**	Rare and local is S Calif.; breeds in willow riparian forests; SW US and N Baja	Summer	Fed: **END** Ca: **END** S1 (nesting)	**Absent** (no suitable habitat)
Campytorhynchus brunei-capillus couesi **San Diego (coastal pop) cactus wren**	Coastal sage scrub with cactus patches; S Calif. and NW Baja Calif.	Year-around	Fed: none Ca: S2?	**Absent** (no suitable cactus patches)
Lanius ludovicianus Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; widespread in N America	Year-around	Fed: none Ca: S4	Nesting: **Low** Foraging: **High**
Polioptila californica California gnatcatcher	Coastal sage scrub; SW Calif. (Moorpark area, Palos Verdes Penins., Orange, Riverside, San Bern., & SD Cos.) and N Baja Calif.	Year-around	Fed: **THR** Ca: S2	**Absent** (no suitable habitat)
Vireo bellii ssp. *pusillus* Least Bell's vireo	Riparian forests and willow scrub; breeds in S Calif. and N Baja, winters in Baja; endangered by habitat loss and cowbird parasitism	Spring - summer	Fed: **END** Ca: **END** S2	**Absent** (no suitable habitat)
Dendroica petechia **Yellow warbler**	Breeds in willow/cottonwood riparian hab; much of N Amer. but increasingly rare in S Ca. (hab loss, cowbird parasitism); winters Mex. to S Amer.	Spring - summer	Fed: none Ca: S2 (nesting only)	**Absent** (no suitable habitat)

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
Icteria virens Yellow-breasted chat	Breeds in dense riparian habitat, low elev., much of US, winters S to Cent. Amer.; becoming rare in Calif. (cowbirds & habitat loss)	Spring - summer	Fed: none Ca: S3	**Absent** (no suitable habitat)
Agelaius tricolor **Tricolored blackbird** (nesting colony)	Breeds colonially in freshwater marshes, nomadic among marshes and fields in winter; almost completely endemic to Calif.	Year-around	Fed: none Ca: S2	**Absent** (no suitable habitat)
Aimophila ruficeps canescens **Southern California rufous-crowned sparrow**	Coastal sage scrub, open chaparral; S Calif. and NW Baja Calif.	Year - around	Fed: none Ca: S2S3	**Absent** (no suitable habitat)
Amphispiza belli belli **Bell's sage sparrow**	Coastal sage scrub, chaparral, saltbush scrub, cismontane cent. and S Calif., NW Baja Calif.	Year - around	Fed: none Ca: S2?	**Absent** (no suitable habitat)

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
MAMMALS (N=9)				
Lepus californicus bennettii San Diego black-tailed jackrabbit	Most habitat types, esp. shrublands; W Calif. and NW Baja Calif.	Year-around	Fed: none Ca: S3?	**Low-moderate** (poor habitat)
Chaetodipus fallax fallax Northwestern San Diego pocket mouse	Open shrublands and sandy areas; SW Calif. and NW Baja Calif. (inland to San Bernardino Val)	Year-around (?)	Fed: none Ca: S2S3	**Low-moderate** (poor habitat)
Perognathus longimembris brevinasus Los Angeles pocket mouse	Open shrublands, grasslands; S Calif. valleys, LA, SW San Bernardino and W Riverside Cos.	Year-around (?)	Fed: none Ca: S1?	**Low** (poor habitat)
Dipodomys stephensi Stephens' kangaroo rat *Dipodomys merriami parvus* San Bernardino kangaroo rat	Sparse, gently sloping grassland, sometimes at margins of cultivated or disturbed lands; San Bernardino County W Riverside Co. and adjacent San Diego Co.	Year-around	Fed: **END** Ca: **THR** S2 Fed: END Ca: S1	**Low-none** (no suit. hab, likely out of geo. range)
Onychomys torridus ramona Southern grasshopper mouse	Arid cismontane lowlands, LA through San Diego Cos. and NW Baja Calif.	Year-around	Fed: none Ca: S3S4	**Low** (no suitable habitat)
Neotoma lepida intermedia San Diego desert wood rat	Arid shrublands, esp. around rocky outctops & crevices; cismontane Calif from San Luis Obispo to San Diego Co, and NW Baja Calif	Year-around	Fed: none Ca: S3S4	**Low** (no suitable habitat)
Antrozous pallidus Pallid bat	Rock outcrops of shrublands, mostly below about 6000 ft. el.; Ca (exc high mts), SW N Amer through interior Oregon and WA; hibernates in winter	Warm season	FWS: none Ca: S3	Roosting: **Absent** Foraging: **Moderate?**

Special Status Species	Habitat and Distribution	Activity Season	Status Designation	Occurrence Probability
Eumops perotis californicus California mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roost in deep rock crevices, forage over wide area	Year-around	Fed: none Ca: S3	Roosting: **Low-none** Foraging: **Moderate?**
Plecotus townsendii pallescens Townsend's big-eared bat	Many habitats throughout Calif and W N Amer, scattered pop'ns in E; day roosts in caves, tunnels, mines; feed primarily on moths	Year-around	Fed: none Ca: S2S3	Roosting: **Low-none** Foraging: **Moderate?**
FISH (N=3)				
Gila orcutti Arroyo chub	Major cismontane stream systems in S CA incl. Sta Ana Riv.; extant popns near Riverside and down-stream; introduced pops. also occur outside historic range	Year - around	Fed: none CA: S2	**Absent** (no suitable habitat)
Rhinichthys osculus "subspecies 3" Santa Ana speckled dace	Endemic to Santa Ana and San Gabriel Riv. watersheds, historic in Big Tujunga Cyn. Sta Ana Riv populations inlower S.Bern Mtn foothills &washes	Year - around	Fed: SOC CA: S1	**Absent** (no suitable habitat)
Catostomus santaanae Santa Ana sucker	Major cismontane stream systems in S Calif. incl. Sta Ana Riv., formerly below ± 3000 ft. elev.; extant popns near Riverside and downstream	Year - around	Fed: **THR** CA: S1	**Absent** (no suitable habitat)
INVERTEBRATES (N=4)				
Branchinecta lynchi Vernal pool branchinecta	Grassland vernal pools; Central Val, cent and S Coast Ranges, W Riverside Co.	Dec - early May	Fed: **THR** Ca: S2S3	**Absent** (no suitable habitat)
Linderiella occidentalis California linderiella	Vernal pools; E Central Val to W Riverside Co.	Spring	Fed: none Ca: S2S3	**Absent** (no suitable habitat)
Streptocephalus woottoni Riverside fairy shrimp	Vernal pools near Murrieta (Riv.Co.), Miramar and Otay Mesa (SD Co.), one site in Orange Co., and two in Baja.	Spring	Fed: **END** Ca: S1	**Absent** (no suitable habitat)
Raphiomidas terminatus abdominalis Delhi sands flower-loving fly	Delhi fine sands, often with unconsolidated dunes present. Southwestern San Bernardino County and northwestern Riverside County	August – Sept.	Fed: **END** Ca: S1	**Absent** (extremely poor habitat, survey results)

References: Barbour & Davis 1969; CDF&G 2001; Emmel & Emmel 1973; Garrett & Dunn 1981; Garth & Tilden 1986, 1999, Grinnell & Miller 1944; Hall 1981; Ingles 1965; Jennings and Hayes 1994; National Geographic Society 1987; Remsen 1978; Stebbins 1954, 1985; Williams 1976; US Fish and Wildlife Service 1994, 1996; Zeiner et al. 1990.

Federal Designations (Federal Endangered Species Act, USFWS)

END:Federally listed, endangered.
THR:Federally listed, threatened.
C1:Category I candidate. Sufficient data are available to support federal listing, but not listed at this time (equivalent to "candidate" (USDI Fish and Wildlife Service 1996).
Former C2: Formerly a Category 2 candidate species. Threat and/or distribution data are not sufficient to support federal listing at this time. No longer recognized by FWS.
C3a:Extinct.
C3b:Taxonomically invalid.
C3c:Too widespread and/or not threatened. No longer considered as a federal candidate for listing.
FSC:Federal Species of Concern

State Designations (California Endangered Species Act, CDFG)

END:State listed, endangered.
THR:State listed, threatened.
RARE:State listed as rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC:California Species of Concern (CDFG)

CDF&G Natural Diversity Data Base Designations

Applied to special status plants and sensitive plant communities; where correct category is uncertain, CDF&G uses two categories or question marks.
S1:Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.
S1.1: Very threatened
S1.2: Threatened
S1.3: No current threats known
S2:6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).
S3:21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).
S4:Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
S5:Demonstrably secure or ineradicable in California. No threat rank.

California Native Plant Society (CNPS) designations:

(Note: According to CNPS (Skinner and Pavlik 1994), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code. This interpretation is inconsistent with other definitions; see text.)
List 1A:Plants presumed extinct in California.
List IB:Plants rare and endangered in California and throughout their range.
List 2:Plants rare, threatened or endangered in California but more common elsewhere in their range.
List 3:Plants about which we need more information; a review list.
List 4:Plants of limited distribution; a watch list.

CNPS R-E-D Code:

Rarity

I: Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.

2: Occurrence confined to several populations or one extended population.

3: Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

Endangerment

1: Not endangered.
2: Endangered in a portion of its range.
3: Endangered throughout its range.

Distribution

1: More or less widespread outside California.
2: Rare outside California.
3: Endemic to California (i.e. does not occur outside California).

Definitions of occurrence probability:

Occurs: Observed on the site during surveys described here, or recorded on-site by other qualified biologists.
High: Observed in similar habitat in region by qualified biologists, or often occurs in habitat similar to that on the site, and within the known range of the species.
Moderate: Reported sightings in surrounding region, or site is within the known range of the species and often occurs in habitat similar to that on the site.
Low: Site is within the known range of the species but habitat on the site is rarely used by the species.
Absent: A survey failed to detect the species, and/or no suitable habitat is present, and/or the study area is well outside known geographic or elevation ranges.
Unknown: No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.

Table 2: Observed Plant Species (N=27)

Latin Name	**Common Name**
VASCULAR PLANTS (27)	
AMARANTHACEAE	AMARANTH FAMILY
Amaranthus palmeri	Palmer's pigweed
ANACARDIACEAE	CASHEW FAMILY
* *Nerium oleander*	Oleander
* *Fraxinis* sp.	Ash
ASTERACEAE	ASTER FAMILY
Conyza boniarensis	Flat-leaved fleabane
* *Lactuca serriola*	Prickly lettuce
* *Taraxacum officinale*	Common dandelion
Verbecinia encelioides	Golden crown beard
Xanthium spinosum	Spiny cocklebur
BRASSICACEAE	MUSTARD FAMILY
* *Hirschfeldia incana*	Short-pod mustard
CHENOPODIACEAE	GOOSEFOOT FAMILY
* *Chenopodium album*	Lamb's quarters
* *Salsola tragus*	Russian thistle, tumbleweed
FABACEAE	PEA FAMILY
* *Lotus purshianus*	Indian clover
* *Medicago polymorpha*	Burclover
GERANIACEAE	GERANIUM FAMILY
* *Erodium cicutarium*	Red-stemmed filaree
HAMAMELIDACEAE	LIQUIDAMBER FAMILY
* *Liquidamber* sp.	Liquidamber
LAMIACEAE	MINT FAMILY
* *Marrubium vulgare*	Horehound
MALVACEAE	MALLOW FAMILY
* *Malva parviflora*	Cheeseweed
MOREACEAE	MULBERRY FAMILY
* *Morus* sp.	Mulberry
MYRTACEAE	MYRTLE FAMILY
* *Eucalyptus* sp.	Eucalyptus
POLYGONACEAE	BUCKWHEAT FAMILY
Rumex crispus	Curly dock
SOLANACEAE	NIGHTSHADE FAMILY
Datura wrightii	Western jimsonweed
* *Nicotiana glauca*	Tree tobacco
ZYGOPHYLLACEAE	CALTROP FAMILY
* *Tribulus terrestris*	Puncture vine
ARECACEAE	PALM FAMILY
* *Washingtonia robusta*	Mexican fan palm
POACEAE	GRASS FAMILY
* *Avena barbata*	Slender wild oat
* *Bromus madritensis ssp. rubens (B. rubens)*	Red brome, Foxtail chess
* *Cynodon dactylon*	Bermuda grass

Table 3: Observed Vertebrate Species (N=25)

Latin Name	Common Name
VERTEBRATE ANIMALS	
REPTILIA	REPTILES (1)
IGUANIDAE	IGUANID LIZARDS
Uta stansburiana	Side-blotched lizard
AVES	BIRDS (22)
ARDEIDAE	HERONS
Bubulcus ibis	Cattle egret
CATHARTIDAE	VULTURES
Cathartes aura	Turkey vulture
ACCIPITRIDAE	HAWKS, EAGLES, HARRIERS
** *Elanus leucurus*	White-tailed kite
Buteo jamaicensis	Red-tailed hawk
FALCONIDAE	FALCONS
Falco sparverius	American kestrel
CHARADRIIDAE	PLOVERS
Charadrius vociferus	Killdeer
COLUMBIDAE	PIGEONS AND DOVES
Columba livia	Rock dove
Zenaida macroura	Mourning dove
STRIGIDAE	TYPICAL OWLS
** *Speotyto cunicularia*	Burrowing owl
TROCHILIDAE	HUMMINGBIRDS
Calypte anna	Anna's hummingbird
TYRANNIDAE	TYRANT FLYCATCHERS
Sayornis nigricans	Black phoebe
Tyrannus verticalis	Western kingbird
HIRUNDINIDAE	SWALLOWS
Hirundo rustica	Barn swallow
CORVIDAE	CROWS AND JAYS
Corvus brachyrhynchos	American crow
MIMIDAE	MOCKINGBIRDS AND THRASHERS
Mimus polyglottos	Northern mockingbird
STURNIDAE	STARLINGS
* *Sturnus vulgaris*	European starling
EMBERIZIDAE	SPARROWS, WARBLERS, TANAGERS
Zonotrichia leucophrys	White-crowned sparrow
Sturnella neglecta	Western meadowlark
Quiscalus mexicanus	Great-tailed grackle
Molothrus ater	Brown-headed cowbird
FRINGILLIDAE	FINCHES
Carpodacus mexicanus	House finch
Carduelis psaltria hesperophilus	Lesser goldfinch
MAMMALIA	MAMMALS (2)
LEPORIDAE	HARES AND RABBITS
Sylvilagus audubonii	Audubon cottontail
CANIDAE	FOXES, WOLVES AND COYOTES
Canis domesticus	Domestic dog

Table 4: List of Invertebrate Species Observed

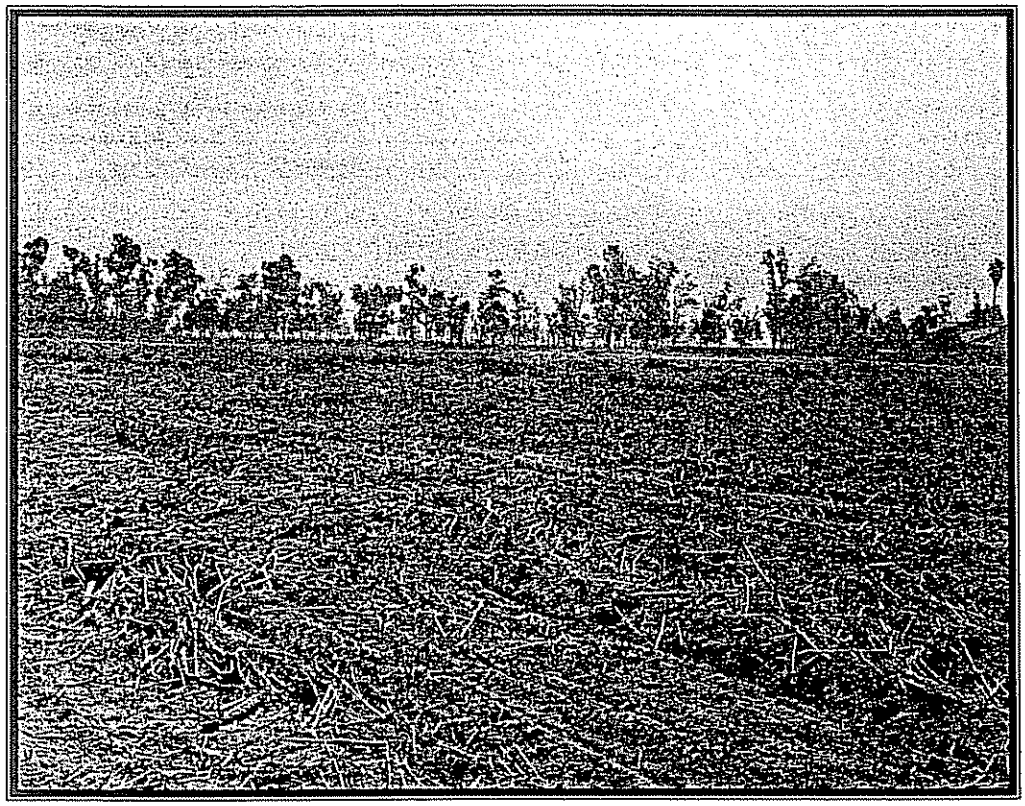
Order-Family	Latin Name
DIPTERA	
ASILIDAE	
	Efferia albibarbis
	Mallophora fautrix
BOMBYLIIDAE	
	Thyridanthrax atrata
	Toxophora pellucida
	Villa pretiosa
CALLIPHORIDAE	
	Phaenicia sericata
DOLICHOPODIDAE	
	Condylostylus sp.
DROSOPHILIDAE	
	Cerititus capitata
MUSCIDAE	
	Musca domestica
SARCOPHAGIDAE	
	Sarcophaga sp.
SYRPHIDAE	
	Eristalis tenax
TABANIDAE	
	Tabanus punctifer
HYMENOPTERA	
ANTHOPHORIDAE	
	Anthophora urbana
	Melissodes sp.
APIDAE	
	Apis mellifera
CHRYSIDIDAE	
	Parnopes edwardsii
FORMICIDAE	
	Pogonomyrmex californicus
HALICTIDAE	
	Agapostemon sp.
MEGACHILIDAE	
	Megachile sp.
MUTILIDAE	
	Dasymutilla coccineohirta
	Dasymutilla californica
HYMENOPTERA cont.	
SPHECIDAE	
	Ammophila sp.
	Bembix comata
	Microbembix californica
	Chalybion californicum
	Chlorion aerarium
	Hoplisoides diversus
	Philanthus multimaculatus
	Prionyx foxi
	Sceliphron caementarium
VESPIDAE	
	Polistes apachus
	Polistes fuscatus
COLEOPTERA	
CHRYSOMELIDAE	
	Trachymela sloanei
	Diabrotica balteata
	Diabrotica undecimpunctata
COCCINELLIDAE	
	Coccinella californica
	Hippodamia convergens
SCARABAEIDAE	
	Cotinus mutabilis
TENEBRIONIDAE	
	Eleodes sp.
DERMAPTERA	
FORFICULIDAE	
	Forficula auricularia
HEMIPTERA	
LYGAEIDAE	
	Geocoris sp.
	Nysius sp.
	Lygaeus kalmii
MIRIDAE	
	Lygus sp.
PENTATOMIDAE	
	Chlorochroa sayi / uhleri
REDUVIIDAE	
	Zelus tetracanthus

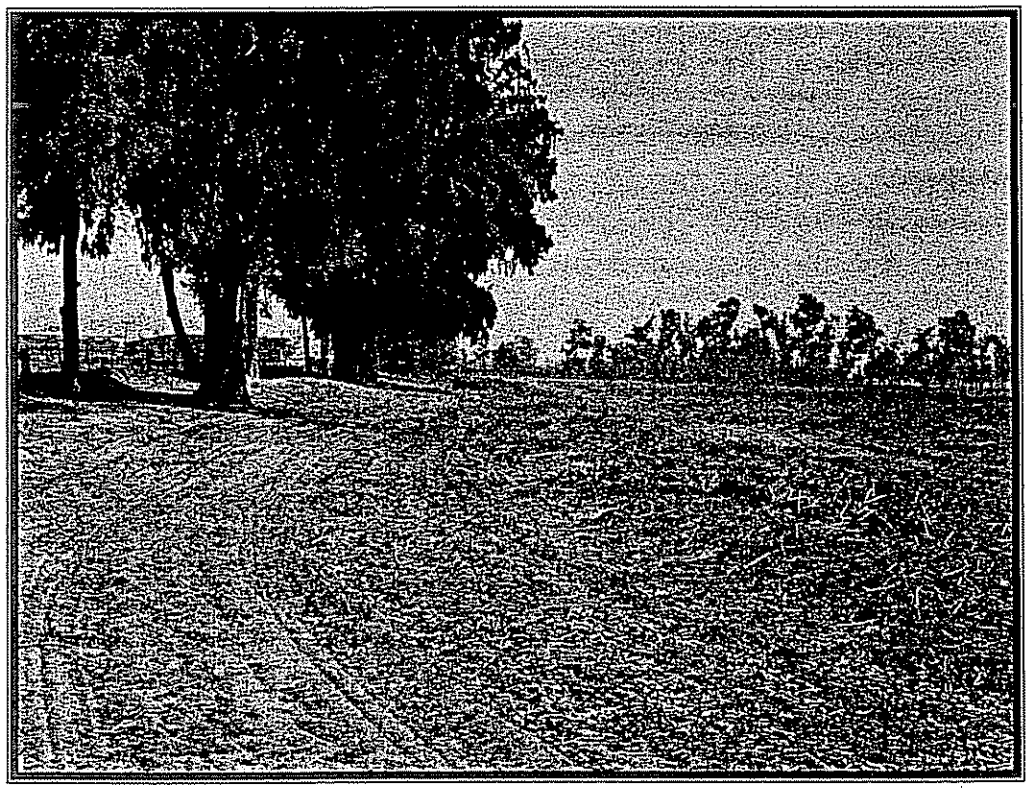
HOMOPTERA
MEMBRACIDAE
Homolodisca lacerta
PSYLLIDAE
Glycaspis brimblecombei
NEUROPTERA
CHRYSOPIDAE
Green lacewing
MYRMELEONTIDAE
Antilion

LEPIDOPTERA
DANAIDAE
Danaus plexippus
HESPERIIDAE
Hylephila phyleus
Lerodea eufala
Atalopedes campestris
Pyrgus communis albescens
LYCAENIDAE
Brephidium exilis
Plebejus acmon
Strymon melinus
NYMPHALIDAE
Vanessa cardui
PAPILIONIDAE
Papilio cresphontes
PIERIDAE
Colias eurytheme
Pieris rapae
Pontia protodice

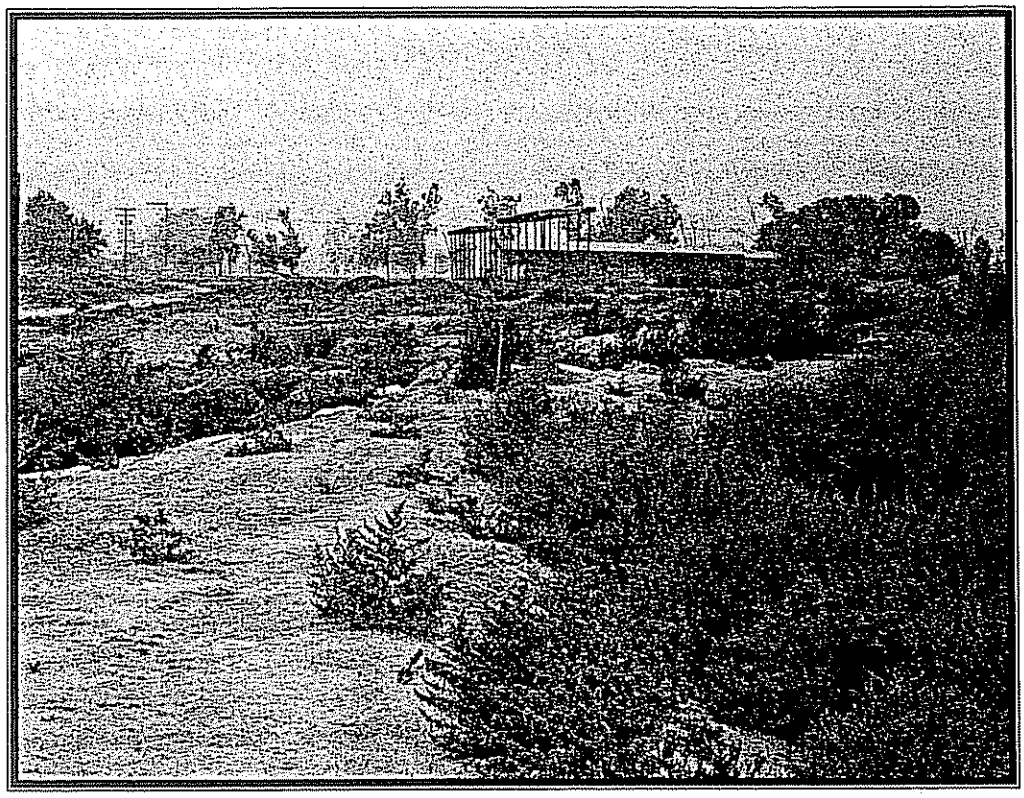
ODONATA
AESHNIDAE
Aeshna multicolor
Anax junius
COENAGRIONIDAE
Argia sp.
LIBELLULIDAE
Libellula saturata
Pantala flavescens
Sympetrum corruptum

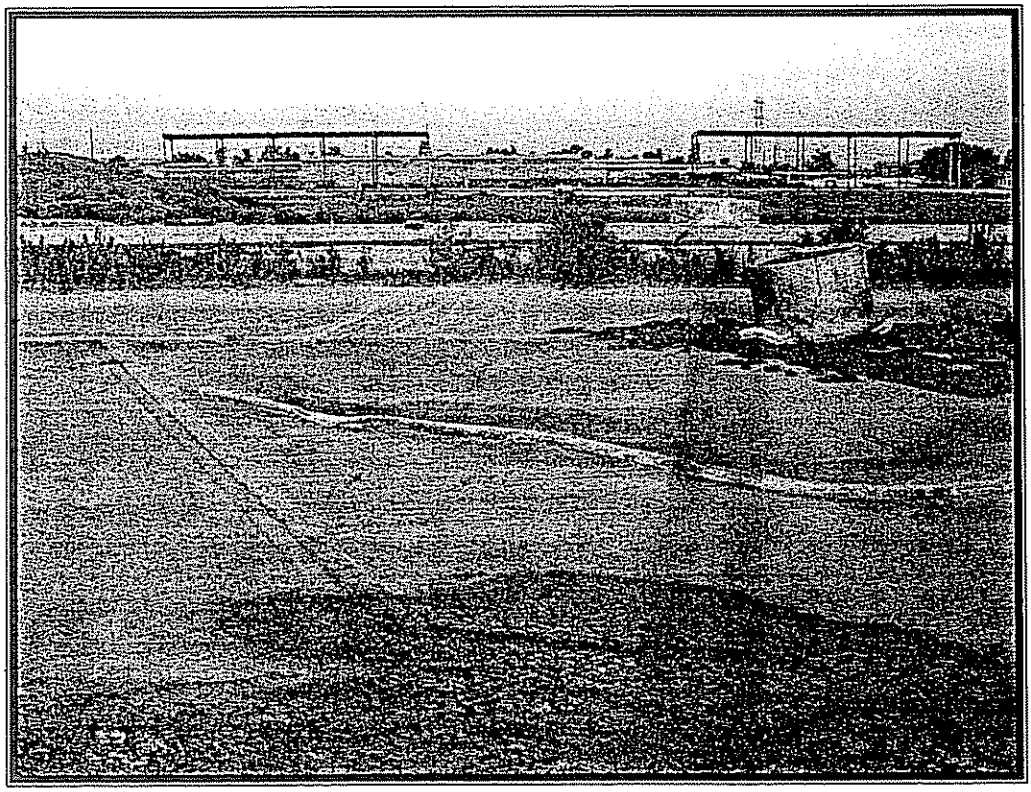
ORTHOPTERA
ACRIDIDAE
Trimerotropis californica
Malanoplus complanatipes
Trimerotropis palidipennis
GRYLLIDAE
Gryllus sp.
MANTIDAE
Iris oratoria



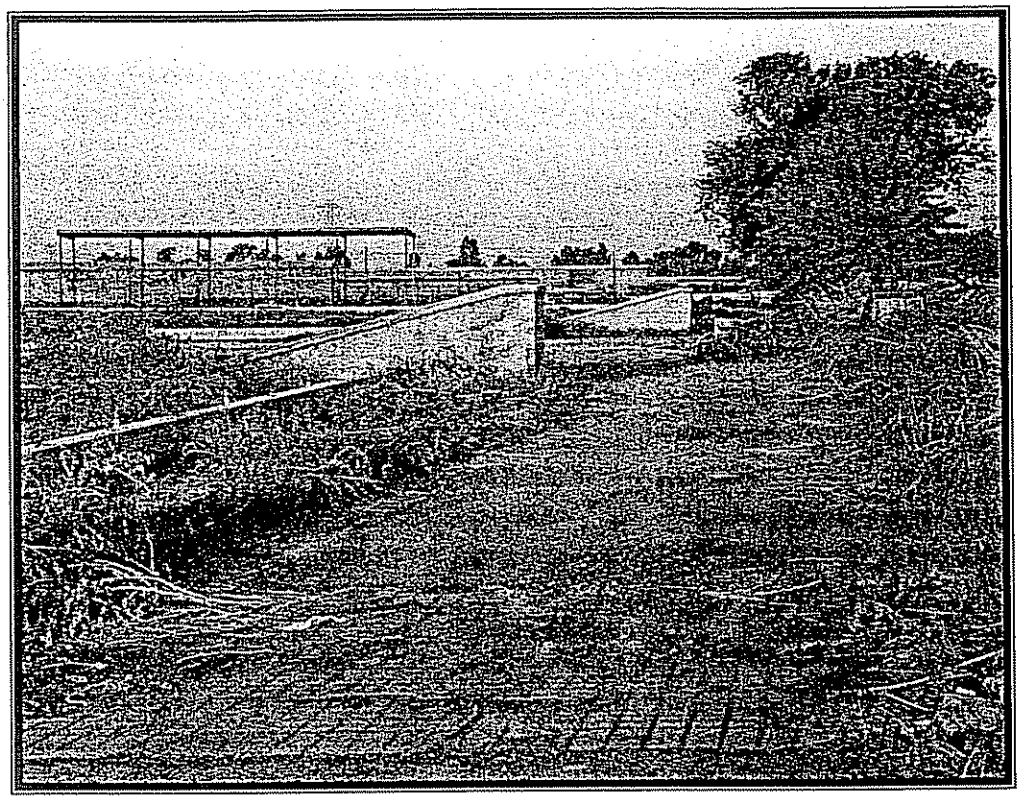


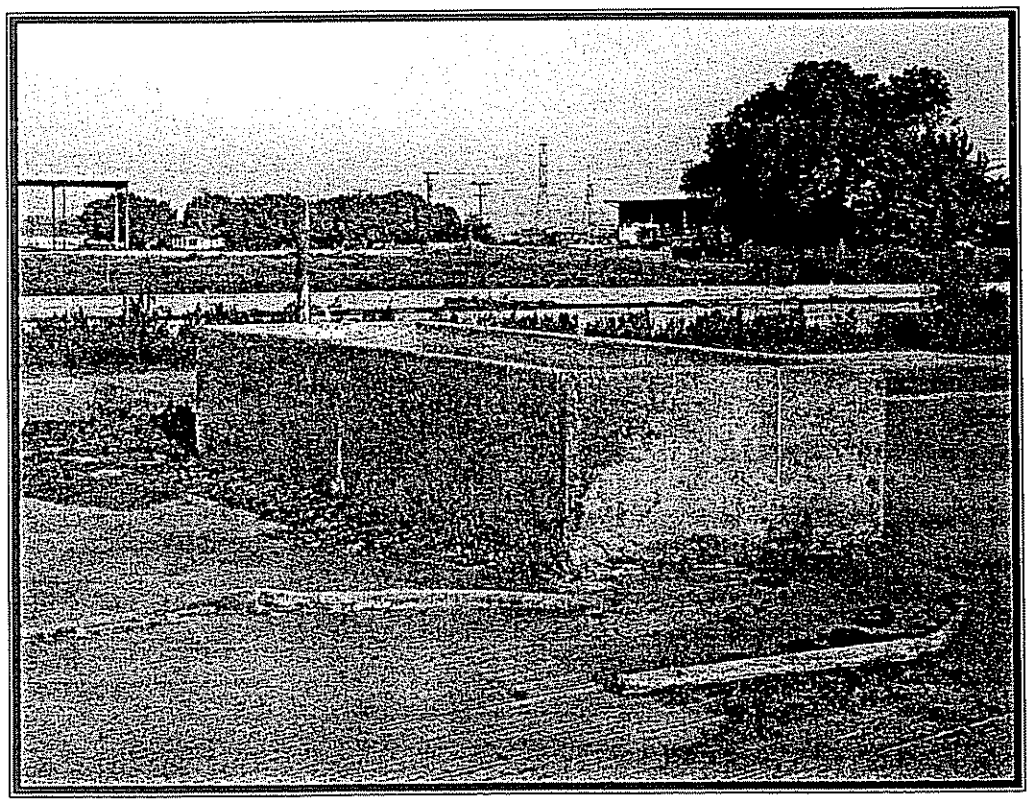
Photoplate 1 and 2: View of disced agricultural land and eucalyptus trees Area 1.



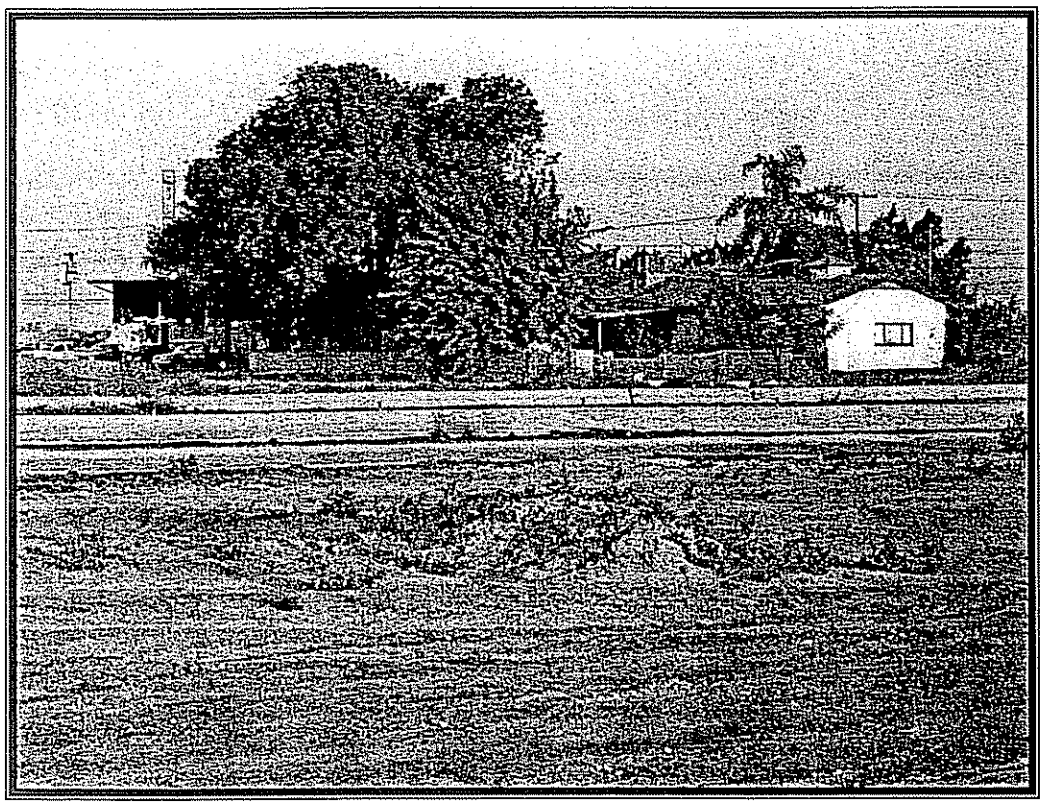


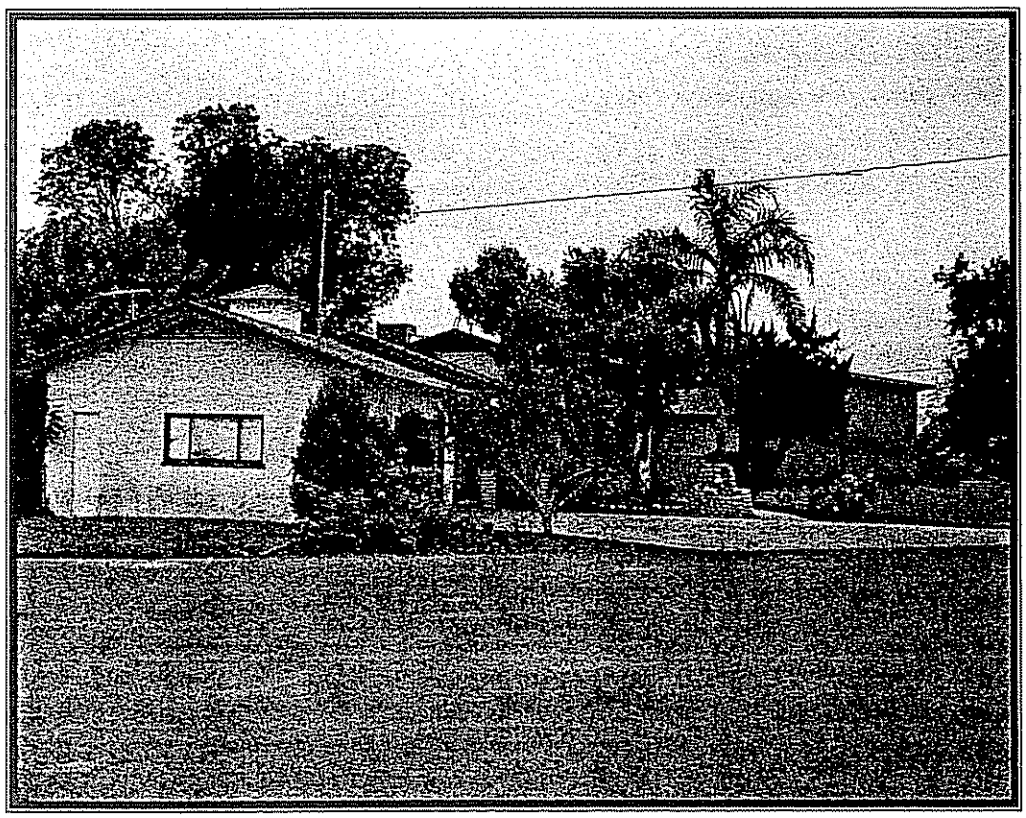
Photoplate 3 and 4: View of disturbed land with shade structures, old foundations and farm buildings in background.



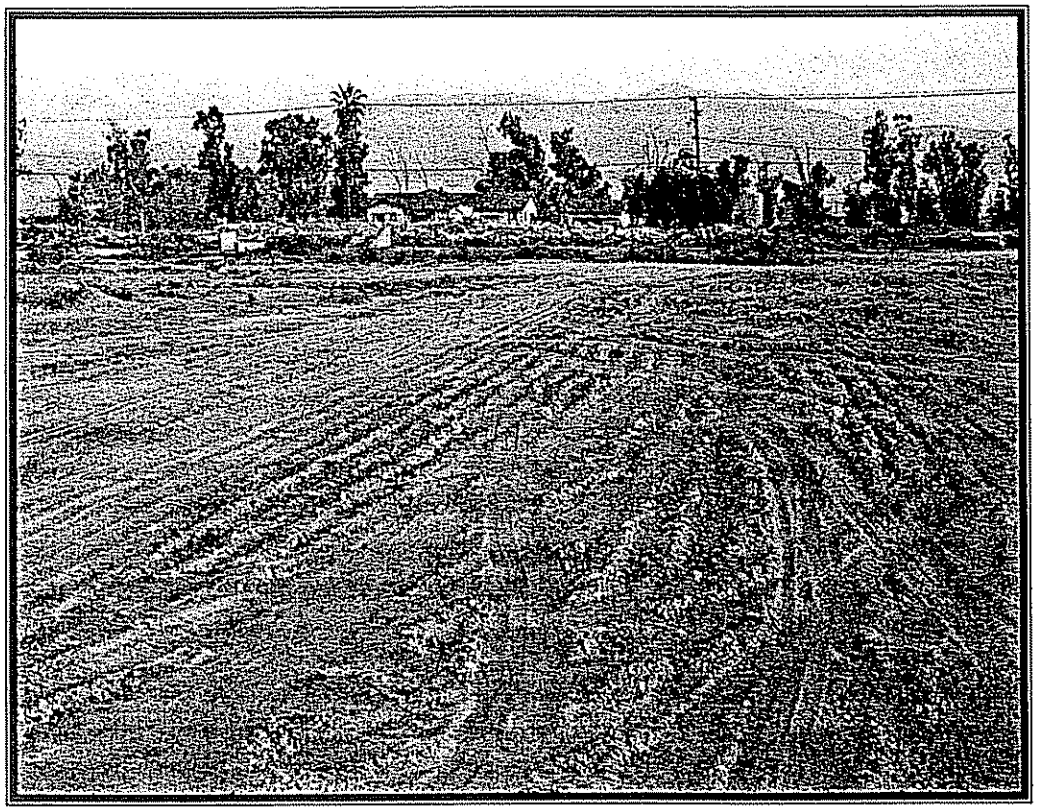


Photoplate 5 and 6: View of disturbed land with shade structures, old foundations, old feed bins and farm buildings in background.

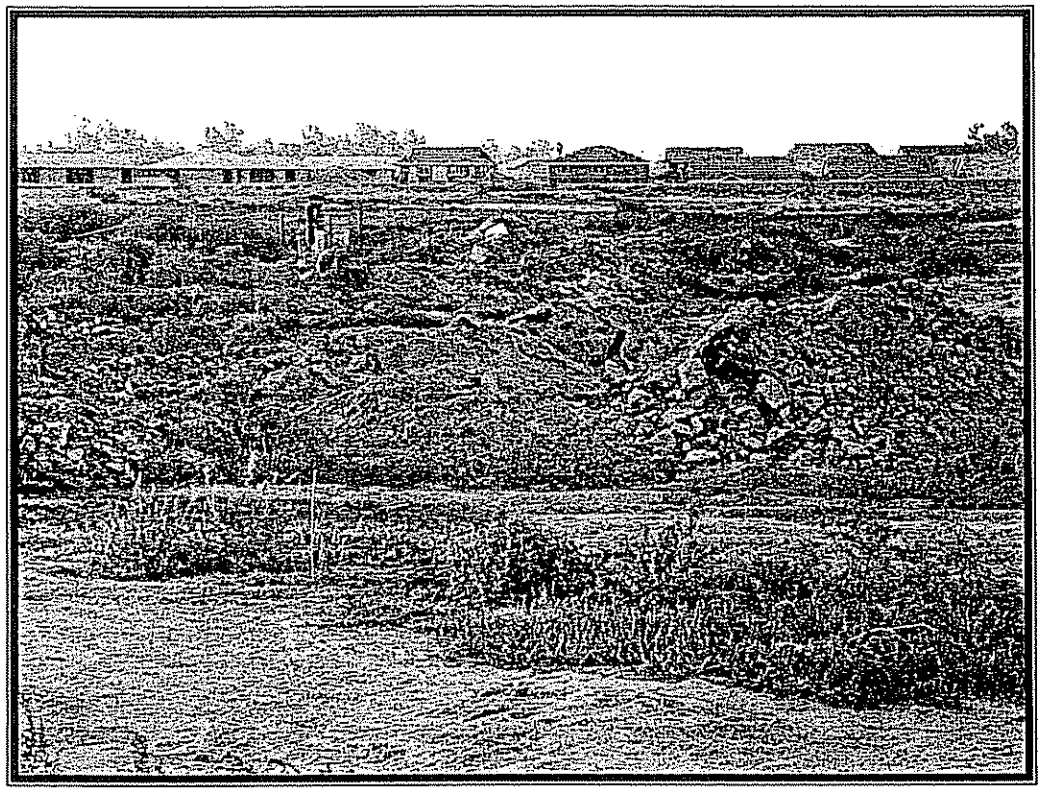


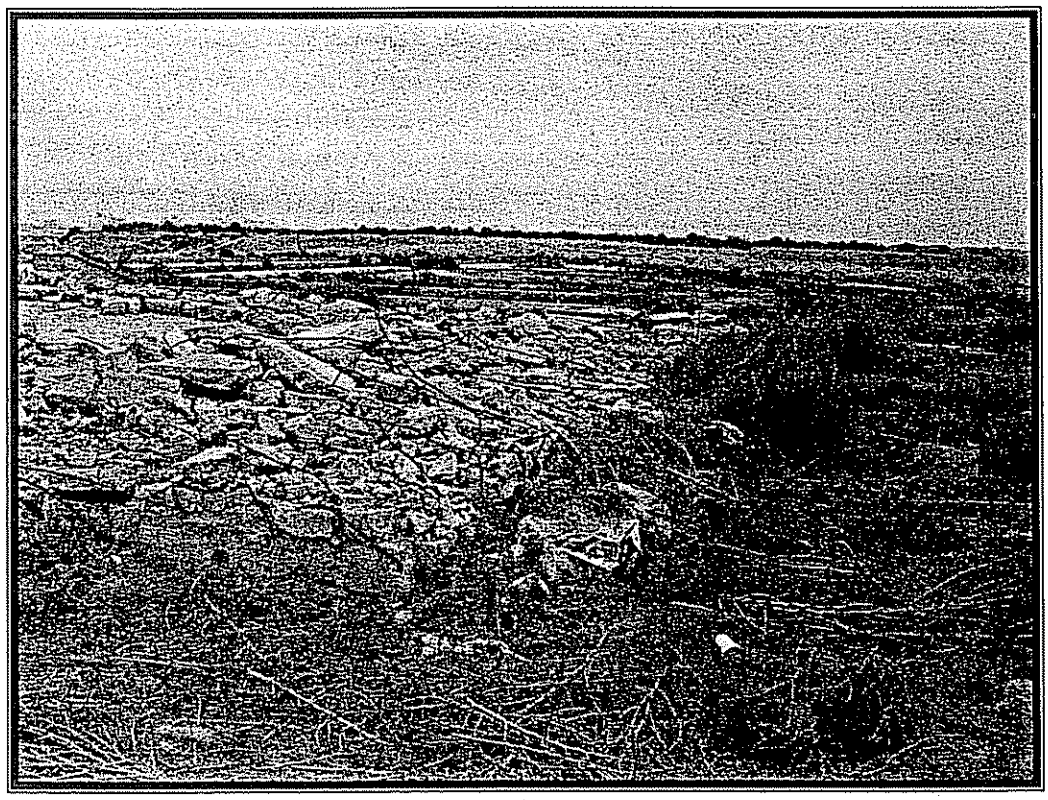


Photoplate 7 and 8: View of on-site residential and landscaped area.

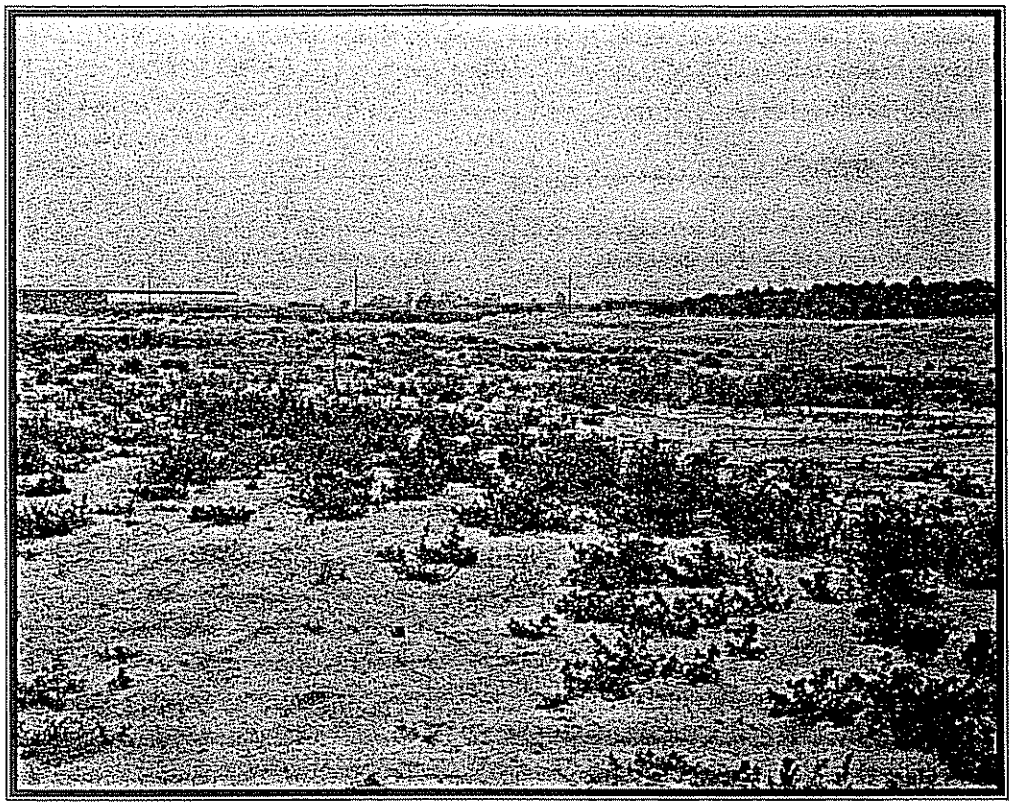


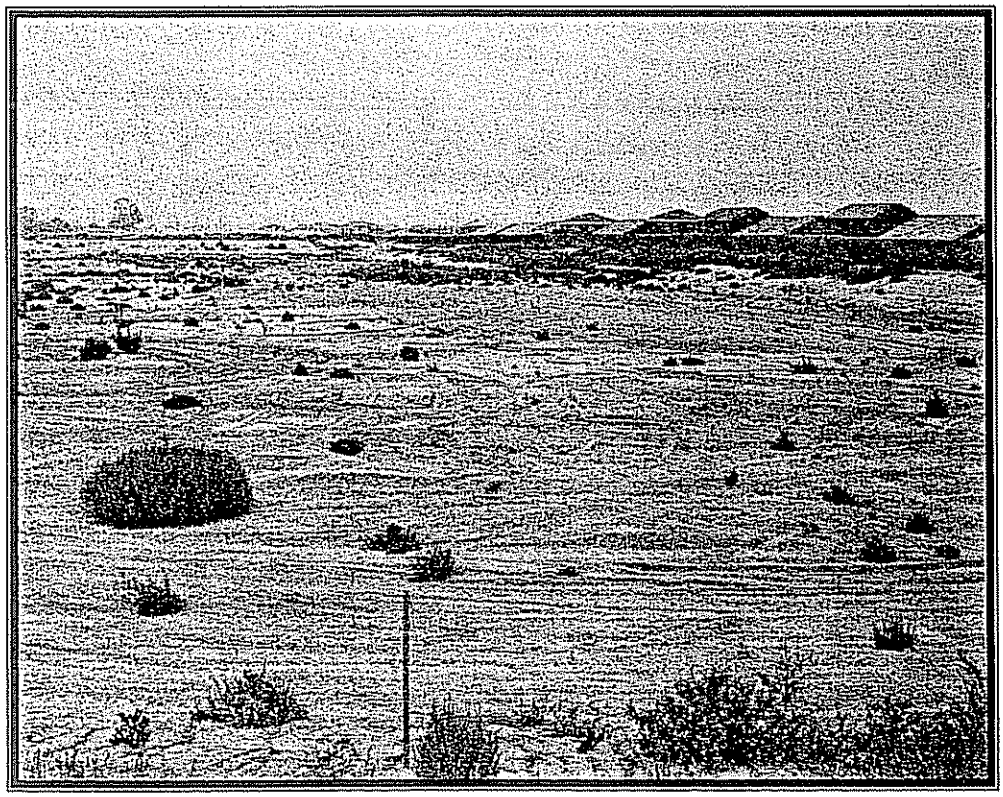
Photoplate 9 and 10: View of disturbed habitat Area 2, north of the retention basin.



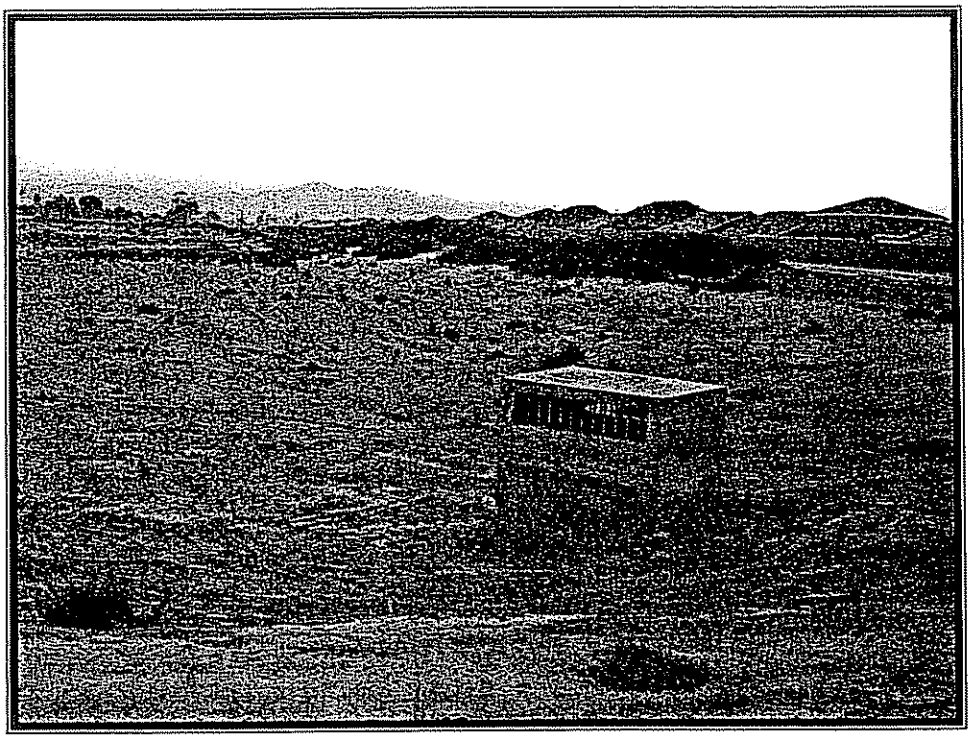


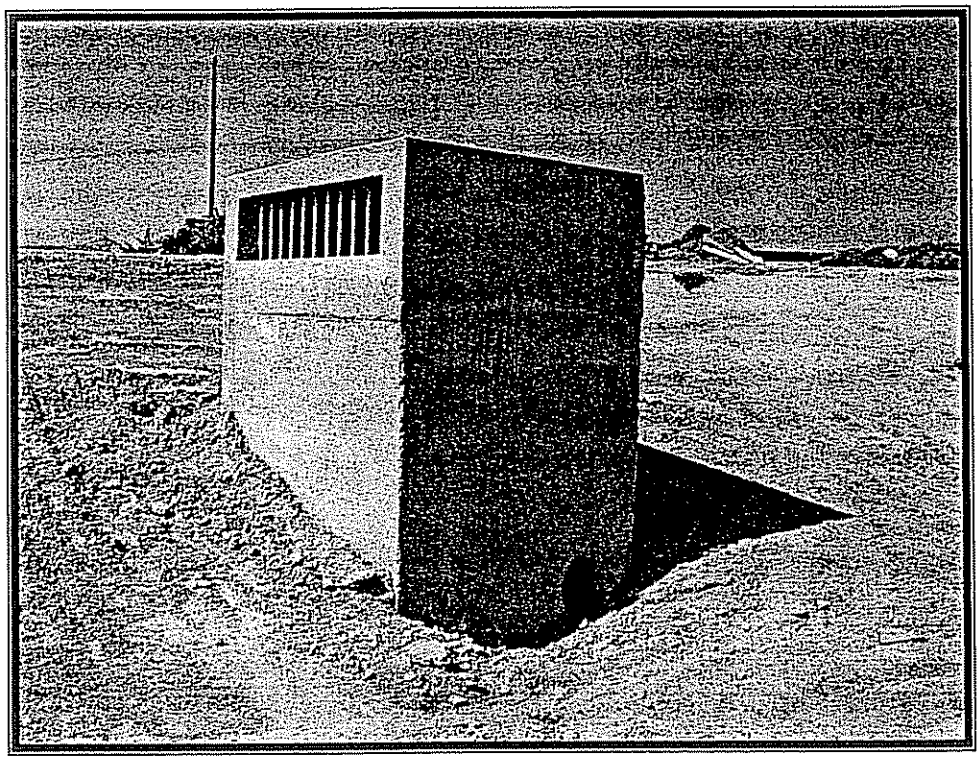
Photoplate 11 and 12: View of partially destroyed foundations and structures. Adjacent residential development visible in Photoplate 11.



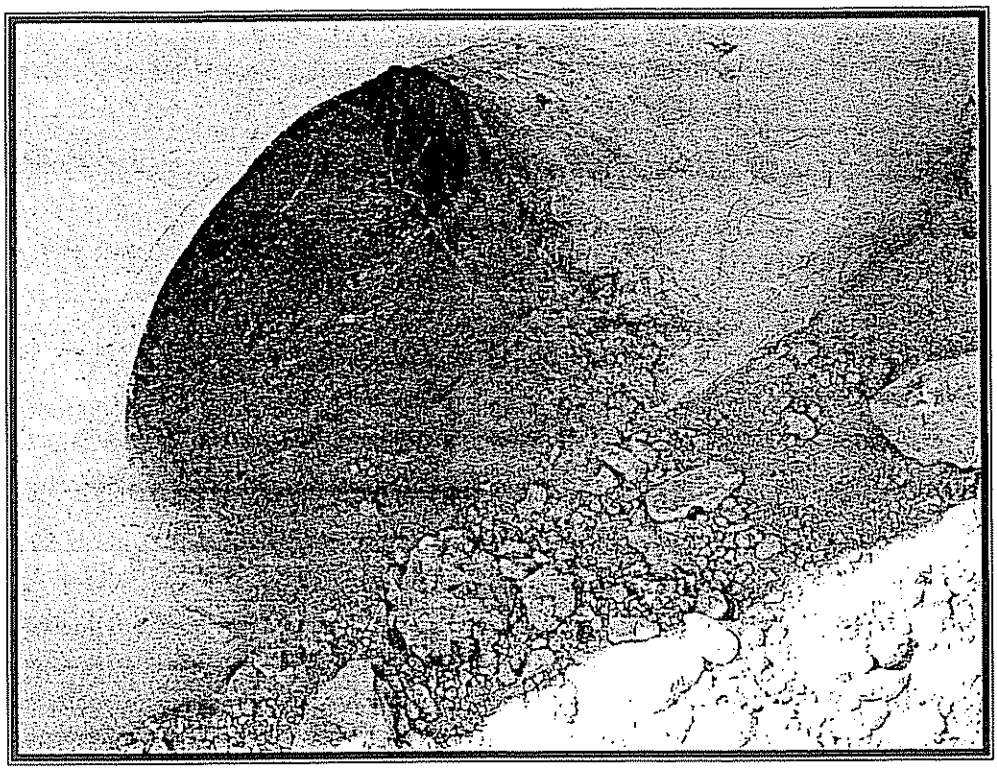


Photoplate 13 and 14: View of disturbed Area 2 facing south.

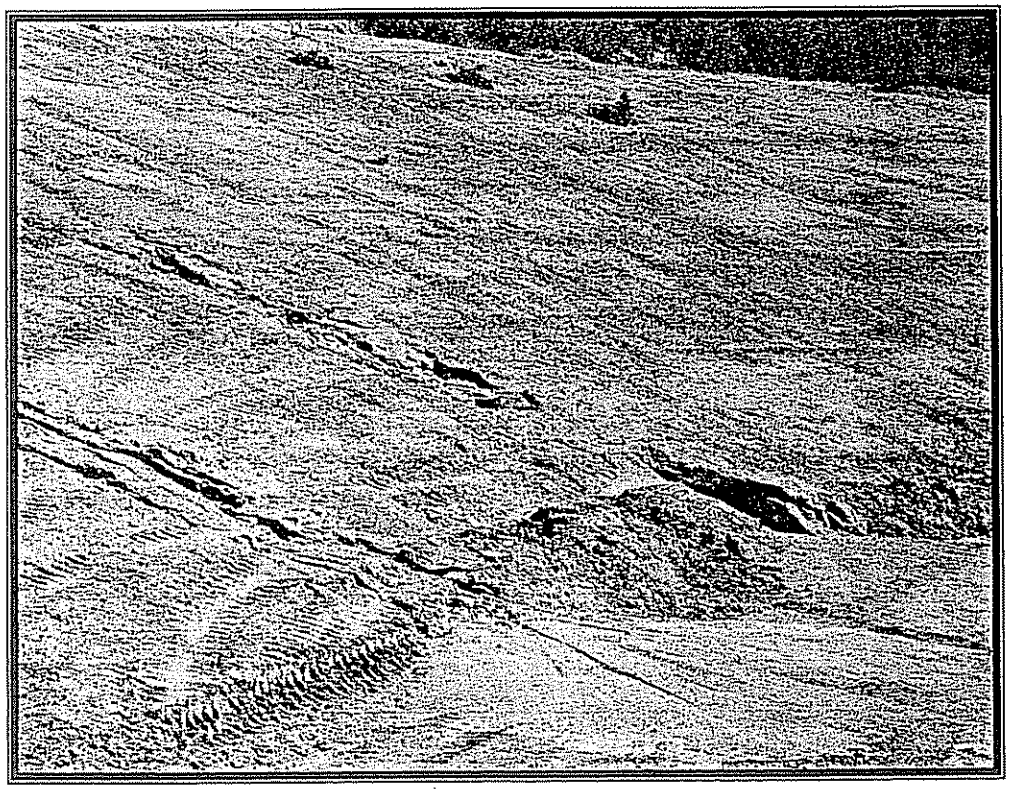




Photoplate 15 and 16: View of cement structure in southwest corner of the retention basin where the burrowing owl observed on site is residing.



Photoplate 17: View of burrowing owl sign at pipe entrance.



Photoplate 18: View of unconsolidated soils on northern end of retention basin.

REPORT OF YEAR 2005 FOCUSED SURVEY FOR DELHI SANDS FLOWER-LOVING FLY AT ARMADA DEVELOPMENT SITE SAN BERNARDINO COUNTY, CALIFORNIA

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November 2005

INTRODUCTION

This report presents the findings of the first year of an intended two consecutive-year focused survey for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) conducted by Larry Munsey International (LMI) on a site ("Survey Site") in an unincorporated area of San Bernardino County, California (Figure 1). The Survey Site falls within Sections 13 and 24, Township 2 south, Range 7 west of the U. S. Geological Survey (USGS) "Corona North" 7.5 minute quadrangle (Figure 2). It is a 30-ha (74-ac) parcel of land located southeast of the City of Ontario between Edison Ave. and the imaginary westward extension of Bellgrave Ave., N and S, respectively; and between Cleveland Ave. (Mill Creek Ave.) and Hamner Ave. (Milliken Ave.), W and E, respectively (Figure 3).

The information provided in this report is for use by resource agencies in assessing the potential impact of any contemplated action at the Survey Site upon the Delhi Sands flower-loving fly, and for use by the property owner and other interested parties in anticipating the possible consequences of environmental compliance and permitting requirements upon land use planning.

BACKGROUND

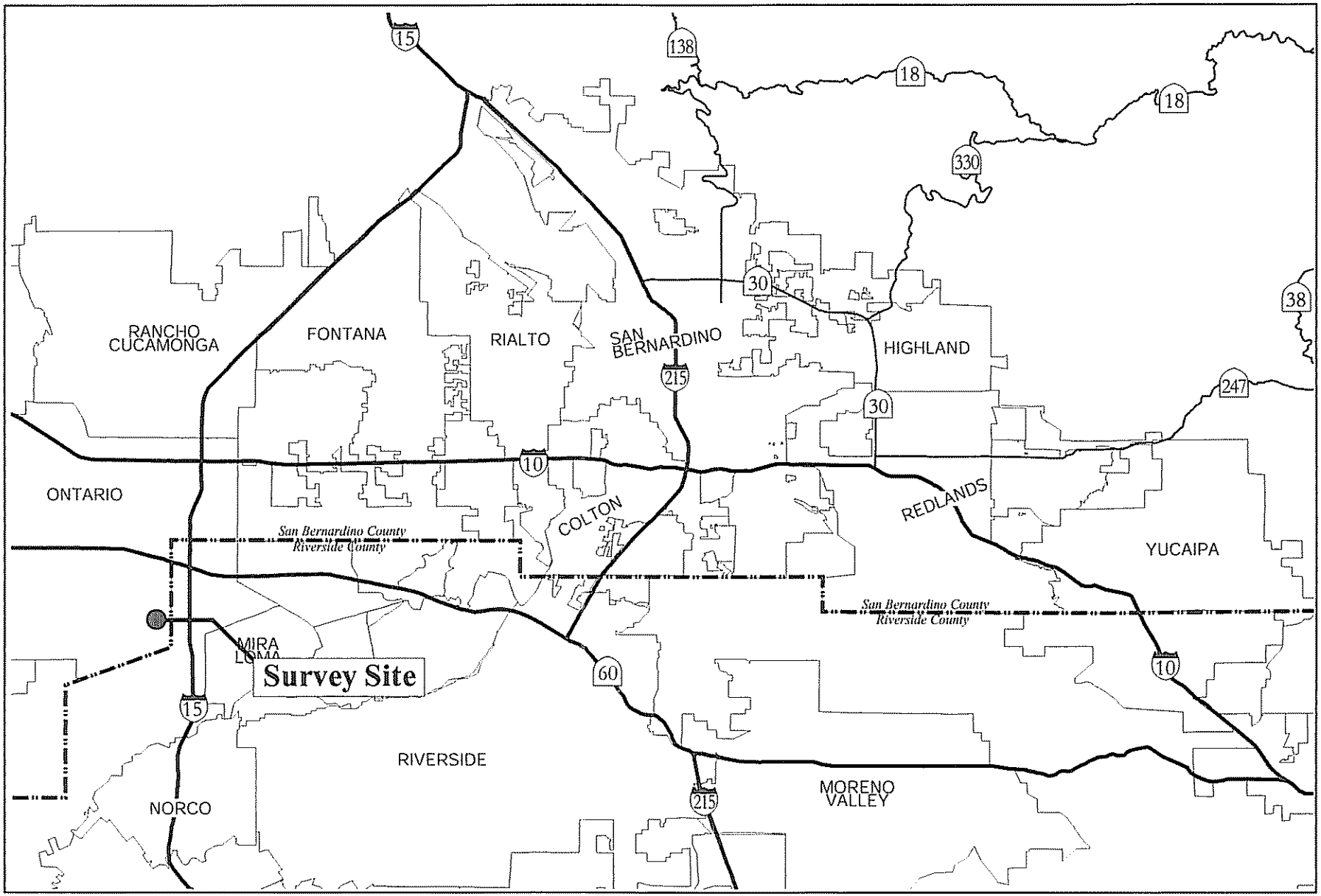
The Delhi Sands flower-loving fly (DSF) is currently listed by the U.S. Fish and Wildlife Service (USFWS) as endangered under the federal Endangered Species Act (ESA). Pursuant to provisions of the ESA, "take" of a federally listed species, such as the DSF, is prohibited by law. The term "take" is defined as any action that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect an endangered species, including by alteration of habitat. The USFWS monitors actions that might affect endangered species through its role as a reviewing agency in the land entitlement process. Typically in California the agency's responsibility to minimize adverse impacts upon endangered species is discharged through involvement in the California Environmental Quality Act (CEQA) review and approval process and/or through the courts. In order to demonstrate whether or not and/or to what degree the DSF, as an endangered species, may be a concern related to land use decisions, the USFWS requires that presence/absence surveys for the species, such as that reported herein, be undertaken.

The DSF is a member of a genus of flies, *Rhaphiomidas*, that, along with some members of the Dipteran family Asilidae (robber flies), contains the largest flies known in North America. Though formerly considered a member of the flower-loving fly family Apioceridae (Cole 1969; Peterson 1981; Cazier 1941, 1985), recent taxonomic studies indicate the genus *Rhaphiomidas*, and thus the DSF, actually belongs in the midas fly family Mydidae (Ovchinnikova 1989; Woodley 1989; Sinclair, *et al.* 1994; Yeates 1994).

There are 20 described species of *Rhaphiomidas* flies as of this writing (Cazier 1985; Rogers 1999), including two new species described recently by Rogers (1993a); descriptions of three additional species are currently in preparation (Rogers 1999). Their known distribution is restricted to desert and semidesert regions of California, southern Nevada, Arizona, New Mexico, western Texas, Baja California, and northwestern Mexico (Rogers and Mattoni 1993). Within this region, they are confined to habitats with fine, sandy substrate, such as sand dunes and dry sandy/rocky washes. All species of this genus exhibit relatively short annual flight periods within a particular locality, normally on the order of two to five weeks (Toft and Kimsey 1982; Wharton 1982; Rogers and Mattoni 1993).

The DSF itself is large, approximately 2.5 cm (1 in) in length, orange-brown in color, and has dark brown oval markings on the upper surface of the abdomen. It has a long proboscis for extracting nectar from flowers, and can be easily distinguished by this obvious feature from the few other species of like-appearing flies occurring within its range. It is generally low-flying, and males of the species are capable of extremely fast flight.

The geographic distribution of the DSF is restricted to areas having a specific sandy substrate type classified as Delhi Series soils, commonly known as "Delhi Sands". This white to light brown fine unconsolidated sand and sandy loam soil formation covers approximately 40 square miles in several irregular patches extending from the City of Colton to Ontario and Chino in northwestern Riverside and southwestern San Bernardino counties (USDA 1971, 1980). This region of Delhi series soils, also known



Larry Munsey International

NORTH

3.2 1.6 0 3.2

SCALE IN MILES

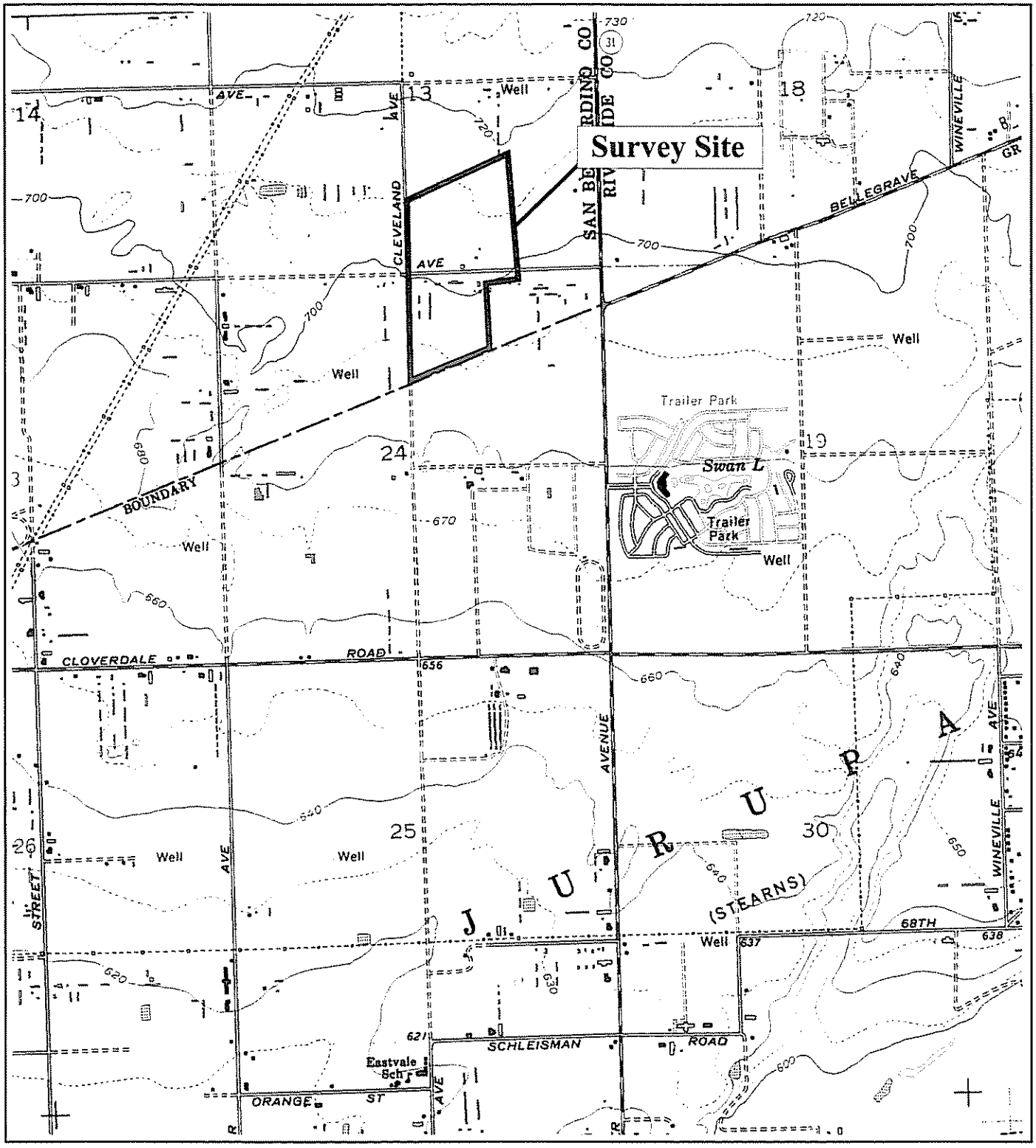
00000058 • 11/2005

figure 1

Regional Location

Armada Development

Year 2005 DSF Survey • Armada Project Site



Source: USGS Corona North 7.5' DRG, 1967 - Photo Revised 1981.

Larry Munsey International

NORTH

2000 1000 0 2000

SCALE IN FEET

figure **2**

Area Location

Armada Development

Year 2005 DSF Survey • Armada Project Site

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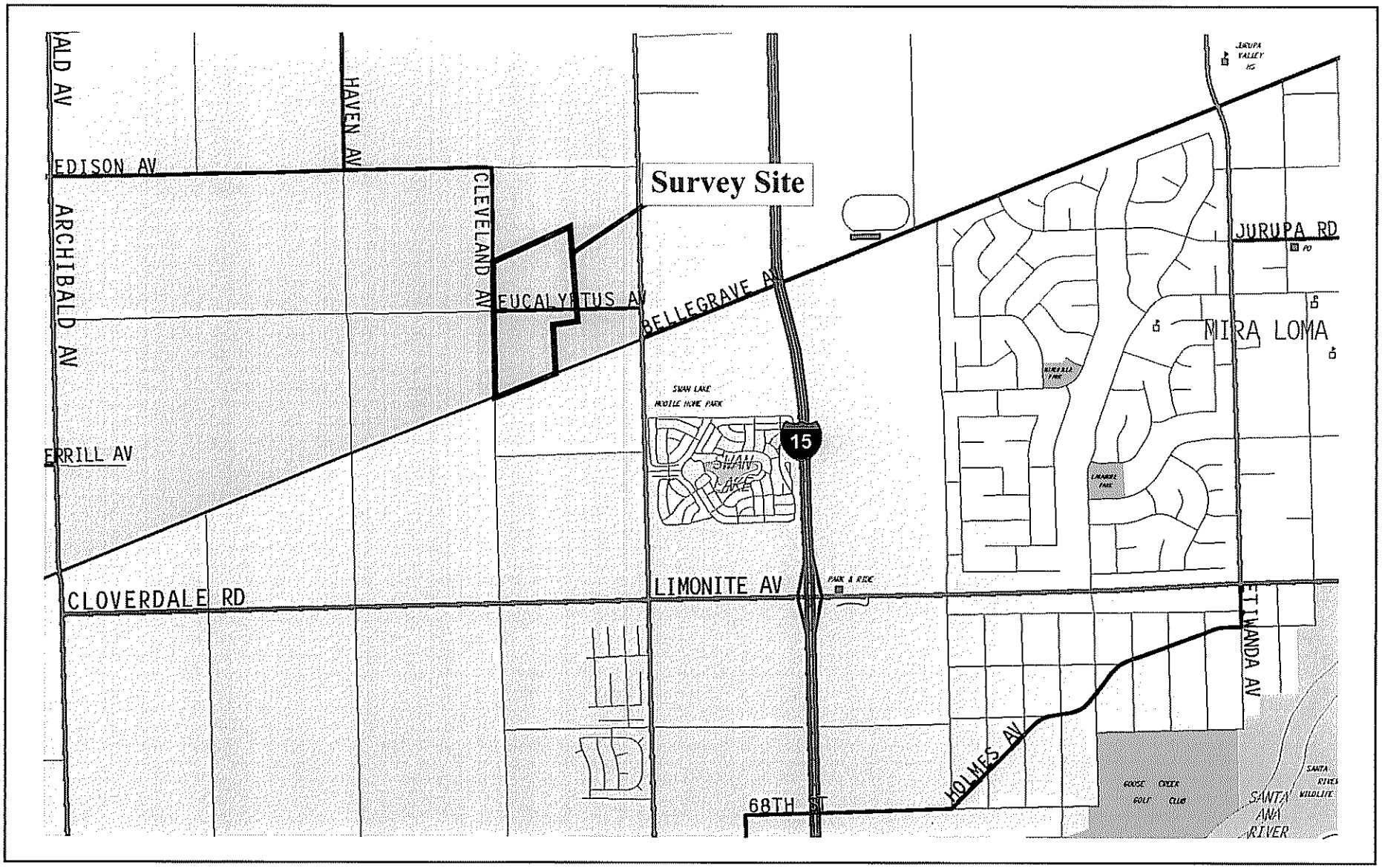

Source: Thomas Bros. Map, 2003.

Larry Munsey International

NORTH

2,554 1,277 0 2,554

SCALE IN FEET

00000058 • 11/2005

figure **3**

Site Location

Armada Development
Year 2005 DSF Survey • Armada Project Site

as the Colton Dunes, is the largest inland cismontane sand dune formation in southern California. This dune formation has been defined as the Desert Sand-verbena Series in Sawyer (1994).

Though museum records indicate its historic range likely included the entire expanse of Delhi Sands soils (Ballmer 1989), the current literature indicates the known distribution of the DSF, as of spring 1997, is restricted to 12 disjunct locations totaling approximately 190 ha (450 ac) situated within a 13-km (8-mi) radius reaching from Colton to Mira Loma, California (Ballmer 1992: USFWS 1992, 1993, 1996a, 1997). This represents a small fraction of its former range (USFWS 1996a, 1997). DSF sightings reported from recent surveys suggest the current range of the DSF may actually extend as far west as Ontario.

Much of the Colton Dunes region has been used for agriculture, chiefly grapes and citrus, since the 1800's. More recently, much of the remaining area has been converted to dairies, housing tracts, and commercial/industrial enterprises. Additional habitat has been lost, degraded, and fragmented by sand mining, illegal dumping, off-road vehicle usage, trampling, vegetation clearing for fire prevention, and competitive exclusion of native plants by invasion of exotic species.

The DSF undergoes complete metamorphosis (egg, larva, pupa, and adult). The complete life span of the species is unknown. Under favorable environmental conditions, the life cycle is likely annual, but it is possible that the larval/pupal stages may last two years or longer, depending on availability of food, temperature, rainfall, and other environmental factors. Except for the adult stage, the remainder of the life cycle is spent underground. It is unknown where the larval form of the DSF lives below ground and what its microhabitat requirements may be. It is not clear whether the early stages of *Rhaphiomidas* in general are herbivores, detritivores, or carnivores. The larvae of the closely related genus *Apiocera* have been successfully raised on earthworms in the laboratory (Cazier 1982).

Adult DSF emerge and become active in the late summer. Collection records for the DSF (Ballmer 1989) and current behavioral studies (Kingsley 1996) document a single annual flight period occurring between early August and early to mid-September. The exact adult life span is not known (several days to several weeks has been postulated), but it is documented that adults do not survive beyond the end of the annual flight period (Kiyani 1995).

Adult DSF are active during the warmest portions of the day during periods of direct sunlight, generally when daytime temperatures exceed 27 degrees Celsius [°C](80 degrees Fahrenheit [°F]) (Ballmer 1989). Peak activity period is between 1000 and 1300 hours PDT; males are rarely, if ever, observed outside 0900-1500 hours, while females have been observed perched on bushes as early as 0800 hours and after nightfall (Kingsley 1996). Flight has not been observed during cloudy, overcast, or rainy conditions, and only rarely during windy or breezy conditions, such as commonly arise in the afternoons within the DSF's range. During these conditions some observations have been made of perching within vegetation. Oviposition has only been observed in mid- to late afternoon, when temperatures begin to decrease (USFWS 1997).

While aloft, DSF may exhibit at least five distinctive types of behavior, each associated with a markedly different flight pattern (Kiyani 1995; Kingsley 1996). "Cruising" or "patrolling", employed by males only, constitutes slow, near-ground, somewhat erratic flight, sustained for relatively long duration with only momentary rest stops during which plants are circled and examined in search of females. Short-movement flight entails relatively slow, low-level, more-or-less direct-line movement from one perch to another nearby, apparently involving no searching. Rapid (or "rocket") flight proceeds in a straight line at above-ground heights of 2 m or more, and functions for longer-distance movement from one place to another, including probably random dispersal. DSF hover in stationary flight (like a hummingbird) over flowers while feeding. Males exhibit territorial behavior by pursuit flight: short bursts pursuing other DSF males or other species of insects that may fly near their "defended" territory; this pursuit may culminate in midair "wrestling" and tumbling to the ground followed by further pursuit, or by the original pursuer returning to the vicinity where the flight originated.

Mating among members of the DSF genus has been described by Rogers and Mattoni (1993). After mating, the females lay their eggs in suitable sandy soil. Females possess specialized egg-laying organs enabling the placement of eggs a few centimeters beneath the surface of the sand. This adaptation assures that the eggs are placed in a cooler and moister environment than the surface of the sand. Most

oviposition takes place in the shade of shrubs, such as telegraph weed (*Heterotheca grandiflora*) (Rogers and Mattoni 1993). The combination of environmental factors required of suitable ovipositing sites is not known.

Adult DSF have rarely been observed taking nectar from flowers, and have not been seen to take other fluids. The nectaring events observed have been brief, on the order of 2-10 seconds, and the only published accounts have all been restricted to flowers of the California buckwheat (*Eriogonum fasciculatum* (Kingsley 1996; USFWS 1997). Rogers (1996, 1998) has reported nectaring observations also involving tarweed (*Hemizonia fasciculata*) and wreathplant (*Stephanomeria virgata*).

Little is known regarding predators of the DSF. The introduced Argentine ant (*Iriodomyrmex humilis*) has been observed to attack and kill a recently emerged adult DSF (Rogers 1993b). Rogers and Mattoni (1993) and Cazier (1985) reported that large robber flies prey upon *Rhaphiomidas* flies. Other predators of the adult flies may include dragonflies and insectivorous birds. Predators of the early DSF stages are unknown, but may include ants, other subterranean predatory insects, and reptiles.

Reliable estimates of DSF population sizes are unavailable. At the San Bernardino County Hospital preserve, the DSF population was estimated at 7 to 10 in 1994, 4 to 9 in 1995, 5 to 13 in 1996, and 5 to 15 in 1997 (Kiyani 1997). Kiyani (1996a,b; 1997) notes a number of assumptions and uncertainties regarding population counts of the DSF, and thus these estimates must be considered tentative. At another site in 1989, a direct count of 13 individuals was made within a half hour over a 10-ac portion of a 150-ac site (Ballmer 1989; USFWS 1997). It has been speculated that typical DSF population densities are likely on the order of 24/ha (10/ac) (USFWS 1997).

Along with other species in the genus, the DSF appears to have very narrow habitat requirements (Rogers and Mattoni 1993); moreover, different microhabitats are selected depending upon sex and specific behaviors involved (Kingsley 1996). The primary habitat requirement for the DSF is sandy substrate with a sparse cover of perennial shrubs and other vegetation. Based upon observations of this and several other members of the *Rhaphiomidas* genus, optimal vegetative cover is probably less than 50 percent, and may be as low as 10-20 percent (USFWS 1997).

The specific species composition and densities of plants preferred by the DSF are currently unknown (Kiyani 1996a). Definitive associations of adults with specific plants have not been established. Typically, the native plant species most consistently found where the DSF occurs (thus commonly considered "indicator species" of suitable habitat) are California buckwheat, telegraph weed, and California croton (*Croton californicus*) (Ballmer 1989; USFWS 1997). Though the former two have been implicated recently as possibly essential to the fly (Kingsley 1996), it has not been conclusively demonstrated whether any of these or other particular plants actually provide resources critical to the DSF, or if they are simply indicators of other, less obvious, habitat factors required by this species. Additional native plants found commonly where the DSF occurs include annual bur-sage (*Ambrosia acanthicarpa*), rancher's fireweed (*Amsinckia menziesii*), vinegar weed (*Lessingia glandulifera*), sapphire eriastrum (*Eriastrum sapphirinum*), and Thurber's spineflower (*Centrostegia thurberi*). Though the foregoing plants are those that occur most commonly in locations where the DSF is found, they also occur where it is not found and their presence does not necessarily imply the presence of the DSF.

Invasive non-native vegetation severely degrades or eliminates the habitat of the DSF (USFWS 1997). Non-native plants especially notorious in this respect include Russian thistle (*Salsola tragus*), horehound (*Marrubium vulgare*), mustard (*Brassica* sp., *Hirschfeldia incana*), cheese weed (*Malva parviflora*), and many species of introduced grasses such as rip gut brome (*Bromus diandrus*) and foxtail chess (*Bromus madritensis* ssp. *rubens*). These exotic plants may alter the amount of soil moisture or make the substrate physically unsuitable for the survival of the DSF and other native subterranean invertebrates.

Notwithstanding the foregoing inferences regarding habitat preferences and requirements, the DSF has been recorded from time to time (albeit in low number and usually fleetingly) in habitats that are substantially degraded and possessed of few apparently favorable attributes for the species. Moreover, the current absence of the DSF on a particular site within its range does not necessarily indicate that future occupation could not occur or re-occur should conditions on the site become more suitable. For example,

the DSF has been recorded recently on certain sites that have been graded or disced repeatedly in the past, after such activity ceased and to some extent the site returned to more natural conditions.

As mandated by the ESA, the USFWS has prepared a recovery plan for the DSF (USFWS 1997). The objective of the recovery plan is to ultimately reduce the risk of DSF extinction to the point that it can be downlisted, *i.e.*, removed from listing as an endangered species. The plan establishes three geographically defined recovery units (RU) known as the Ontario, Jurupa, and Colton RUs. The Survey Site falls within the Colton RU, which contains the majority of currently known populations of DSF.

In order to accomplish its objective, the DSF Recovery Plan predicates that each RU must contain occupied and/or restorable-to-suitable-for-occupation habitat for at least one population of DSF. Further, the plan stipulates that a minimum of eight DSF populations must occur across the 3 RUs, of which four must be in the Colton RU, two each on either side of the east-west running Interstate 10.

EXISTING CONDITIONS

The Survey Site is an irregularly shaped partially fenced vacant fallow field, intersected by old concrete roads and the remains of concrete foundations of former buildings. It is surrounded by the following land uses: north – agricultural; east – fallow field; south – residential; west – residential. The site is bordered on the north and south by asphalt paved roads. Topography of the site is generally flat, except in the western portion where a basin has been excavated along the southwestern boundary and immediately to the north of this a large area has been built up into an artificial "mesa" with fairly steep sides. Natural substrate is classified by soil maps of the U.S. Department of Agriculture (USDA 1980) as Delhi Fine Sand on the northwest approximately 30% of the site and Hilmar Loamy Fine Sand (which contains about 10 percent Delhi Fine Sand) on the remainder. A substantial amount of gravel has been imported onto the site and is intermixed with the natural substrate throughout.

Vegetation consists of ruderal (weedy) mostly non-native plants that are good colonizers of disturbed areas. Russian thistle is dominant, accompanied commonly by Palmer's amaranth (*Amaranthus palmeri*), lamb's quarters (*Chenopodium album*), knotweed (*Polygonum* sp.), and foxtail chess. Some of these exotic species are known to be deleterious to the suitability of habitat for the DSF. None of the three plant species (telegraph weed, croton, and California buckwheat) commonly considered indicative of habitat suitable for the DSF is present on the site.

Plant diversity on the site is very low. A total of 15 species in 8 families was detected (Appendix A); of these, two-thirds are non-native. Vegetation cover on the site is generally dense (approximately 90%), except in areas that have been cleared or paved. In addition to previous construction and modification of natural topography, the site has also been disturbed by mowing and discing.

METHODS

Review of Existing Information

Documentation pertinent to the biology of the DSF and biological resources in the vicinity of the Survey Site was compiled, reviewed, and analyzed. Information reviewed included: (1) Federal Register listing package for the Delhi Sands flower-loving fly; (2) literature pertaining to habitat requirements of the DSF; (3) the Recovery Plan for the DSF (USFWS 1997), and (4) California Natural Diversity Data Base (CNDDB 2004).

Concurrent with this survey, sites within the vicinity of the Survey Site known to be occupied by the DSF were visited to assess directly or by discussion with other surveyors the current status and activity patterns of various DSF populations in the region.

Focused Survey

A focused survey was conducted for the DSF on the Survey Site to assess its presence or absence. The survey was conducted in accordance with USFWS interim general survey guidelines, which recommend 2 replicate surveys per week during the flight period of the DSF (defined by survey guidelines as 1 August

through 20 September, but modified by the Service for the current year to commence 1 July), to be performed between the hours of 1000 and 1400 during appropriate weather conditions (USFWS 1996b). Surveys were conducted by Rick Rogers (TE 844645), Dale Colby, Eric Renfro, and William Gendron.

A total of 23 surveys was performed on the following dates: 3, 6, 10, 13, 17, 20, 24, 27, 31 July; 3, 7, 10, 14, 17, 21, 24, 28, 31 August; and 4, 7, 11, 14,18 September 2005. Weather conditions during the surveys were generally conducive to high levels of invertebrate activity. Temperatures ranged between 28 and 39 °C (82-102 °F), with the following exceptions: two occasions in July when the temperature at survey start was 26 °C (78 °F) but reached 27 °C (80 °F) within minutes; one survey-day in August and one in September when the temperature at the beginning of the surveys was in the low 20s °C (70s °F) but exceeded 27 °C (80 °F) by the end of the survey periods; and two survey-days in September during which the temperature was in the low-mid 20s °C (low-mid 70s °F) throughout the entire survey periods. Wind speed typically ranged from 1 to 16 km/hr (1 to 10 mi/hr), with infrequent gusts to 24 km/hr (15 mi/hr). Skies were generally clear or with scattered clouds, with the exception of two survey-days when overcast conditions prevailed.

During the surveys, the Survey Site was walked systematically and deliberately in search of both DSF sexes and discarded pupal cases. The surveys included careful examination of plant flowers, stems, and foliage; open patches of sand; shaded areas at the base of plants; air space in the immediate vicinity of flowering plants; and general air space within unaided vision above the site. Thus, an exhaustive search was accomplished for flying, feeding, perching, or otherwise engaged flies.

All insects encountered during the surveys were identified to the lowest possible taxon, either by sight or, when necessary, by capture and subsequent determination in the laboratory. Only active and exposed macro insect fauna was considered, thus other less obvious groups no doubt also present (*e.g.*, springtails, termites, earwigs, thrips, etc.) were not recorded.

RESULTS AND DISCUSSION

No DSF or DSF sign (*i.e.*, discarded pupal cases) were observed on the Survey Site during the survey. Of note, the DSF also was not detected on a nearby site during surveys conducted in 2003 and 2004 (LMI 2003, 2004).

Birds observed or heard on or above the site included the turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), killdeer (*Charadrius vociferus*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), western scrub jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), European starling (*Sturnis vulgaris*), and a few species of songbirds. Other vertebrates detected were the side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), cottontail (*Sylvilagus audubonii*), pocket gopher (*Thomomys bottae*), feral dogs and cats, and heteromyid rodents (burrows, tracks, and tail drags).

A total of 121 species of insects in 45 families was recorded on the Survey Site during the survey. A full list of insects observed is provided in Appendix B.

The following factors indicate the presence of the DSF on the Survey Site is unlikely:

- degraded condition of entire site;
- disturbed condition of soils;
- low diversity of plant species;
- absence of California buckwheat, California croton, and telegraph weed;
- high proportion of non-native invasives in site's plant composition; and
- type and condition of the habitat surrounding the site.

By USFWS regulation, a second consecutive year of surveys with negative results is required to confirm the absence of the DSF on the site.

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APPENDICES

APPENDIX A
PLANTS OBSERVED ON THE PROJECT SITE [1]

ANGIOSPERMS (DICOTYLEDONS)

AMARANTHACEAE — AMARANTH FAMILY

Amaranthus palmeri – Palmer's amaranth

ASTERACEAE — SUNFLOWER FAMILY

Baccharis salicifolia – mule fat
* *Conyza bonariensis* – flax-leaved horseweed
Helianthus annuus – common sunflower
Stephanomeria virgata – twiggy wreathplant

BRASSICACEAE — MUSTARD FAMILY

* *Hirschfeldia incana* – short-podded mustard

CHENOPODIACEAE — GOOSEFOOT FAMILY

* *Chenopodium album* – lamb's quarters
* *Chenopodium botrys* – Jerusalem oak
* *Salsola tragus* – Russian thistle

FABACEAE — LEGUME FAMILY

Lotus purshianus – Spanish clover
* *Melilotus alba* – white sweetclover

POLYGONACEAE — BUCKWHEAT FAMILY

* *Polygonum* sp.

ZYGOPHYLLACEAE — CALTROP FAMILY

* *Tribulus terrestris* – puncture vine

ANGIOSPERMS (MONOCOTYLEDONS)

POACEAE — GRASS FAMILY

* *Bromus madritensis* ssp. *rubens* – foxtail chess
* *Digitaria sanguinalis* – hairy crabgrass

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[1] This is not intended as an exhaustive listing of the vegetation occurring on the site; some annual herbs or very uncommon species may not have been detected by the field survey. Floral taxonomy used in this report follows the *Jepson Manual: Higher Plants of California* (Hickman 1993). Additional common plant names are taken from Munz (1974), Beauchamp (1986), Roberts (1989), Abrams (1923, 1944), and Abrams and Ferris (1951, 1960).

* non-native

APPENDIX B
INSECTS OBSERVED ON THE PROJECT SITE [1]

ORDER ODONATA — DRAGONFLIES & DAMSELFLIES

AESHNIDAE — DARNER FAMILY

Anax junius – common green darner
Aeshna multicolor – multicolored darner

LIBELLULIDAE — SKIMMER FAMILY

Libellula saturata – big red skimmer
Pachydiplax longipennis – swift long-winged skimmer
Pantala flavescens – globetrotter
Tramea onusta – red saddlebags

COENAGRIONIDAE — NARROW-WINGED DAMSELFLY FAMILY

Enallagma sp. – bluet

ORDER ORTHOPTERA — GRASSHOPPERS, KATYDIDS & CRICKETS

ACRIDIDAE — SHORT-HORNED GRASSHOPPER FAMILY

Derotmema saussureanum
Melanoplus sp.
Trimeritropis californicus
Trimeritropis pallidipennis – pallid band-wing grasshopper
Schistocerca nitens – gray bird grasshopper

GRYLLIDAE — CRICKET FAMILY

Oecanthus sp. – tree cricket

ORDER MANTODEA — MANTIDS & WALKINGSTICKS

MANTIDAE — MANTIS FAMILY

Iris oratoria – Mediterranean mantis
Stagomantis californica

ORDER HEMIPTERA — TRUE BUGS

MIRIDAE — PLANT BUG FAMILY

Lygus sp.

NABIDAE — DAMSEL BUG FAMILY

Nabis sp.

PENTATOMIDAE — STINK BUG FAMILY

Chlorochroa uhleri/sayi – Say's stink bug

LYGAEIDAE — SEED BUG FAMILY

Geocoris sp.
Lygaeus kalmii – small milkweed bug

RHOPALIDAE — SCENTLESS PLANT BUGS

Rhopalus sp.

REDUVIIDAE — ASSASSIN BUG FAMILY

Sinea sp.
Zelus tetracanthus
Zelus sp.

ORDER NEUROPTERA — NET-WINGED INSECTS

CHRYSOPIDAE — GREEN LACEWING FAMILY

Chrysoperla sp. – green lacewing

ORDER COLEOPTERA — BEETLES

MALACHIIDAE — SOFT-WINGED FLOWER BEETLE FAMILY

1 unidentified species

COCCINELLIDAE — LADYBIRD BEETLE FAMILY

Coccinella neuvapunctata
Hippodamia convergens – convergent ladybird beetle

MORDELLIDAE — TUMBLING FLOWER BEETLE FAMILY

1 unidentified species

TENEBRIONIDAE — DARKLING BEETLE FAMILY

Eleodes gracilis – stink beetle

SCARABAEIDAE — SCARAB BEETLE FAMILY

Aphodius sp.
Cotinus texana (mutabilis) – green fruit beetle

CHRYSOMELIDAE — LEAF BEETLE FAMILY

Diabrotica undecimpunctata – western spotted cucumber beetle
Diabrotica vittata

ORDER LEPIDOPTERA — MOTHS AND BUTTERFLIES

SUBORDER HETEROCERA — MOTHS

ARCTIIDAE — TIGER MOTH FAMILY

Estigmene acraea – wooly bear moth

SUBORDER RHOPALOCERA — BUTTERFLIES

HESPERIIDAE — SKIPPER FAMILY

Hylephila phyleus – fiery skipper
Pyrgus albescens – western checkered skipper

PIERIDAE — WHITES & SULFURS FAMILY

Pieris (Artogeia) rapae — cabbage white
Pieris (Pontia) protodice – common white
Colias eurytheme – orange sulphur

NYMPHALIDAE — BRUSH-FOOTED BUTTERFLY FAMILY

Cynthia (Vanessa) cardui – painted lady

LYCAENIDAE — HAIRSTREAKS, COPPERS & BLUES FAMILY

Brephidium exilis – pygmy blue
Icaricia (Plebejus) acmon – acmon blue
Strymon melinus – gray (common) hairstreak

ORDER DIPTERA — TRUE FLIES

TABANIDAE — HORSE & DEER FLY FAMILY

Tabanus punctifer – big black horse fly

MYDIDAE — MIDAS FLY FAMILY

Nemomidas pantherinus – midas fly

ASILIDAE — ROBBER FLY FAMILY

Efferia albibarbis
Mallophora fautrix – bumble bee robber fly
Saropogon luteus
Stenopogon brevisculus

BOMBYLIIDAE — BEE FLY FAMILY

Hemipenthes inops
Hemipenthes lepidota
Neodiplocampta mira
Thyridanthrax atrata
Thyridanthrax nugator
Villa molitor

SYRPHIDAE — HOVER FLY FAMILY

Eristalis aeneas
Eristalis arbustorum
Eristalis latifrons
Eristalis obsoletus
Eristalis tenax – drone fly
Eupeodes volucris
Heliophilus latifrons
Paragus tibialis
Syritta pipiens

CONOPIDAE — THICK-HEADED FLY FAMILY

Physocephala texana

TEPHRITIDAE — FRUIT FLY FAMILY

Ceratitis capitata

MUSCIDAE — MUSCID FLY FAMILY

Graphiomyia maculata
Musca domestica – house fly

TACHINIDAE — TACHINID FLY FAMILY

Cylindromyia sp.
Gymnosoma fuliginosa
Tachinomyia sp.

SARCOPHAGIDAE — FLESH FLY FAMILY

Eumacronchia sp.
Sarcophaga haemorrhoidalis – flesh fly
Wolfhartia sp.

ORDER HYMENOPTERA — ANTS, BEES & WASPS

CHALCIDIDAE — CHALCID WASP FAMILY

Brachymeria sp.

CHRYSIDIDAE — CUCKOO WASP FAMILY

Argochrysis mesillae
Omallus sp.
Parnopes edwardsii – Edwards' cuckoo wasp
Tribe Elampini

MUTILLIDAE — VELVET ANT FAMILY

Dasymutilla coccineohirta – red-haired velvet ant

FORMICIDAE — ANT FAMILY

Pogonomyrmex californica – red harvester ant

POMPILIDAE — SPIDER WASP FAMILY

Ageniella sp.
Anoplus sp.
Episyron sp.
Pepsis chrysothemis – tarantula hawk

VESPIDAE — PAPER WASP FAMILY

Euodyneurus sp.
Polistes apachus – paper wasp
Polistes gallicus – European paper wasp

SPHECIDAE — THREAD-WAISTED AND DIGGER WASP FAMILY

Ammophila aberti
Ammophila azteca
Astata sp.
Bembix comata – sand wasp
Bycrites ventralis
Cerceris bicornuta
Cerceris femerrubrum
Chlorion aerarium
Dryudella picta
Haplomelinus albitomentosus
Liris aequalis
Liris sp.
Microbembix californica
Oxybellus pitanta
Oxybellus uniglumis
Philanthus multimaculata
Philanthus pacificus
Podalonia sp.
Prionyx parkeri
Sceliphron caementarium – black-and-yellow mud dauber
Sphecius grandis – cicada killer

HALICTIDAE — HALICTID BEE FAMILY

Agapostemon texana – metallic sweat bee
Halictus sp.
Lasioglossum sp.

MEGACHILIDAE — LEAFCUTTING BEE FAMILY

Megachile sp.

ANTHOPHORIDAE — DIGGER BEE FAMILY

Anthophora urbana
Epeolus sp.
Melecta sp.
Melessodes sp. (2)
Nomada sp.

APIDAE — BUMBLE BEE & HONEY BEE FAMILY

Apis mellifera – honey bee
Bombus sonorus – Sonoran bumble bee

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[1] This list reports insects observed on the site during the surveys for the DSF; it is not intended to represent an exhaustive insect survey.

REPORT OF YEAR 2005 FOCUSED SURVEY FOR DELHI SANDS FLOWER-LOVING FLY AT AMBERHILL SITE SAN BERNARDINO COUNTY, CALIFORNIA

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INTRODUCTION

This report presents the findings of the first year of an intended two consecutive-year focused survey for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) conducted by Larry Munsey International (LMI) on a site ("Survey Site") in an unincorporated area of San Bernardino County, California (Figure 1). The Survey Site falls within Sections 13 and 24, Township 2 south, Range 7 west of the U. S. Geological Survey (USGS) "Corona North" 7.5 minute quadrangle (Figure 2). It is a 26-ha (64-ac) parcel of land located southeast of the City of Ontario between Edison Ave. and the imaginary westward extension of Bellgrave Ave., N and S, respectively; and between Cleveland Ave. (Mill Creek Ave.) and Hamner Ave. (Milliken Ave.), W and E, respectively (Figure 3).

The information provided in this report is for use by resource agencies in assessing the potential impact of any contemplated action at the Survey Site upon the Delhi Sands flower-loving fly, and for use by the property owner and other interested parties in anticipating the possible consequences of environmental compliance and permitting requirements upon land use planning.

BACKGROUND

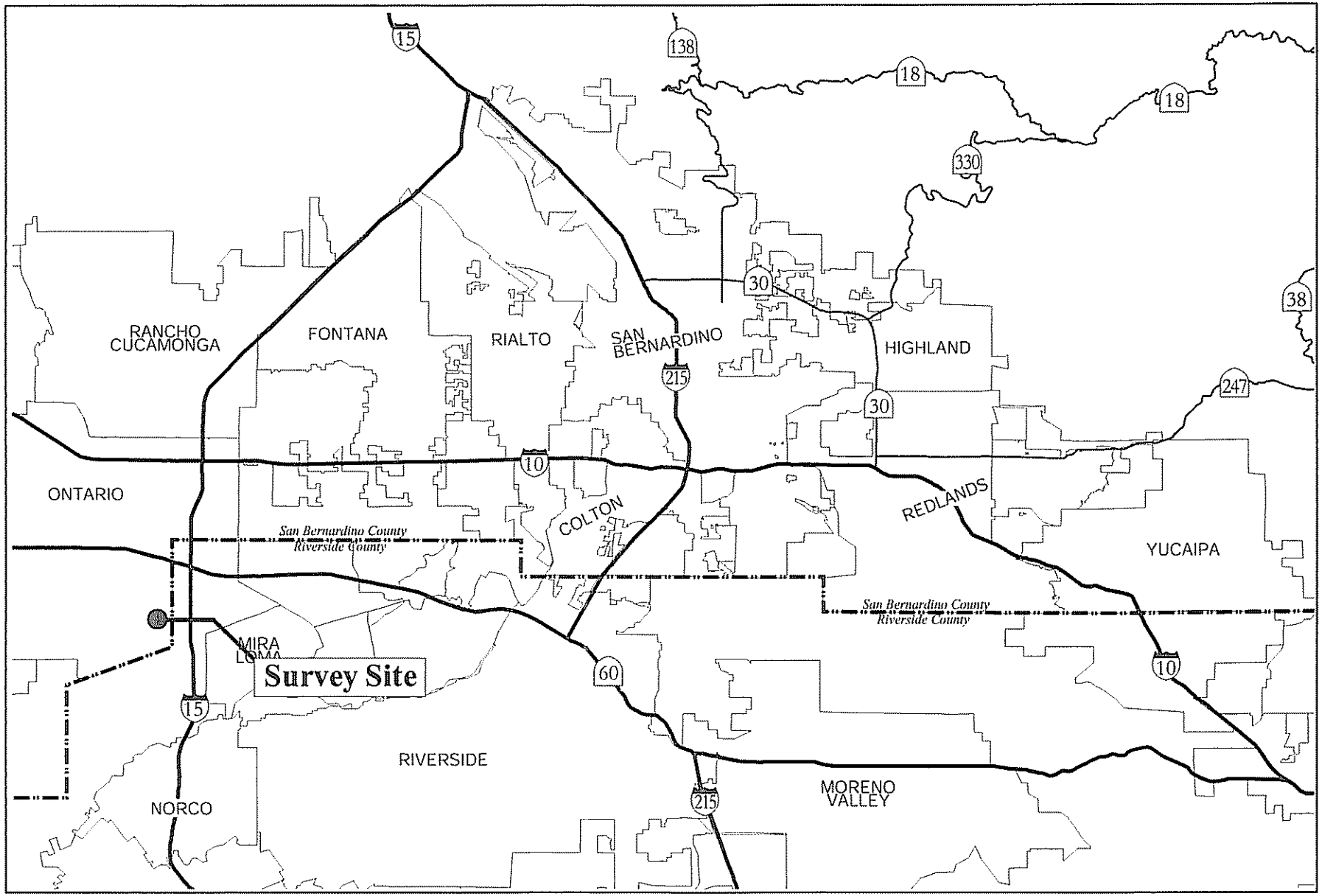
The Delhi Sands flower-loving fly (DSF) is currently listed by the U.S. Fish and Wildlife Service (USFWS) as endangered under the federal Endangered Species Act (ESA). Pursuant to provisions of the ESA, "take" of a federally listed species, such as the DSF, is prohibited by law. The term "take" is defined as any action that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect an endangered species, including by alteration of habitat. The USFWS monitors actions that might affect endangered species through its role as a reviewing agency in the land entitlement process. Typically in California the agency's responsibility to minimize adverse impacts upon endangered species is discharged through involvement in the California Environmental Quality Act (CEQA) review and approval process and/or through the courts. In order to demonstrate whether or not and/or to what degree the DSF, as an endangered species, may be a concern related to land use decisions, the USFWS requires that presence/absence surveys for the species, such as that reported herein, be undertaken.

The DSF is a member of a genus of flies, *Rhaphiomidas*, that, along with some members of the Dipteran family Asilidae (robber flies), contains the largest flies known in North America. Though formerly considered a member of the flower-loving fly family Apioceridae (Cole 1969; Peterson 1981; Cazier 1941, 1985), recent taxonomic studies indicate the genus *Rhaphiomidas*, and thus the DSF, actually belongs in the midas fly family Mydidae (Ovchinnikova 1989; Woodley 1989; Sinclair, *et al.* 1994; Yeates 1994).

There are 20 described species of *Rhaphiomidas* flies as of this writing (Cazier 1985; Rogers 1999), including two new species described recently by Rogers (1993a); descriptions of three additional species are currently in preparation (Rogers 1999). Their known distribution is restricted to desert and semidesert regions of California, southern Nevada, Arizona, New Mexico, western Texas, Baja California, and northwestern Mexico (Rogers and Mattoni 1993). Within this region, they are confined to habitats with fine, sandy substrate, such as sand dunes and dry sandy/rocky washes. All species of this genus exhibit relatively short annual flight periods within a particular locality, normally on the order of two to five weeks (Toft and Kimsey 1982; Wharton 1982; Rogers and Mattoni 1993).

The DSF itself is large, approximately 2.5 cm (1 in) in length, orange-brown in color, and has dark brown oval markings on the upper surface of the abdomen. It has a long proboscis for extracting nectar from flowers, and can be easily distinguished by this obvious feature from the few other species of like-appearing flies occurring within its range. It is generally low-flying, and males of the species are capable of extremely fast flight.

The geographic distribution of the DSF is restricted to areas having a specific sandy substrate type classified as Delhi Series soils, commonly known as "Delhi Sands". This white to light brown fine unconsolidated sand and sandy loam soil formation covers approximately 40 square miles in several irregular patches extending from the City of Colton to Ontario and Chino in northwestern Riverside and southwestern San Bernardino counties (USDA 1971, 1980). This region of Delhi series soils, also known



Larry Munsey International

NORTH

3.2 1.6 0 3.2

SCALE IN MILES

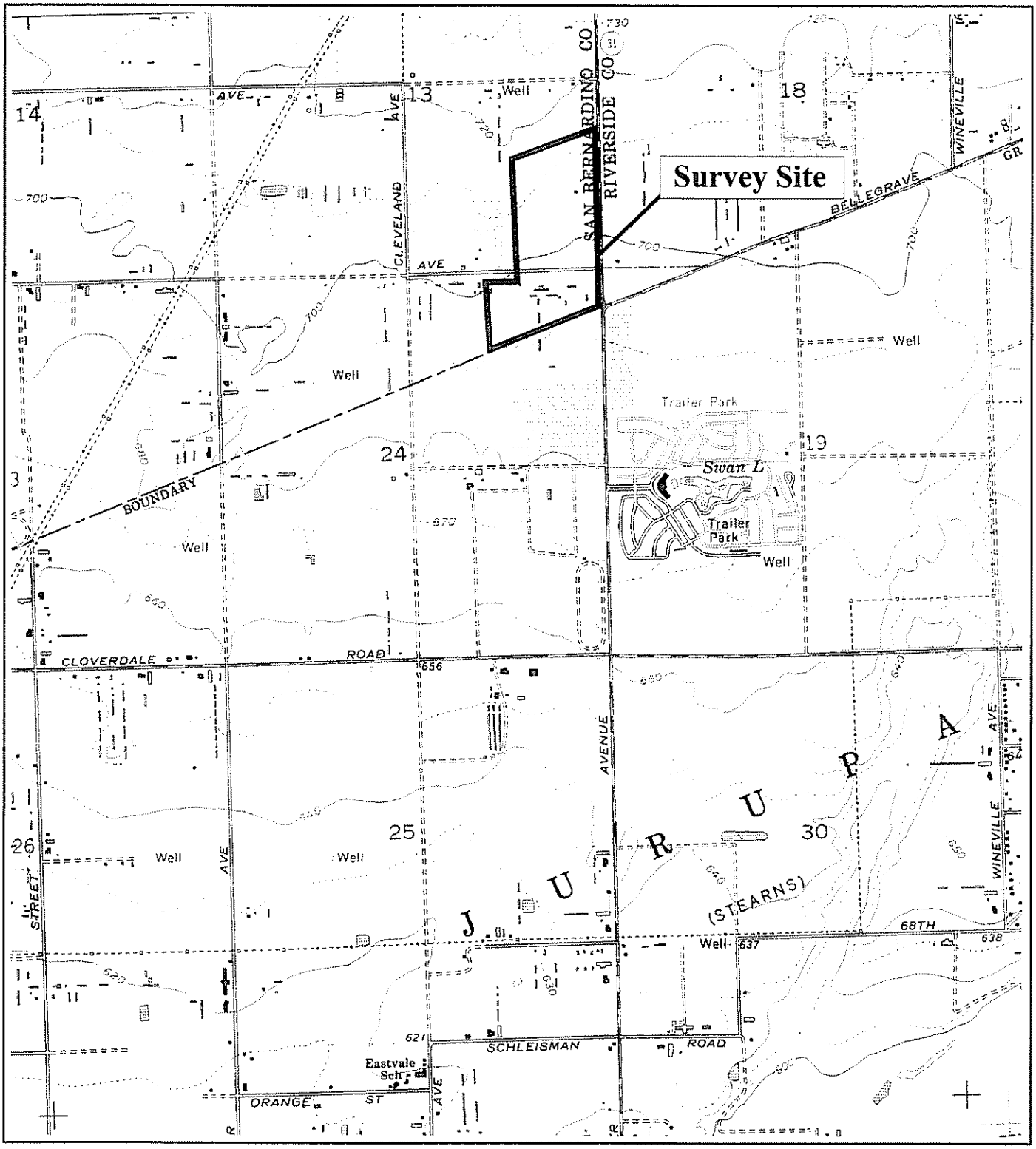
00000057 • 11/2005

figure 1

Regional Location

Armada Development

Year 2005 DSF Survey • Amberhill Project Site



Source: USGS Corona North 7.5' DRG, 1967 - Photo Revised 1981.

Larry Munsey International

NORTH

2000 1000 0 2000

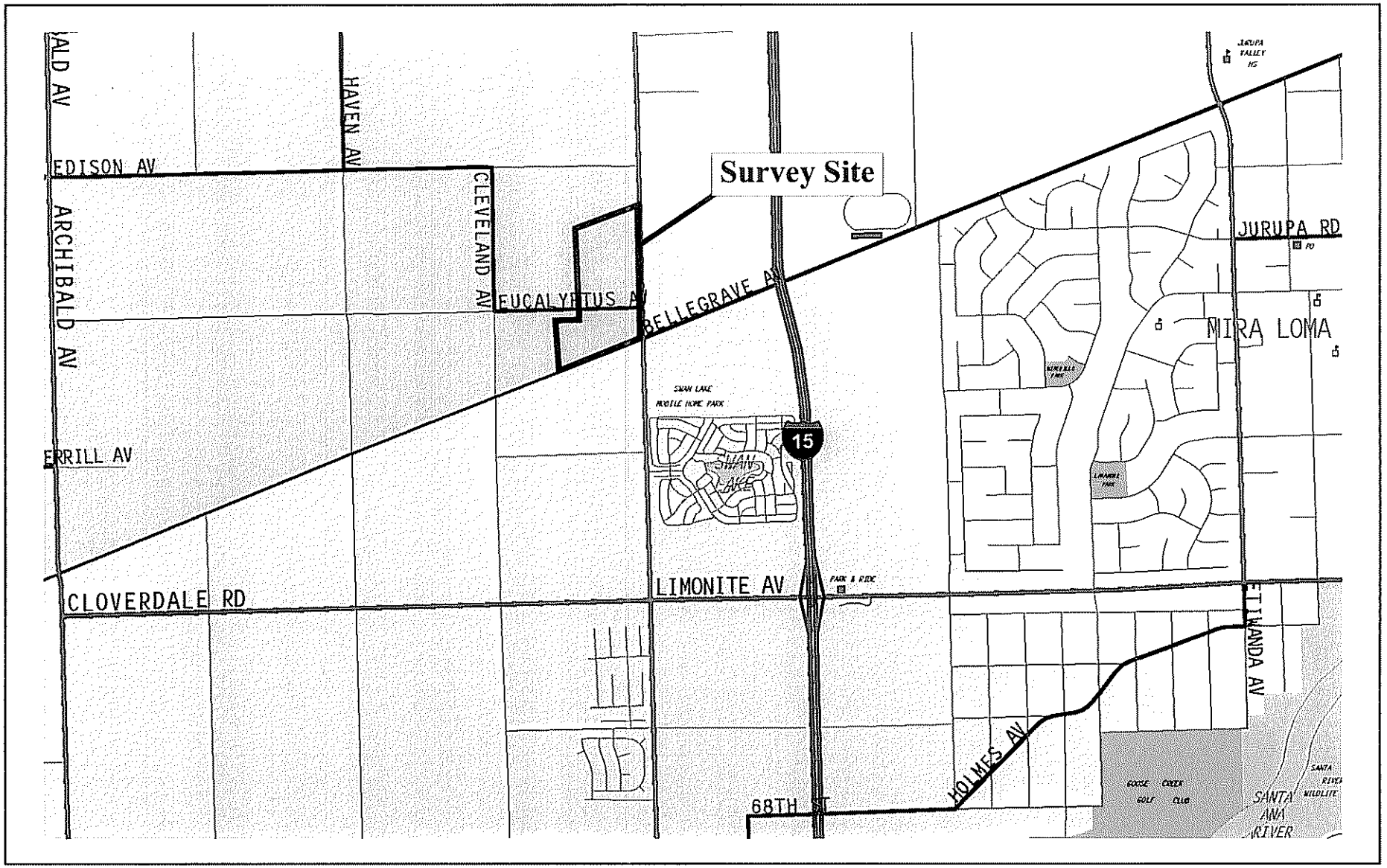
SCALE IN FEET

figure **2**

Area Location

Armada Development
Year 2005 DSF Survey • Amberhill Project Site

00000057 • 11/2005



Source: Thomas Bros. Map, 2003.

Larry Munsey International

NORTH

2,554 1,277 0 2,554

SCALE IN FEET

figure **3**

Site Location

Armada Development

Year 2005 DSF Survey • Amberhill Project Site

00000057 • 11/2005

as the Colton Dunes, is the largest inland cismontane sand dune formation in southern California. This dune formation has been defined as the Desert Sand-verbena Series in Sawyer (1994).

Though museum records indicate its historic range likely included the entire expanse of Delhi Sands soils (Ballmer 1989), the current literature indicates the known distribution of the DSF, as of spring 1997, is restricted to 12 disjunct locations totaling approximately 190 ha (450 ac) situated within a 13-km (8-mi) radius reaching from Colton to Mira Loma, California (Ballmer 1992: USFWS 1992, 1993, 1996a, 1997). This represents a small fraction of its former range (USFWS 1996a, 1997). DSF sightings reported from recent surveys suggest the current range of the DSF may actually extend as far west as Ontario.

Much of the Colton Dunes region has been used for agriculture, chiefly grapes and citrus, since the 1800's. More recently, much of the remaining area has been converted to dairies, housing tracts, and commercial/industrial enterprises. Additional habitat has been lost, degraded, and fragmented by sand mining, illegal dumping, off-road vehicle usage, trampling, vegetation clearing for fire prevention, and competitive exclusion of native plants by invasion of exotic species.

The DSF undergoes complete metamorphosis (egg, larva, pupa, and adult). The complete life span of the species is unknown. Under favorable environmental conditions, the life cycle is likely annual, but it is possible that the larval/pupal stages may last two years or longer, depending on availability of food, temperature, rainfall, and other environmental factors. Except for the adult stage, the remainder of the life cycle is spent underground. It is unknown where the larval form of the DSF lives below ground and what its microhabitat requirements may be. It is not clear whether the early stages of *Rhaphiomidas* in general are herbivores, detritivores, or carnivores. The larvae of the closely related genus *Apiocera* have been successfully raised on earthworms in the laboratory (Cazier 1982).

Adult DSF emerge and become active in the late summer. Collection records for the DSF (Ballmer 1989) and current behavioral studies (Kingsley 1996) document a single annual flight period occurring between early August and early to mid-September. The exact adult life span is not known (several days to several weeks has been postulated), but it is documented that adults do not survive beyond the end of the annual flight period (Kiyani 1995).

Adult DSF are active during the warmest portions of the day during periods of direct sunlight, generally when daytime temperatures exceed 27 degrees Celsius [°C](80 degrees Fahrenheit [°F]) (Ballmer 1989). Peak activity period is between 1000 and 1300 hours PDT; males are rarely, if ever, observed outside 0900-1500 hours, while females have been observed perched on bushes as early as 0800 hours and after nightfall (Kingsley 1996). Flight has not been observed during cloudy, overcast, or rainy conditions, and only rarely during windy or breezy conditions, such as commonly arise in the afternoons within the DSF's range. During these conditions some observations have been made of perching within vegetation. Oviposition has only been observed in mid- to late afternoon, when temperatures begin to decrease (USFWS 1997).

While aloft, DSF may exhibit at least five distinctive types of behavior, each associated with a markedly different flight pattern (Kiyani 1995; Kingsley 1996). "Cruising" or "patrolling", employed by males only, constitutes slow, near-ground, somewhat erratic flight, sustained for relatively long duration with only momentary rest stops during which plants are circled and examined in search of females. Short-movement flight entails relatively slow, low-level, more-or-less direct-line movement from one perch to another nearby, apparently involving no searching. Rapid (or "rocket") flight proceeds in a straight line at above-ground heights of 2 m or more, and functions for longer-distance movement from one place to another, including probably random dispersal. DSF hover in stationary flight (like a hummingbird) over flowers while feeding. Males exhibit territorial behavior by pursuit flight: short bursts pursuing other DSF males or other species of insects that may fly near their "defended" territory; this pursuit may culminate in midair "wrestling" and tumbling to the ground followed by further pursuit, or by the original pursuer returning to the vicinity where the flight originated.

Mating among members of the DSF genus has been described by Rogers and Mattoni (1993). After mating, the females lay their eggs in suitable sandy soil. Females possess specialized egg-laying organs enabling the placement of eggs a few centimeters beneath the surface of the sand. This adaptation assures that the eggs are placed in a cooler and moister environment than the surface of the sand. Most

oviposition takes place in the shade of shrubs, such as telegraph weed (*Heterotheca grandiflora*) (Rogers and Mattoni 1993). The combination of environmental factors required of suitable ovipositing sites is not known.

Adult DSF have rarely been observed taking nectar from flowers, and have not been seen to take other fluids. The nectaring events observed have been brief, on the order of 2-10 seconds, and the only published accounts have all been restricted to flowers of the California buckwheat (*Eriogonum fasciculatum* (Kingsley 1996; USFWS 1997). Rogers (1996, 1998) has reported nectaring observations also involving tarweed (*Hemizonia fasciculata*) and wreathplant (*Stephanomeria virgata*).

Little is known regarding predators of the DSF. The introduced Argentine ant (*Iriodomyrmex humilis*) has been observed to attack and kill a recently emerged adult DSF (Rogers 1993b). Rogers and Mattoni (1993) and Cazier (1985) reported that large robber flies prey upon *Rhaphiomidas* flies. Other predators of the adult flies may include dragonflies and insectivorous birds. Predators of the early DSF stages are unknown, but may include ants, other subterranean predatory insects, and reptiles.

Reliable estimates of DSF population sizes are unavailable. At the San Bernardino County Hospital preserve, the DSF population was estimated at 7 to 10 in 1994, 4 to 9 in 1995, 5 to 13 in 1996, and 5 to 15 in 1997 (Kiyani 1997). Kiyani (1996a,b; 1997) notes a number of assumptions and uncertainties regarding population counts of the DSF, and thus these estimates must be considered tentative. At another site in 1989, a direct count of 13 individuals was made within a half hour over a 10-ac portion of a 150-ac site (Ballmer 1989; USFWS 1997). It has been speculated that typical DSF population densities are likely on the order of 24/ha (10/ac) (USFWS 1997).

Along with other species in the genus, the DSF appears to have very narrow habitat requirements (Rogers and Mattoni 1993); moreover, different microhabitats are selected depending upon sex and specific behaviors involved (Kingsley 1996). The primary habitat requirement for the DSF is sandy substrate with a sparse cover of perennial shrubs and other vegetation. Based upon observations of this and several other members of the *Rhaphiomidas* genus, optimal vegetative cover is probably less than 50 percent, and may be as low as 10-20 percent (USFWS 1997).

The specific species composition and densities of plants preferred by the DSF are currently unknown (Kiyani 1996a). Definitive associations of adults with specific plants have not been established. Typically, the native plant species most consistently found where the DSF occurs (thus commonly considered "indicator species" of suitable habitat) are California buckwheat, telegraph weed, and California croton (*Croton californicus*) (Ballmer 1989; USFWS 1997). Though the former two have been implicated recently as possibly essential to the fly (Kingsley 1996), it has not been conclusively demonstrated whether any of these or other particular plants actually provide resources critical to the DSF, or if they are simply indicators of other, less obvious, habitat factors required by this species. Additional native plants found commonly where the DSF occurs include annual bur-sage (*Ambrosia acanthicarpa*), rancher's fireweed (*Amsinckia menziesii*), vinegar weed (*Lessingia glandulifera*), sapphire eriastrum (*Eriastrum sapphirinum*), and Thurber's spineflower (*Centrostegia thurberi*). Though the foregoing plants are those that occur most commonly in locations where the DSF is found, they also occur where it is not found and their presence does not necessarily imply the presence of the DSF.

Invasive non-native vegetation severely degrades or eliminates the habitat of the DSF (USFWS 1997). Non-native plants especially notorious in this respect include Russian thistle (*Salsola tragus*), horehound (*Marrubium vulgare*), mustard (*Brassica* sp., *Hirschfeldia incana*), cheese weed (*Malva parviflora*), and many species of introduced grasses such as rip gut brome (*Bromus diandrus*) and foxtail chess (*Bromus madritensis* ssp. *rubens*). These exotic plants may alter the amount of soil moisture or make the substrate physically unsuitable for the survival of the DSF and other native subterranean invertebrates.

Notwithstanding the foregoing inferences regarding habitat preferences and requirements, the DSF has been recorded from time to time (albeit in low number and usually fleetingly) in habitats that are substantially degraded and possessed of few apparently favorable attributes for the species. Moreover, the current absence of the DSF on a particular site within its range does not necessarily indicate that future occupation could not occur or re-occur should conditions on the site become more suitable. For example,

the DSF has been recorded recently on certain sites that have been graded or disced repeatedly in the past, after such activity ceased and to some extent the site returned to more natural conditions.

As mandated by the ESA, the USFWS has prepared a recovery plan for the DSF (USFWS 1997). The objective of the recovery plan is to ultimately reduce the risk of DSF extinction to the point that it can be downlisted, *i.e.,* removed from listing as an endangered species. The plan establishes three geographically defined recovery units (RU) known as the Ontario, Jurupa, and Colton RUs. The Survey Site falls within the Colton RU, which contains the majority of currently known populations of DSF.

In order to accomplish its objective, the DSF Recovery Plan predicates that each RU must contain occupied and/or restorable-to-suitable-for-occupation habitat for at least one population of DSF. Further, the plan stipulates that a minimum of eight DSF populations must occur across the 3 RUs, of which four must be in the Colton RU, two each on either side of the east-west running Interstate 10.

EXISTING CONDITIONS

The Survey Site is an irregularly shaped partially fenced vacant fallow field surrounded by the following land uses: north – agricultural; east – residential; south – residential; west – fallow field. The site is bordered on the north, south, and east by asphalt paved roads. Additionally, a residential dwelling is present at the northwest corner of the site, and a commercial nursery selling palm trees is located at its northeast end. The topography of the site is essentially flat. Natural substrate is classified by soil maps of the U.S. Department of Agriculture (USDA 1980) as Delhi Fine Sand on approximately 80% of the site and Hilmar Loamy Fine Sand (which contains about 10 percent Delhi Fine Sand) on the remainder along the western border.

Vegetation consists of ruderal (weedy) mostly non-native plants that are good colonizers of disturbed areas. Russian thistle is dominant, accompanied commonly by Palmer's amaranth (*Amaranthus palmeri*), lamb's quarters (*Chenopodium album*), knotweed (*Polygonum* sp.), and foxtail chess. Some of these exotic species are known to be deleterious to the suitability of habitat for the DSF. None of the three plant species (telegraph weed, croton, and California buckwheat) commonly considered indicative of habitat suitable for the DSF is present on the site.

Plant diversity on the site is very low. A total of 17 species in 10 families was detected (Appendix A); of these, all but four are non-native. Vegetation cover on the site is generally dense (approximately 80%). The site has been disturbed by discing, and dumping of gravel and trash throughout.

METHODS

Review of Existing Information

Documentation pertinent to the biology of the DSF and biological resources in the vicinity of the Survey Site was compiled, reviewed, and analyzed. Information reviewed included: (1) Federal Register listing package for the Delhi Sands flower-loving fly; (2) literature pertaining to habitat requirements of the DSF; (3) the Recovery Plan for the DSF (USFWS 1997), and (4) California Natural Diversity Data Base (CNDDB 2004).

Concurrent with this survey, sites within the vicinity of the Survey Site known to be occupied by the DSF were visited to assess directly or by discussion with other surveyors the current status and activity patterns of various DSF populations in the region.

Focused Survey

A focused survey was conducted for the DSF on the Survey Site to assess its presence or absence. The survey was conducted in accordance with USFWS interim general survey guidelines, which recommend 2 replicate surveys per week during the flight period of the DSF (defined by survey guidelines as 1 August through 20 September, but modified by the Service for the current year to commence 1 July), to be

performed between the hours of 1000 and 1400 during appropriate weather conditions (USFWS 1996b). Surveys were conducted by Rick Rogers (TE 844645), Dale Colby, Eric Renfro, and William Gendron.

A total of 23 surveys was performed on the following dates: 3, 6, 10, 13, 17, 20, 24, 27, 31 July; 3, 7, 10, 14, 17, 21, 24, 28, 31 August; and 4, 7, 11, 14,18 September 2005. Weather conditions during the surveys were generally conducive to high levels of invertebrate activity. Temperatures ranged between 27 and 39 °C (80-103 °F), with the following exceptions: two occasions in July when the temperature at survey start was 26 °C (78 °F) but reached 27 °C (80 °F) within minutes; one overcast survey-day in August when the temperature hovered near 21 °C (70 °F) during the entire survey period; and the three final survey-days in September during which the temperature was in the low-mid 20s °C (low-mid 70s °F) throughout the entire survey periods. Wind speed typically ranged from <1 to 15 km/hr (<1 to 9 mi/hr), with infrequent gusts to 24 km/hr (15 mi/hr). Skies were generally clear or with scattered clouds, with the exception of two survey-days when overcast conditions prevailed.

During the surveys, the Survey Site was walked systematically and deliberately in search of both DSF sexes and discarded pupal cases. The surveys included careful examination of plant flowers, stems, and foliage; open patches of sand; shaded areas at the base of plants; air space in the immediate vicinity of flowering plants; and general air space within unaided vision above the site. Thus, an exhaustive search was accomplished for flying, feeding, perching, or otherwise engaged flies.

All insects encountered during the surveys were identified to the lowest possible taxon, either by sight or, when necessary, by capture and subsequent determination in the laboratory. Only active and exposed macro insect fauna was considered, thus other less obvious groups no doubt also present (*e.g.*, springtails, termites, earwigs, thrips, etc.) were not recorded.

RESULTS AND DISCUSSION

No DSF or DSF sign (*i.e.*, discarded pupal cases) were observed on the Survey Site during the survey. Of note, the DSF also was not detected on a nearby site during surveys conducted in 2003 and 2004 (LMI 2003, 2004).

Birds observed or heard on or above the site included the cattle egret (*Bubulcus ibis*), turkey vulture (*Cathartes aura*), mallard (*Anas platyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), western scrub jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), and a few species of songbirds. Other vertebrates detected were the side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), cottontail (*Sylvilagus audubonii*), pocket gopher (*Thomomys bottae*), feral dogs and cats, and heteromyid rodents (burrows, tracks, and tail drags).

A total of 123 species of insects in 42 families was recorded on the Survey Site during the survey. A full list of insects observed is provided in Appendix B.

The following factors indicate the presence of the DSF on the Survey Site is unlikely:

- degraded condition of entire site;
- disturbed condition of Delhi Sands soils;
- low diversity of plant species;
- absence of California buckwheat, California croton, and telegraph weed;
- high proportion of non-native invasives in site's plant composition; and
- type and condition of the habitat surrounding the site.

By USFWS regulation, a second consecutive year of surveys with negative results is required to confirm the absence of the DSF on the site.

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APPENDICES

APPENDIX A
PLANTS OBSERVED ON THE PROJECT SITE [1]

ANGIOSPERMS (DICOTYLEDONS)

AMARANTHACEAE — AMARANTH FAMILY

Amaranthus palmeri – Palmer's amaranth

ASTERACEAE — SUNFLOWER FAMILY

* *Conyza bonariensis* – flax-leaved horseweed
Helianthus annuus – common sunflower

BRASSICACEAE — MUSTARD FAMILY

* *Hirschfeldia incana* – short-podded mustard
* *Sisymbrium altissimum* – tumble mustard

CHENOPODIACEAE — GOOSEFOOT FAMILY

* *Chenopodium album* – lamb's quarters
* *Chenopodium botrys* – Jerusalem oak
* *Salsola tragus* – Russian thistle

FABACEAE — LEGUME FAMILY

Lotus purshianus – Spanish clover
* *Melilotus alba* – white sweetclover

BORAGINACEAE — BORAGE FAMILY

Heliotropium curassavicum – salt heliotrope

POLYGONACEAE — BUCKWHEAT FAMILY

* *Polygonum* sp.

SOLANACEAE — NIGHTSHADE FAMILY

* *Datura stramonium* – annual jimson weed
* *Nicotiana glauca* – tree tobacco

ZYGOPHYLLACEAE — CALTROP FAMILY

* *Tribulus terrestris* – puncture vine

ANGIOSPERMS (MONOCOTYLEDONS)

POACEAE — GRASS FAMILY

* *Bromus madritensis* ssp. *rubens* – foxtail chess
* *Digitaria sanguinalis* – hairy crabgrass

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[1] This is not intended as an exhaustive listing of the vegetation occurring on the site; some annual herbs or very uncommon species may not have been detected by the field survey. Floral taxonomy used in this report follows the *Jepson Manual: Higher Plants of California* (Hickman 1993). Additional common plant names are taken from Munz (1974), Beauchamp (1986), Roberts (1989), Abrams (1923, 1944), and Abrams and Ferris (1951, 1960).

* non-native

APPENDIX B
INSECTS OBSERVED ON THE PROJECT SITE [1]

ORDER ODONATA — DRAGONFLIES & DAMSELFLIES

AESHNIDAE — DARNER FAMILY

Anax junius – common green darner
Aeshna multicolor – multicolored darner

LIBELLULIDAE — SKIMMER FAMILY

Libellula saturata – big red skimmer
Pantala flavescens – globetrotter
Sympetrum (Tarnetrum) corruptum – pastel skimmer
Tramea lacerata – black skimmer
Tramea onusta – red saddlebags

COENAGRIONIDAE — NARROW-WINGED DAMSELFLY FAMILY

Enallagma sp. – bluet

ORDER DERMAPTERA — EARWIGS

LABIDURIDAE — LONG-HORNED EARWIGS

Euborellia annulipes – ring-legged earwig

ORDER ORTHOPTERA — GRASSHOPPERS, KATYDIDS & CRICKETS

ACRIDIDAE — SHORT-HORNED GRASSHOPPER FAMILY

Dissosteira pictipennis – red-winged grasshopper
Melanoplus sp.
Trimeritropis californicus
Trimeritropis pallidipennis – pallid band-wing grasshopper
Schistocerca nitens – gray bird grasshopper

ORDER HEMIPTERA — TRUE BUGS

MIRIDAE — PLANT BUG FAMILY

Lygus sp.

NABIDAE — DAMSEL BUG FAMILY

Nabis sp.

PENTATOMIDAE — STINK BUG FAMILY

Chlorochroa uhleri/sayi – Say's stink bug

LYGAEIDAE — SEED BUG FAMILY

Lygaeus kalmii – small milkweed bug

RHOPALIDAE — SCENTLESS PLANT BUGS

Rhopalus sp.

REDUVIIDAE — ASSASSIN BUG FAMILY

Sinea sp.
Zelus tetracanthus
Zelus sp.

ORDER NEUROPTERA — NET-WINGED INSECTS

CHRYSOPIDAE — GREEN LACEWING FAMILY

Chrysoperla sp. – green lacewing

ORDER COLEOPTERA — BEETLES

HISTERIDAE — HISTER BEETLE FAMILY

1 unidentified species

COCCINELLIDAE — LADYBIRD BEETLE FAMILY

Coccinella neuvapunctata
Hippodamia convergens – convergent ladybird beetle

MORDELLIDAE — TUMBLING FLOWER BEETLE FAMILY

1 unidentified species

TENEBRIONIDAE — DARKLING BEETLE FAMILY

Eleodes gracilis – stink beetle

SCARABAEIDAE — SCARAB BEETLE FAMILY

Cotinus texana (mutabilis) – green fruit beetle

CHRYSOMELIDAE — LEAF BEETLE FAMILY

Diabrotica undecimpunctata – western spotted cucumber beetle
Diabrotica vittata
Lema trilineata – three-lined potato beetle

ORDER LEPIDOPTERA — MOTHS AND BUTTERFLIES

SUBORDER HETEROCERA — MOTHS

ARCTIIDAE — TIGER MOTH FAMILY

Estigmene acraea – wooly bear moth

SUBORDER RHOPALOCERA — BUTTERFLIES

HESPERIIDAE — SKIPPER FAMILY

Hylephila phyleus – fiery skipper
Erynnis funeralis – funereal duskywing
Pyrgus albescens – western checkered skipper

PIERIDAE — WHITES & SULFURS FAMILY

Pieris (Artogeia) rapae — cabbage white
Pieris (Pontia) protodice – common white
Colias eurytheme – orange sulphur

NYMPHALIDAE — BRUSH-FOOTED BUTTERFLY FAMILY

Danaus gilippus – queen
Cynthia (Vanessa) cardui – painted lady
Cynthia (Vanessa) anabella – west coast lady
Junonia (Precis) coenia – buckeye

LYCAENIDAE — HAIRSTREAKS, COPPERS & BLUES FAMILY

Brephidium exilis – pygmy blue
Leptotes marina – marine blue
Icaricia (Plebejus) acmon – acmon blue
Strymon melinus – gray (common) hairstreak

ORDER DIPTERA — TRUE FLIES

MYDIDAE — MIDAS FLY FAMILY

Nemomidas pantherinus – midas fly

ASILIDAE — ROBBER FLY FAMILY

Efferia albibarbis
Mallophora fautrix – bumble bee robber fly
Saropogon luteus
Stenopogon brevisculus

BOMBYLIIDAE — BEE FLY FAMILY

Geron sp.
Neodiplocampta mira.
Hemipenthes inops
Thyridanthrax atrata
Villa agrippina
Villa molitor

SYRPHIDAE — HOVER FLY FAMILY

Allograpta obliqua
Copestylum (Volucella) mexicana – cactus fly
Eristalis aeneas
Eristalis arbustorum
Eristalis latifrons
Eristalis obsoletus
Eristalis tenax – drone fly
Eupeodes volucris
Heliophilus latifrons
Syritta pipiens

CONOPIDAE — THICK-HEADED FLY FAMILY

Physocephala texana

MUSCIDAE — MUSCID FLY FAMILY

Graphiomyia maculata
Musca domestica – house fly
Muscina sp.

TACHINIDAE — TACHINID FLY FAMILY

Archytas californiae
Cylindromyia sp.
Gymnosoma fuliginosa
Peleteria texana
Trichopoda sp.

CALLIPHORIDAE — BLOW FLY FAMILY

Chrysomya sp.
Phaenicia sericata – green bottle fly
Phaenicia cuprina – bronze bottle fly

SARCOPHAGIDAE — FLESH FLY FAMILY

Eumacronchia sp.
Sarcophaga haemorrhoidalis – flesh fly

ORDER HYMENOPTERA — ANTS, BEES & WASPS

CHALCIDIDAE — CHALCID WASP FAMILY

Brachymeria sp.

CHRYSIDIDAE — CUCKOO WASP FAMILY

Omallus sp.
Parnopes edwardsii – Edwards' cuckoo wasp

FORMICIDAE — ANT FAMILY

Pogonomyrmex californica – red harvester ant

POMPILIDAE — SPIDER WASP FAMILY

Anoplus sp.
Episyron sp.
Pepsis chrysothemis – tarantula hawk
Pepsis thysbe
Tachypompilus unicolor

VESPIDAE — PAPER WASP FAMILY

Eumenes bolli
Euodyneurus sp.
Polistes apachus – paper wasp
Polistes aurifer
Polistes exclamans – zebra paper wasp

SPHECIDAE — THREAD-WAISTED AND DIGGER WASP FAMILY

Ammophila aberti
Ammophila azteca
Ammophila sp.
Astata nubecula
Astata sp.
Bembix comata – sand wasp
Chlorion aerarium
Dryudella picta
Eucerceris insignis
Haplomelinus albitomentosus
Hoplisoides diversus
Isodonta elegans
Liris aequalis
Liris sp.
Oxybellus pitanta
Oxybellus uniglumis
Philanthus multimaculata
Philanthus pacificus
Prionyx parkeri
Sceliphron caementarium – black-and-yellow mud dauber
Tachysphex sp.
Tachytes distincta

HALICTIDAE — HALICTID BEE FAMILY

Agapostemon texana – metallic sweat bee
Halictus sp.

MEGACHILIDAE — LEAFCUTTING BEE FAMILY

Chalicodoma sp.
Megachile perihirta
Megachile sp.

ANTHOPHORIDAE — DIGGER BEE FAMILY

Anthophora urbana
Diadasia sp.
Melessodes sp. (2)
Nomada sp.
Svastra texana

APIDAE — BUMBLE BEE & HONEY BEE FAMILY

Apis mellifera – honey bee
Bombus californicus – California bumble bee
Bombus sonorus – Sonoran bumble bee
Xylocopa varipuncta – valley carpenter bee

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[1] This list reports insects observed on the site during the surveys for the DSF; it is not intended to represent an exhaustive insect survey.

L&L ENVIRONMENTAL, INC.

BIOLOGICAL & CULTURAL INVESTIGATIONS & MONITORING

DELHI SANDS FLOWER-LOVING FLY (*RHAPHIOMIDAS TERMINATUS ABDOMINALIS*) PRESENCE / ABSENCE SURVEY ON THE FORECAST HOMES ONTARIO SITE, TRACT 16261 COUNTY OF SAN BERNARDINO, CALIFORNIA

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January 2002

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EXECUTIVE SUMMARY

L&L Environmental, Inc. (L&L) was retained by Forecast Homes Group (FHG) to conduct a presence/absence survey for the Delhi Sands Flower-loving Fly (herein DSF) on Assessors Parcels 218-252-004, 218-252-005, 218-332-001 and 218-332-002, Ontario, California. The purpose of the survey was to identify the presence or absence of the state and federally listed DSF and evaluate the effects of the proposed project on the listed species.

The proposed project, Tract 16261, is the development of 70 acres with single-family residential housing, situated within the City of Ontario. The survey area encompasses four parcels of land separated by Eucalyptus Avenue. The northern half of the project area, Area 1, lies at the northeastern corner of the junction of Eucalyptus and Cleveland Avenues. The southern half, Area 2, is located immediately south of Area 1 and Eucalyptus Avenue.

The project area is heavily disturbed by long-term agricultural, residential and other development. The natural vegetation and soil conditions have been highly altered due to these activities, and now contain mostly non-native grasses and other weedy vegetation. Native habitats are not present, adjacent to or within the survey area.

Focused surveys were conducted during the 2001 survey season, from August to September. A mound of unconsolidated soils, compromising approximately eight (8) to ten (10) acres, creates the only potential habitat on the project site and is considered very poor habitat. L&L conducted this survey as a precaution, in order to provide additional data to the U.S. Fish and Wildlife Service (USFWS) as to the absence of the species. The survey resulted in no DSF, DSF eggs, larvae or pupae observations. The results were entirely negative.

Although unconsolidated soils are present and the site has been mapped as containing Delhi series sand deposits, it is highly unlikely that DSF is present based on the lack of native vegetation, highly altered soil conditions, ongoing disturbances and the lack of data indicating its presence south of Highway 60.

L&L recommends the client petition the USFWS to release the project from 2002 survey requirements.

1.0) INTRODUCTION

The following report was written for Forecast Homes Group (FHG), at the request of Mr. Kevin Manning of FHG. It describes the results of the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis,* herein DSF) Presence / Absence Survey conducted on the Ontario site, County of San Bernardino, California.

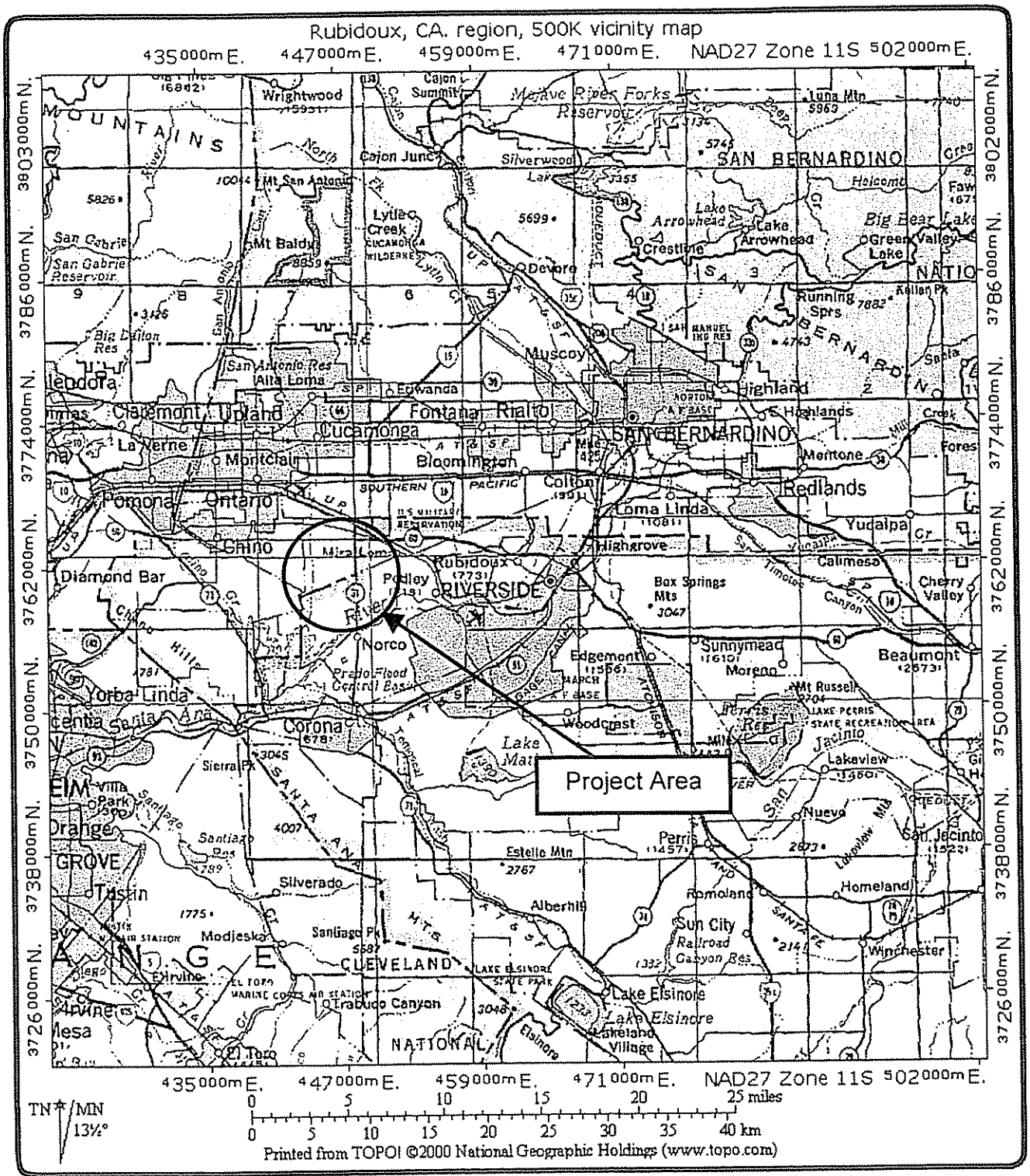
The purpose of the survey was to identify the presence or absence of the DSF and to evaluate the effects the project may have on the species. This information is needed since the adoption of the project plan has the potential to result in adverse effects to the species.

Our survey consisted of: (1) a records search and literature review, to determine the location of known DSF sightings (2) a protocol survey for the DSF to determine this species presence or absence on the project site.

1.1) Project Location

The survey area encompasses properties north and south of Eucalyptus Avenue, totaling approximately 70 acres, in the City of Ontario, southwestern San Bernardino County (Figure 1). The northern half of the project area, Area 1, lies at the northeastern corner of the intersection of Eucalyptus and Cleveland Avenues. This portion of the project area is bounded to the north by pasture lands and an active feed lot and to the west by rural residential units and similarly disturbed empty lots. The southern half, Area 2, is located immediately south of Area 1 and Eucalyptus Avenue. This portion of the project area is bounded to the south by Bellegrave Avenue and the Riverside County line.

The subject property is situated within Sections 13 and 24, Township 2 South, Range 7 West, as shown on a portion of the USGS Corona North 7.5' Topographic Quadrangle (Figure 2). Adjacent land, like the survey area, varies, to include such disturbances as actively cultivated in-use agricultural fields, pasture lands, feed lots, fallow fields, rural residential areas, paved and unimproved roads, and other developments (Figure 3). The proposed project is the construction of a residential development.



L&L Environmental, Inc.

BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

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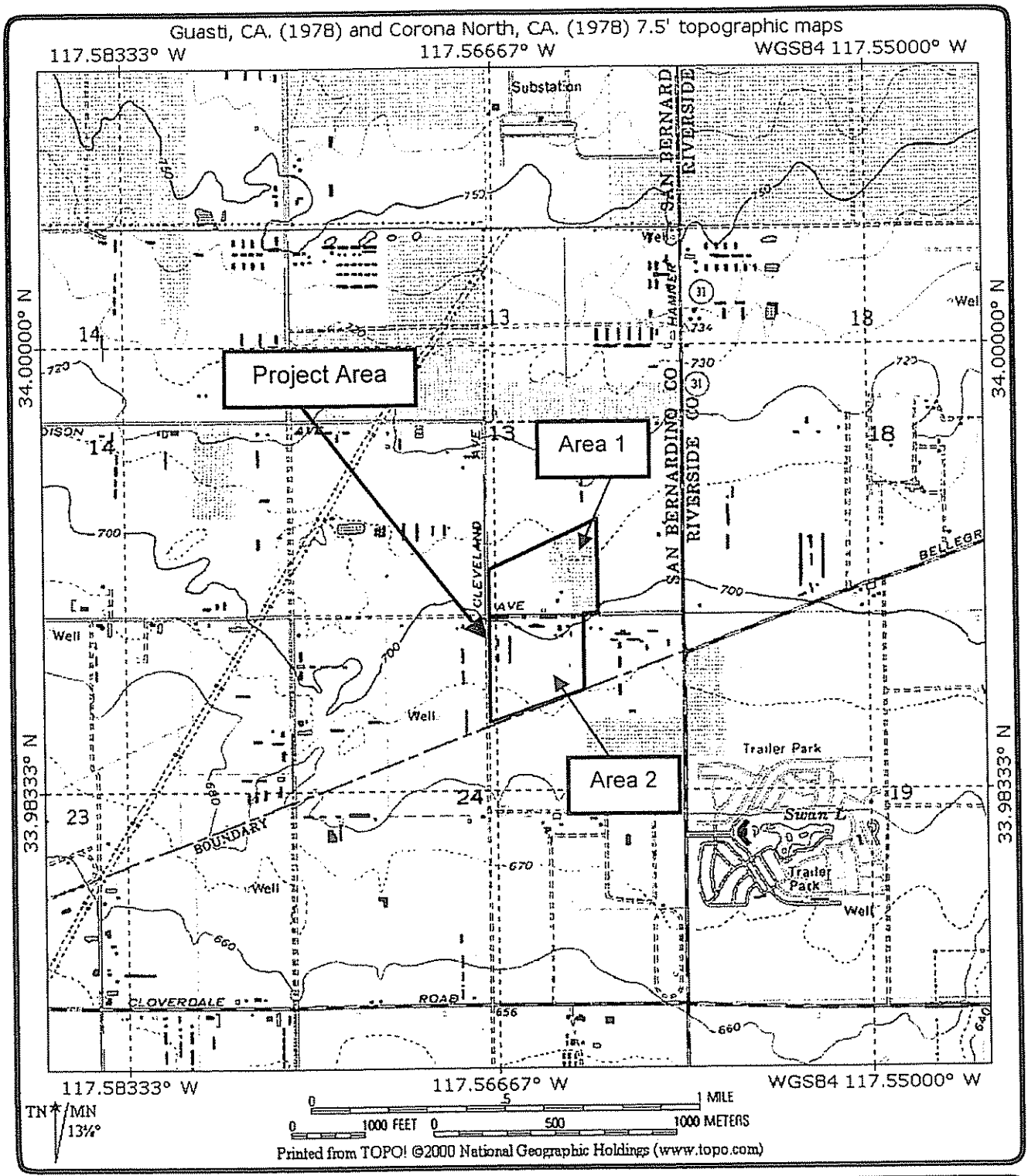
Figure 1

Project Vicinity Map

Forecast Homes Group, LLC
County of San Bernardino, California



L&L Environmental, Inc.

BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

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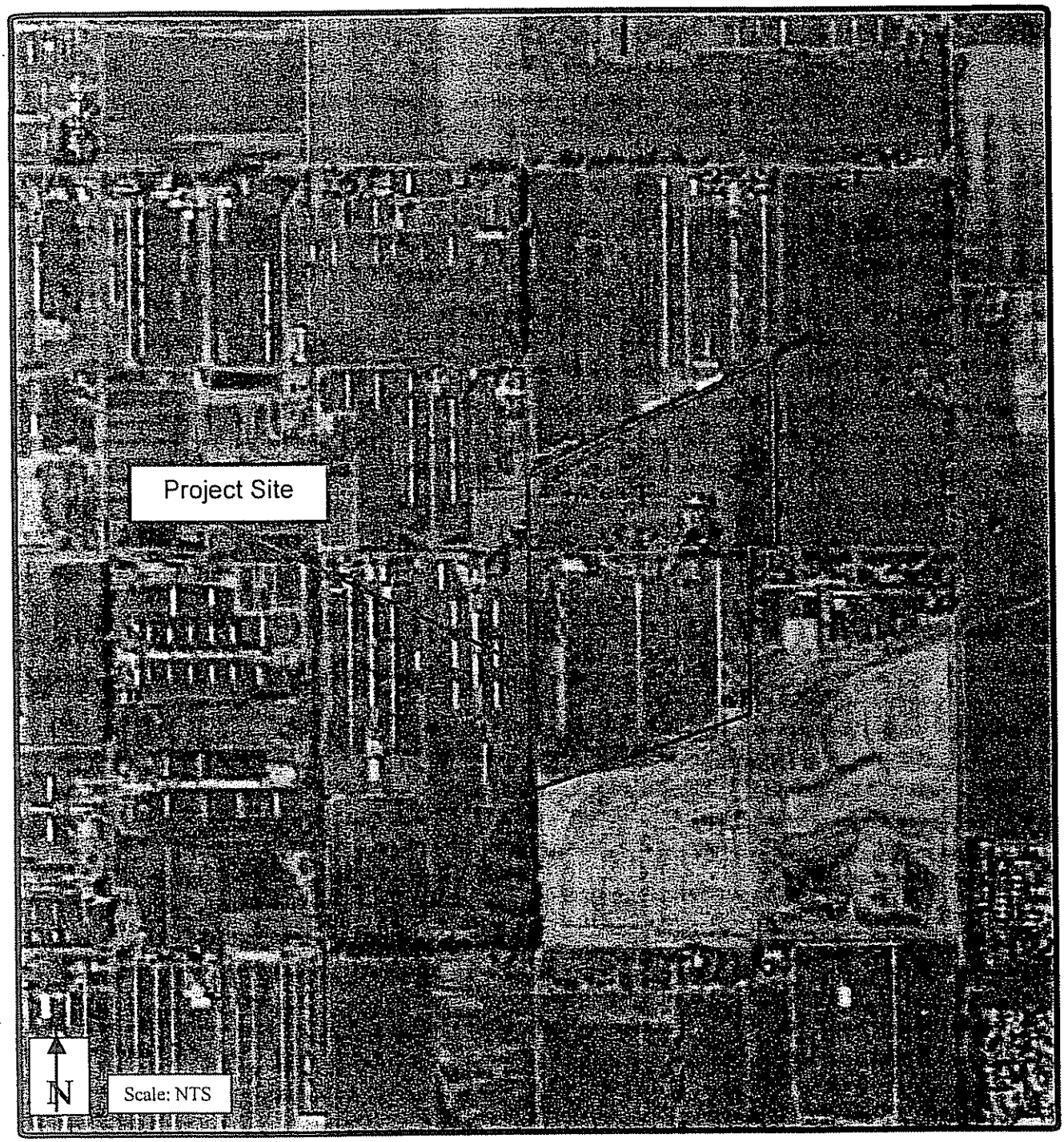
Figure 2

Project Location Map

Forecast Homes Group, LLC
County of San Bernardino, California



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BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

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Figure 3

USGS Aerial Photograph

(taken 2001: www.airphotousa.com)

Forecast Homes Group, LLC
City of Ontario, California

2.0) REGULATORY ENVIRONMENT

2.1) Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS), under the Federal Endangered Species Act of 1973, as amended (FESA), protects species listed as endangered or threatened. Endangered species are defined as a species "in danger of extinction throughout all or a significant portion of its range" while a threatened species is "likely to become endangered in the foreseeable future."

Take of listed species is prohibited under section 9 of the FESA. Take includes the direct killing, harming, or harassing of a species, and destruction of habitat that may be important for the species survival and recovery. Harm is further defined as significant habitat alteration that results in death or injury to listed species by significantly impairing behavior patterns such as breeding, feeding, or sheltering. The USFWS is empowered to permit "take" of listed species incidental to otherwise lawful activities. Procedures for obtaining a permit for incidental take are identified under Section 7 of the FESA for federal actions and Section 10 for non-federal actions.

The USFWS monitors species that are candidates for listing. As part of the normal listing process, a species is proposed for listing (proposed rule) and then listed (final rule). The proposed and final rules are published in the Federal Register. If a species is known to be on the brink of extinction, the USFWS can make an emergency listing, which skips the proposed rule step. Species are not protected until they are listed. However, consultation with the USFWS regarding candidate species or species proposed for listing can prevent project delays should the species be listed prior to project completion.

2.2) California Department Of Fish And Game (CDFG)

2.2.1) California Endangered Species Act

California Endangered Species Act (CESA) definitions of endangered and threatened species parallel those defined in the FESA. Endangered species are in serious danger of becoming extinct and threatened species are likely to become an endangered species in the foreseeable future according to Sections 2062 and 2067, respectively, of the California Fish and Game Code. Candidate species are species that are under formal review by CDFG for addition to the endangered or threatened species list (Section 2067). Prior to being considered for protected status, the CDFG designates a species as being of special concern. Species of special concern

are those species for which CDFG has information indicating that the species is declining.

2.3) California Environmental Quality Act

The California Environmental Quality Act requires identification of environmental effects from discretionary projects. Significant effects are to be mitigated by avoidance, minimization, rectification, or compensation whenever possible.

Effects to all State and Federally listed species are considered significant under the California Environmental Quality Act (CEQA). In addition to formally listed species, Section 15380(d) of CEQA considers effects to species that are demonstrably endangered or rare as important or significant within CEQA terms. These definitions can include State designated species of special concern, federal candidate and proposed species, NDDB tracked species, and California Native Plant Society List 1B and 2 plants.

3.0) SPECIES INFORMATION

Species: **Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*)**
Federal Status: **Endangered**
State Status: **Endangered**

The DSF was listed by the United States Fish & Wildlife Service (Service) under the Federal Endangered Species Act of 1973, as amended, on September 23, 1993 (USFWS, 1993). The DSF is a geographic race (subspecies) of *Rhaphiomidas terminatus*. The nominate form of this species, known as the El Segundo Flower-loving Fly *(Rhaphiomidas terminatus terminatus*) is historically known from coastal dune systems in the El Segundo and Palos Verdes areas of Los Angeles County. Presumed extinct since the late 1960's, a small surviving population of this subspecies was rediscovered on the Palos Verdes peninsula in August 2001.

DSF is restricted in distribution to the Colton Dune system, which covers an area of approximately 40 square miles in the cities of Colton, Rialto, Fontana, and Ontario. Historically, it is believed that the DSF occurred throughout much of this area. It is estimated that as much as 97 percent of the formerly known DSF habitat has been converted for human uses or has been adversely impacted by various anthropogenic disturbances.

The DSF is a large-sized fly (approximately 21-26mm in length) and is primarily orange-brown with dark brown colored oval spots on the abdominal tergites. The wings are primarily clear, but have a light brown edge along the forewing costal margin. A distinguishing characteristic of the DSF from all other sympatric insects is its relatively large size and iridescent green eyes. An additional characteristic for DSF and other members of the genus *Rhaphiomidas* is the presence of a non-retractable proboscis (mouthpart), which the DSF uses for extracting nectar from flowers. Males can be easily distinguished from females by the presence of greatly enlarged terminalia (claspers) at the end of their abdomens. Like other members of this genus, DSF is a strong flier, capable of hovering and rapid flight.

The DSF was once thought to be a member of the flower-loving fly family Apioceridae, but has undergone recent taxonomic revisions and is now considered a member of the fly family Mydidae. Unfortunately the common name for DSF has not changed along with this revision, since it is rarely observed nectaring (feeding) on flowers. Although few DSF feeding behaviors have been observed by researchers to date, indications are that the flowers of California buckwheat (*Eriogonum fasciculatum*) may be a potentially important nectar resource (GPB, pers. obs.). Researchers have observed DSF feeding on other native plant species, including (but not limited to) slender tarweed (*Hemizonia fasciculata*).

Most DSF are observed perching on the soil surface or on plants in sparsely vegetated areas (such as unpaved roads or trails) adjacent to or within occupied habitat. Male flies are most often observed, usually defending territories or flying in search of females for mating. Adult flies are active during the late summer months of August and September, when temperatures in the region often rise above 100° Fahrenheit. Detailed life history accounts (food source, lifespan, etc. of the immature stages) of DSF are not currently known. It is known that DSF larval development takes place underground within Delhi Series sands for the remaining months of the year, and that adult flies emerge from pupal cases located just under the soil surface.

4.0) METHODS AND PERSONNEL

A literature review was conducted to identify local occurrences, habitat requirements of the Delhi Sands Flower-loving Fly occurring in the region and survey protocol. Literature reviewed included the 1992 US Fish and Wildlife Service (USFWS) DSF Protocol and associated documents as well as the California Natural Diversity Data Base for the Corona North and Riverside West USGS topographical quadrangles. Plant community designations are based primarily on "A Manual of California Vegetation" (Sawyer and Keeler-Wolf 1995). Latin names of plants follow the "Jepson Manual" (Hickman 1993).

The Delhi Sands Flower-loving Fly survey was conducted in accordance with the USFWS field survey protocol for presence/absence survey (USFWS 1997). Guy Bruyea, L&L field biologist, conducted surveys on August 4, 6, 10, 12, 16, 19, 23, 26, 30 and September 2, 6, 9, 13, and 16, 2001. All field surveys were conducted during daylight hours, with suitable weather conditions. Survey times are presented in Table 1 and survey forms are included in Appendix C.

The site surveys were conducted on foot by conducting a series of transects across the subject property where possible, stopping periodically for observations and notations. Digital photographs were taken to record the condition of the site during the surveys and are provided in Appendix B.

Table 1: Forecast Homes Survey Data

Date	Time	Purpose	Biologist(s)	Results
August 04	1000-1400	DSF Survey	Guy Bruyea	Negative
August 06	1000-1400	DSF Survey	Guy Bruyea	Negative
August 10	1000-1400	DSF Survey	Guy Bruyea	Negative
August 12	1000-1400	DSF Survey	Guy Bruyea	Negative
August 16	1000-1400	DSF Survey	Guy Bruyea	Negative
August 19	1000-1400	DSF Survey	Guy Bruyea	Negative
August 23	1000-1400	DSF Survey	Guy Bruyea	Negative
August 26	1000-1400	DSF Survey	Guy Bruyea	Negative
August 30	1000-1400	DSF Survey	Guy Bruyea	Negative
September 02	1000-1400	DSF Survey	Guy Bruyea	Negative
September 06	1000-1400	DSF Survey	Guy Bruyea	Negative
September 09	1000-1400	DSF Survey	Guy Bruyea	Negative
September 13	1000-1400	DSF Survey	Guy Bruyea	Negative
September 16	1000-1400	DSF Survey	Guy Bruyea	Negative

5.0) RESULTS

5.1) Vegetation

All areas have been subjected to various human disturbances, mostly in the form of agricultural activities related to the presence of cornfields, feed lots, pastures, or other farm related disturbances (Figure 3). The natural vegetation and soil conditions have been highly altered due to these activities, and now contain mostly non-native grasses and other weedy vegetation. The results of the general biological survey showed that due to previous and ongoing disturbances, native vegetation communities are not present on the Forecast site. A total of twenty-seven (27) commonly observed, mostly non-native and ornamental, plant species were detected during the biological surveys.

Disturbed habitat includes large areas of little-to-no vegetation or developed areas. Vegetation that does occur include areas that contain mostly non-native plant species including ornamentals and ruderal exotics, including common dandelion (*Taraxacum* sp.), horehound (*Marrubium vulgare*), puncture vine (*Tribulus terrestris*), Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), cheeseweed (*Malva parviflora*), and bermuda grass (*Cynodon dactylon*). Other plant species observed on the subject property include short-pod mustard (*Hirschfeldia incana*), lamb's quarters (*Chenopodium album*), flax-leaf fleabane (*Conyza boniarensis*), Palmer's pigweed (*Amaranthus palmeri*), tree tobacco (*Nicotiana glauca*), golden crown beard (*Verbecinia encelioides*), and spiny cocklebur (*Xanthium spinosum*).

Large eucalyptus trees can be found bordering the Forecast property at the northern boundary of Area 1, which separates the Forecast property from neighboring pasture and other agricultural lands and along Eucalyptus Avenue at the northeast corner of Area 2.

Developed areas include lands that have been altered due to the placement of permanent structures and paved roads, thereby preventing the growth of vegetation. On the site developed areas include two residential units along Eucalyptus Avenue, various farm buildings and shade structures, old foundations and abandoned feed bins and associated paved areas. Non-native ornamental landscaping is present on both Areas 1 and 2 of the Forecast site, mostly in association with two onsite rural residential units present along Eucalyptus Avenue. Trees such as mulberry (*Morus* sp.), gumtree (*Eucalyptus* sp.), liquidamber (*Liquidamber* sp.). oleander (*Nerium oleander*), ash (*Fraxinis* sp.), and Mexican fan palm (*Washingtonia robusta*) were observed.

5.2) Soils

Area 2 contains a large retention basin (estimated at 8 to 10 acres) in the southern portion, and immediately north of the basin is an artificial mound (also estimated at 8 to 10 acres), which contains consolidated and unconsolidated soils.

5.3) Literature Review

Preliminary site data indicated that no delhi sands flower-loving fly had been identified on the project site or within the vicinity. The closest recorded DSF sighting appears to be approximately two (2) miles north of the project site (CDFG 2001).

In 1998 Tierra Madre Consultants conducted a DSF habitat assessment on approximately 450 acres of farmland for Regent/Forecast Homes, including the 70-acre proposed project site. In their report, Area 2 is described as an active cattle feedlot, with rural residences and a small amount of weedy vegetation (Tierra Madre Consultants, 1998). Although this area has been modified, cattle have been removed and some farm buildings leveled since the 1998 habitat evaluation by Tierra Madre Consultants, it still remains highly disturbed due to long term and ongoing disturbances.

Tierra Madre identified the location of recorded Delhi series soils and concluded they were no longer present within the project area. They concluded with a recommendation for no further focused surveys.

5.4) Presence / Absence Survey

The project site lies within the historic range of the Delhi Sands Flower-loving Fly and contains poorly suitable habitat. During the protocol surveys no DSF adults, eggs, larvae or pupae were observed. The results were entirely negative.

Although unconsolidated soils are present and the site has been mapped as containing Delhi series sand deposits, it is highly unlikely that DSF is present based on the lack of native vegetation, highly altered soil conditions, ongoing disturbances, and the lack of data indicating its presence south of Highway 60.

The project site contained a relatively low insect diversity for this general area due to the lack of nectar resources, lack of native vegetation and past and ongoing disturbances associated with agricultural activities onsite and in adjacent areas.

A list of species encountered during the surveys is found in Appendix A of this report. An active burrowing owl burrow and owls were identified onsite during the protocol survey in a cement structure in the retention basin. One other sensitive species, the white-tailed kite, was observed on the project site. No threatened or endangered species were encountered during the surveys.

6.0) CONCLUSIONS

Despite the earlier results of Tierra Madre, L&L with the agreement of Forecast Homes, proposed to conduct one year of the two year U.S. Fish and Wildlife Service (USFWS) protocol survey. This was decided due to the mapped Delhi series soils on site, a small area of unconsolidated soils and as a precaution, in order to provide additional data to the U.S. Fish and Wildlife Service (USFWS) as to the absence of the species within the project boundaries.

Very poorly suitable habitat for the Delhi Sands Flower-loving Fly occurs within a small portion of the project boundaries. This species is state and federally listed as endangered. No DSF adults, eggs, larvae or pupae were observed during the focused survey. The development of the property is likely to have little or no impact to the Delhi Sands Flower-loving Fly.

Due to the site location, poor habitat and survey results, the Delhi Sands Flower-loving Fly is determined not to occur within the project boundary or the adjacent habitat. No further surveys or mitigation for the species is recommended. L&L recommends petitioning the U.S. Fish and Wildlife Service (USFWS) to release this project site from any further requirements, in particular the second year of focused surveys.

7.0) REFERENCES AND CITATIONS

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Table 2: List of Invertebrate Species Observed

Order-Family	Latin Name
DIPTERA	
ASILIDAE	
	Efferia albibarbis
	Mallophora fautrix
BOMBYLIIDAE	
	Thyridanthrax atrata
	Toxophora pellucida
	Villa pretiosa
CALLIPHORIDAE	
	Phaenicia sericata
DOLICHOPODIDAE	
	Condylostylus sp.
DROSOPHILIDAE	
	Cerititus capitata
MUSCIDAE	
	Musca domestica
SARCOPHAGIDAE	
	Sarcophaga sp.
SYRPHIDAE	
	Eristalis tenax
TABANIDAE	
	Tabanus punctifer
HYMENOPTERA	
ANTHOPHORIDAE	
	Anthophora urbana
	Melissodes sp.
APIDAE	
	Apis mellifera
CHRYSIDIDAE	
	Parnopes edwardsii
FORMICIDAE	
	Pogonomyrmex californicus
HALICTIDAE	
	Agapostemon sp.
MEGACHILIDAE	
	Megachile sp.
MUTILIDAE	
	Dasymutilla coccineohirta
	Dasymutilla californica
HYMENOPTERA cont.	
SPHECIDAE	
	Ammophila sp.
	Bembix comata
	Microbembix californica
	Chalybion californicum
	Chlorion aerarium
	Hoplisoides diversus
	Philanthus multimaculatus
	Prionyx foxi
	Sceliphron caementarium
VESPIDAE	
	Polistes apachus
	Polistes fuscatus
COLEOPTERA	
CHRYSOMELIDAE	
	Trachymela sloanei
	Diabrotica balteata
	Diabrotica undecimpunctata
COCCINELLIDAE	
	Coccinella californica
	Hippodamia convergens
SCARABAEIDAE	
	Cotinus mutabilis
TENEBRIONIDAE	
	Eleodes sp.
DERMAPTERA	
FORFICULIDAE	
	Forficula auricularia
HEMIPTERA	
LYGAEIDAE	
	Geocoris sp.
	Nysius sp.
	Lygaeus kalmii
MIRIDAE	
	Lygus sp.
PENTATOMIDAE	
	Chlorochroa sayi / uhleri
REDUVIIDAE	
	Zelus tetracanthus

HOMOPTERA
MEMBRACIDAE
Homolodisca lacerta
PSYLLIDAE
Glycaspis brimblecombei
NEUROPTERA
CHRYSOPIDAE
Green lacewing
MYRMELEONTIDAE
Antilion

LEPIDOPTERA
DANAIDAE
Danaus plexippus
HESPERIIDAE
Hylephila phyleus
Lerodea eufala
Atalopedes campestris
Pyrgus communis albescens
LYCAENIDAE
Brephidium exilis
Plebejus acmon
Strymon melinus
NYMPHALIDAE
Vanessa cardui
PAPILIONIDAE
Papilio cresphontes
PIERIDAE
Colias eurytheme
Pieris rapae
Pontia protodice

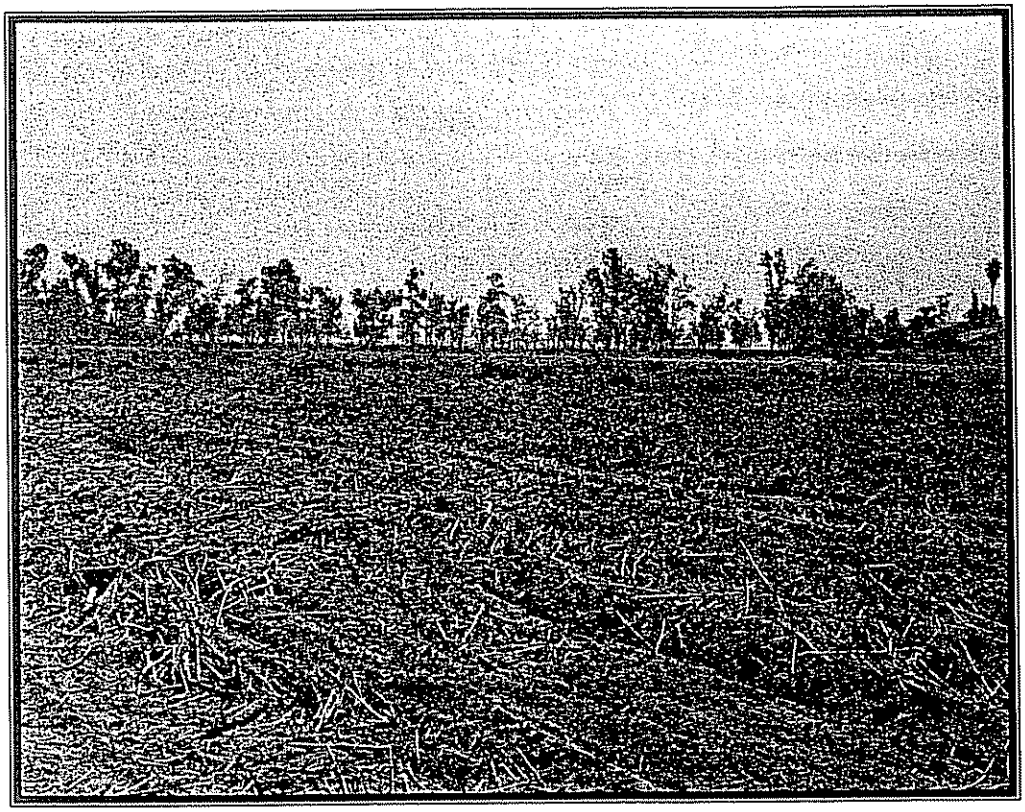
ODONATA
AESHNIDAE
Aeshna multicolor
Anax junius
COENAGRIONIDAE
Argia sp.
LIBELLULIDAE
Libellula saturata
Pantala flavescens
Sympetrum corruptum

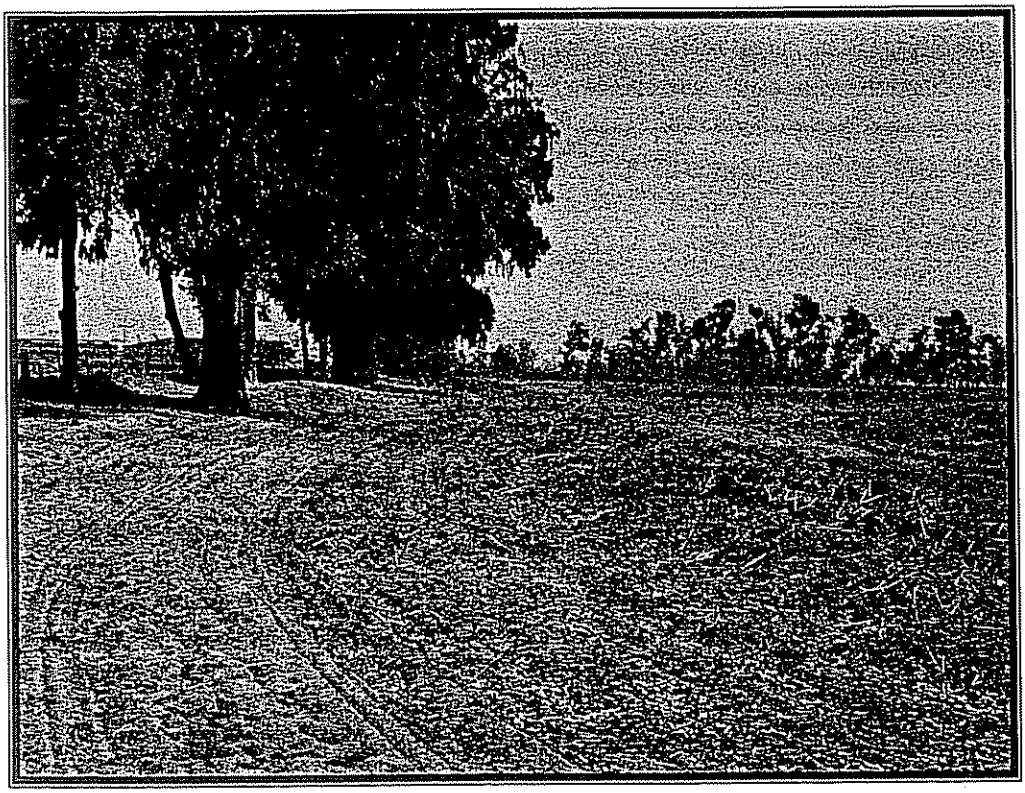
ORTHOPTERA
ACRIDIDAE
Trimerotropis californica
Malanoplus complanatipes
Trimerotropis palidipennis
GRYLLIDAE
Gryllus sp.
MANTIDAE
Iris oratoria

Table 3: List of Other Species Observed

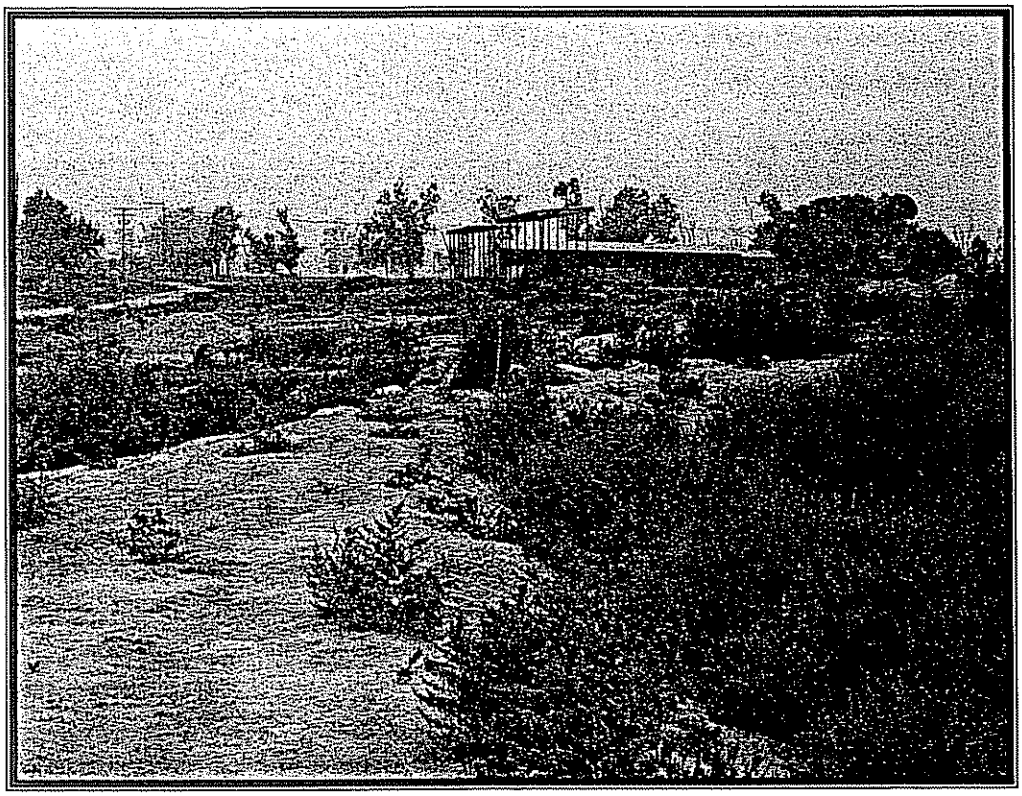
Latin Name	**Common Name**
VASCULAR PLANTS (27)	
AMARANTHACEAE	AMARANTH FAMILY
Amaranthus palmeri	Palmer's pigweed
ANACARDIACEAE	CASHEW FAMILY
* *Nerium oleander*	Oleander
* *Fraxinis* sp.	Ash
ASTERACEAE	ASTER FAMILY
Conyza boniarensis	Flat-leaved fleabane
* *Lactuca serriola*	Prickly lettuce
* *Taraxacum officinale*	Common dandelion
Verbecinia encelioides	Golden crown beard
Xanthium spinosum	Spiny cocklebur
BRASSICACEAE	MUSTARD FAMILY
* *Hirschfeldia incana*	Short-pod mustard
CHENOPODIACEAE	GOOSEFOOT FAMILY
* *Chenopodium album*	Lamb's quarters
* *Salsola tragus*	Russian thistle, tumbleweed
FABACEAE	PEA FAMILY
* *Lotus purshianus*	Indian clover
* *Medicago polymorpha*	Burclover
GERANIACEAE	GERANIUM FAMILY
* *Erodium cicutarium*	Red-stemmed filaree
HAMAMELIDACEAE	LIQUIDAMBER FAMILY
* *Liquidamber* sp.	Liquidamber
LAMIACEAE	MINT FAMILY
* *Marrubium vulgare*	Horehound
MALVACEAE	MALLOW FAMILY
* *Malva parviflora*	Cheeseweed
MOREACEAE	MULBERRY FAMILY
* *Morus* sp.	Mulberry
MYRTACEAE	MYRTLE FAMILY
* *Eucalyptus* sp.	Eucalyptus
POLYGONACEAE	BUCKWHEAT FAMILY
Rumex crispus	Curly dock
SOLANACEAE	NIGHTSHADE FAMILY
Datura wrightii	Western jimsonweed
* *Nicotiana glauca*	Tree tobacco
ZYGOPHYLLACEAE	CALTROP FAMILY
* *Tribulus terrestris*	Puncture vine
ARECACEAE	PALM FAMILY
* *Washingtonia robusta*	Mexican fan palm
POACEAE	GRASS FAMILY
* *Avena barbata*	Slender wild oat
* *Bromus madritensis ssp. rubens (B. rubens)*	Red brome, Foxtail chess
* *Cynodon dactylon*	Bermuda grass

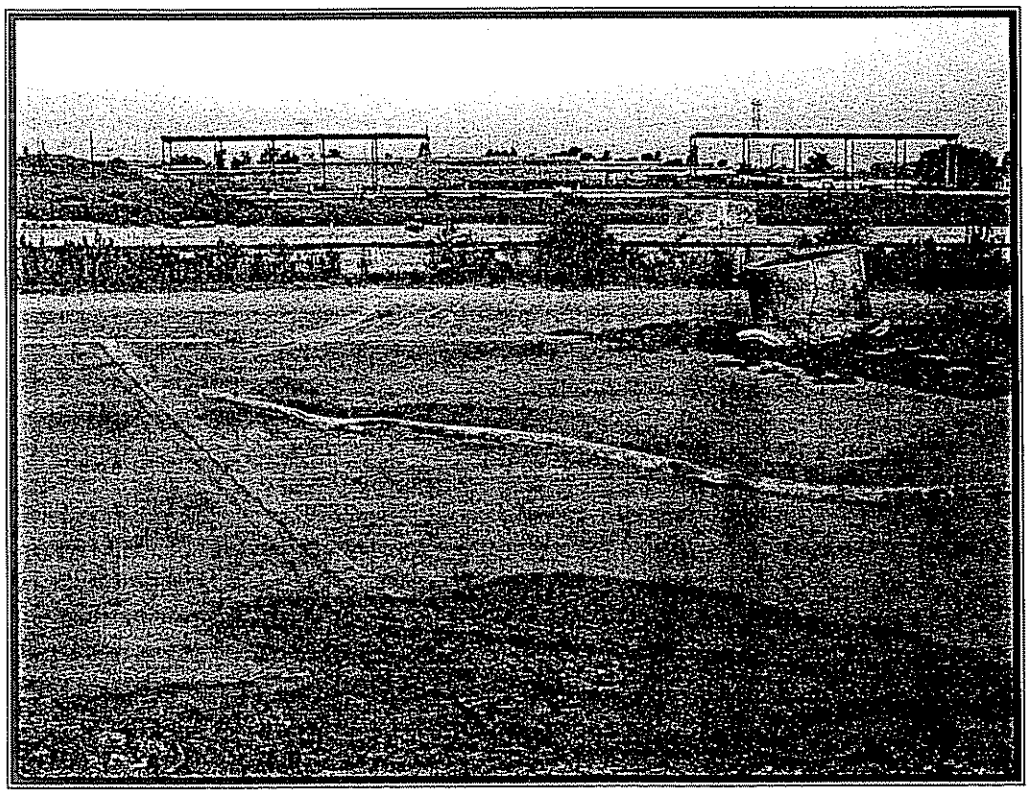
Latin Name	**Common Name**
VERTEBRATE ANIMALS	
REPTILIA	REPTILES (1)
IGUANIDAE	IGUANID LIZARDS
Uta stansburiana	Side-blotched lizard
AVES	BIRDS (22)
ARDEIDAE	HERONS
Bubulcus ibis	Cattle egret
CATHARTIDAE	VULTURES
Cathartes aura	Turkey vulture
ACCIPITRIDAE	HAWKS, EAGLES, HARRIERS
** *Elanus leucurus*	White-tailed kite
Buteo jamaicensis	Red-tailed hawk
FALCONIDAE	FALCONS
Falco sparverius	American kestrel
CHARADRIIDAE	PLOVERS
Charadrius vociferus	Killdeer
COLUMBIDAE	PIGEONS AND DOVES
Columba livia	Rock dove
Zenaida macroura	Mourning dove
STRIGIDAE	TYPICAL OWLS
** *Speotyto cunicularia*	Burrowing owl
TROCHILIDAE	HUMMINGBIRDS
Calypte anna	Anna's hummingbird
TYRANNIDAE	TYRANT FLYCATCHERS
Sayornis nigricans	Black phoebe
Tyrannus verticalis	Western kingbird
HIRUNDINIDAE	SWALLOWS
Hirundo rustica	Barn swallow
CORVIDAE	CROWS AND JAYS
Corvus brachyrhynchos	American crow
MIMIDAE	MOCKINGBIRDS AND THRASHERS
Mimus polyglottos	Northern mockingbird
STURNIDAE	STARLINGS
* *Sturnus vulgaris*	European starling
EMBERIZIDAE	SPARROWS, WARBLERS, TANAGERS
Zonotrichia leucophrys	White-crowned sparrow
Sturnella neglecta	Western meadowlark
Quiscalus mexicanus	Great-tailed grackle
Molothrus ater	Brown-headed cowbird
FRINGILLIDAE	FINCHES
Carpodacus mexicanus	House finch
Carduelis psaltria hesperophilus	Lesser goldfinch
MAMMALIA	MAMMALS (2)
LEPORIDAE	HARES AND RABBITS
Sylvilagus audubonii	Audubon cottontail
CANIDAE	FOXES, WOLVES AND COYOTES
Canis domesticus	Domestic dog



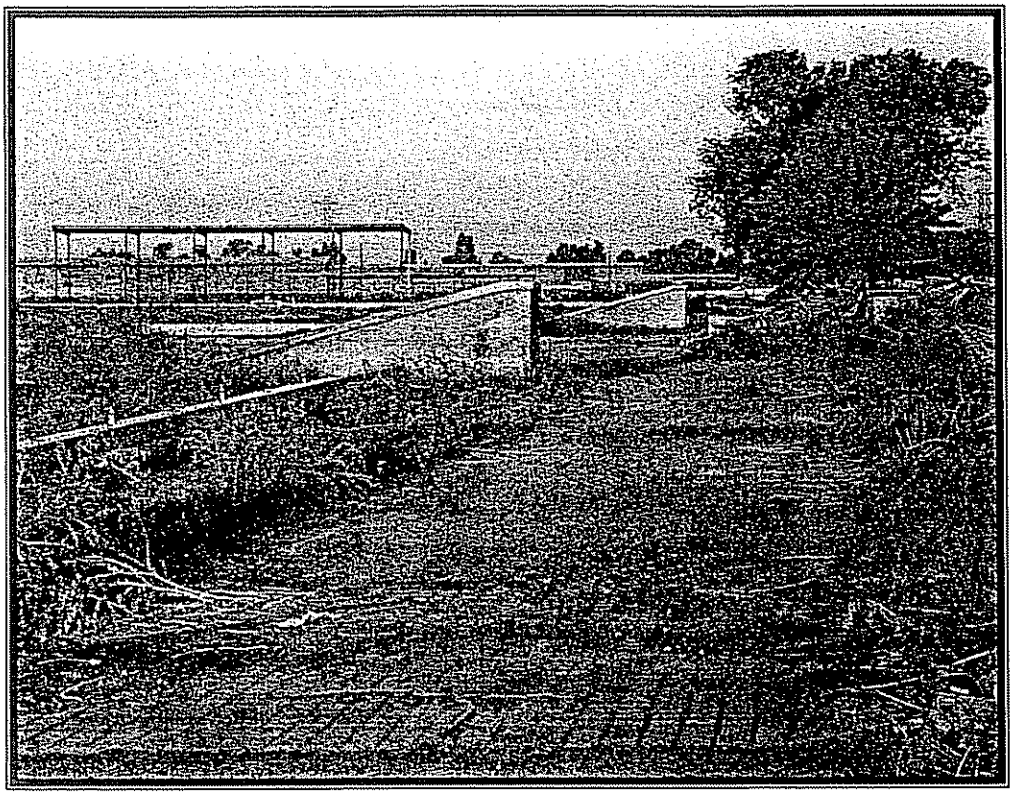


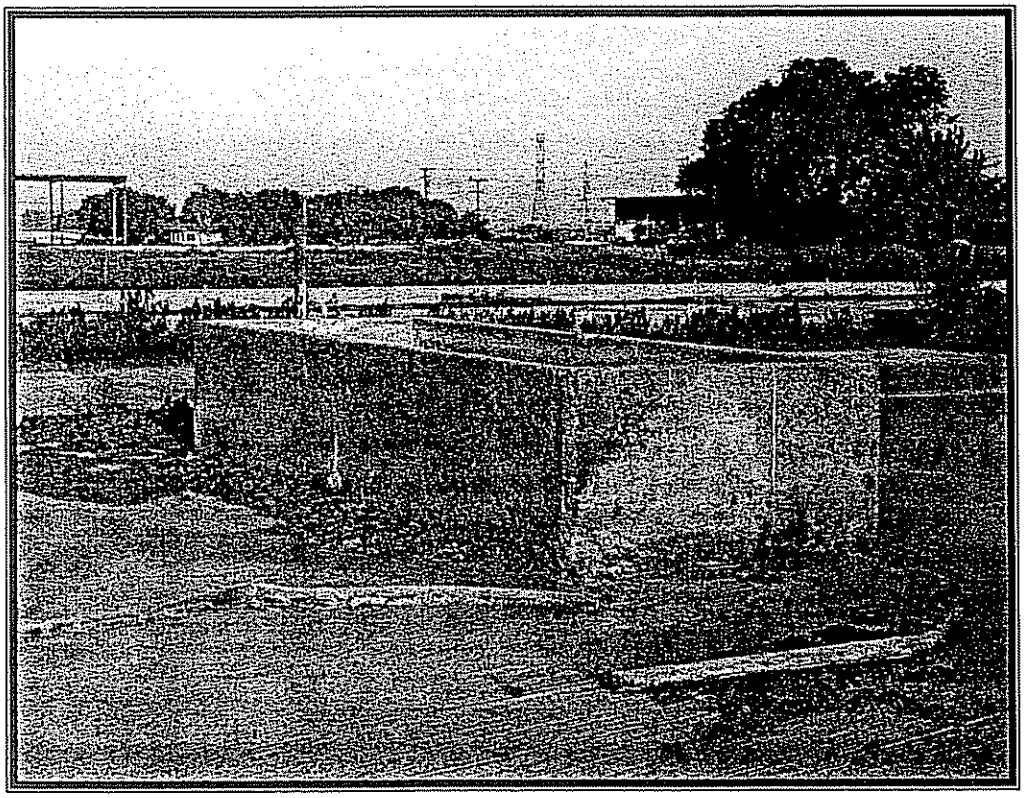
Photoplate 1 and 2: View of disced agricultural land and eucalyptus trees Area 1.



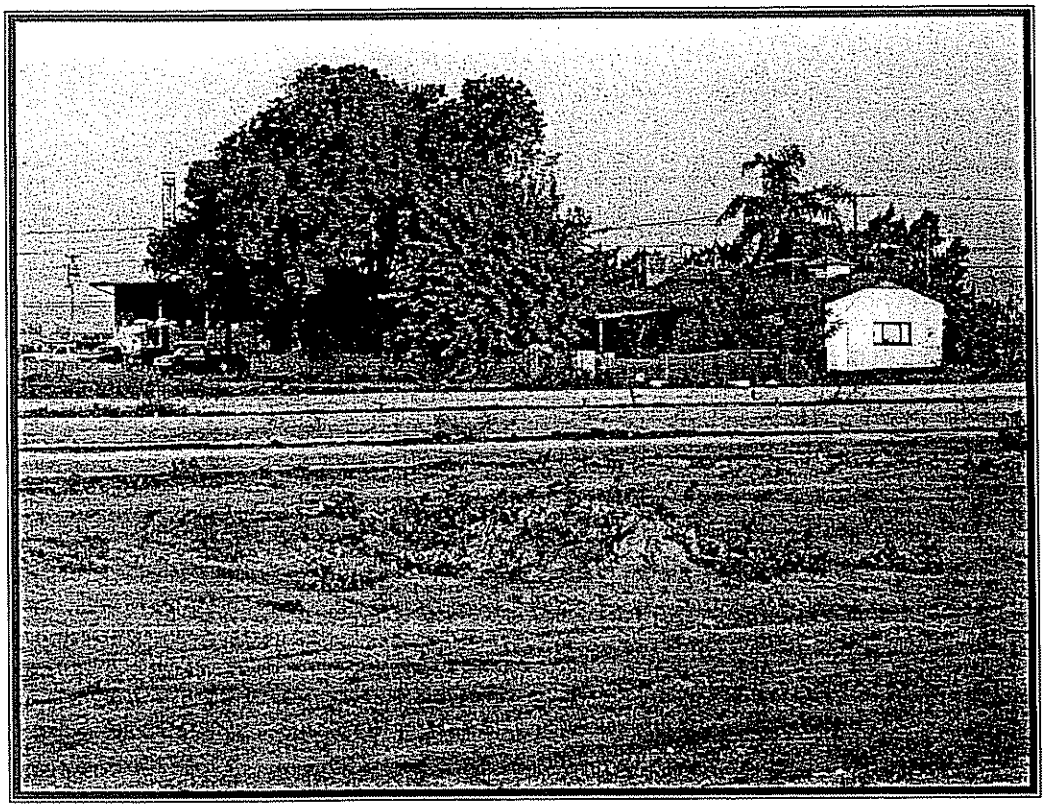


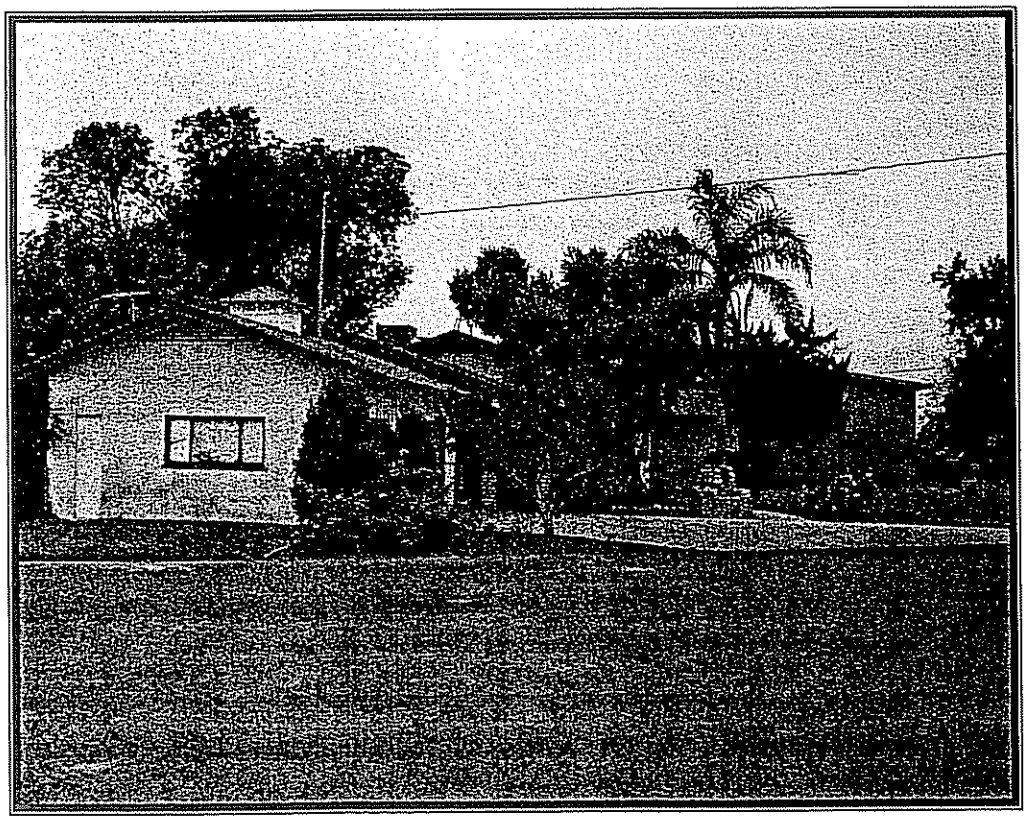
Photoplate 3 and 4: View of disturbed land with shade structures, old foundations and farm buildings in background.



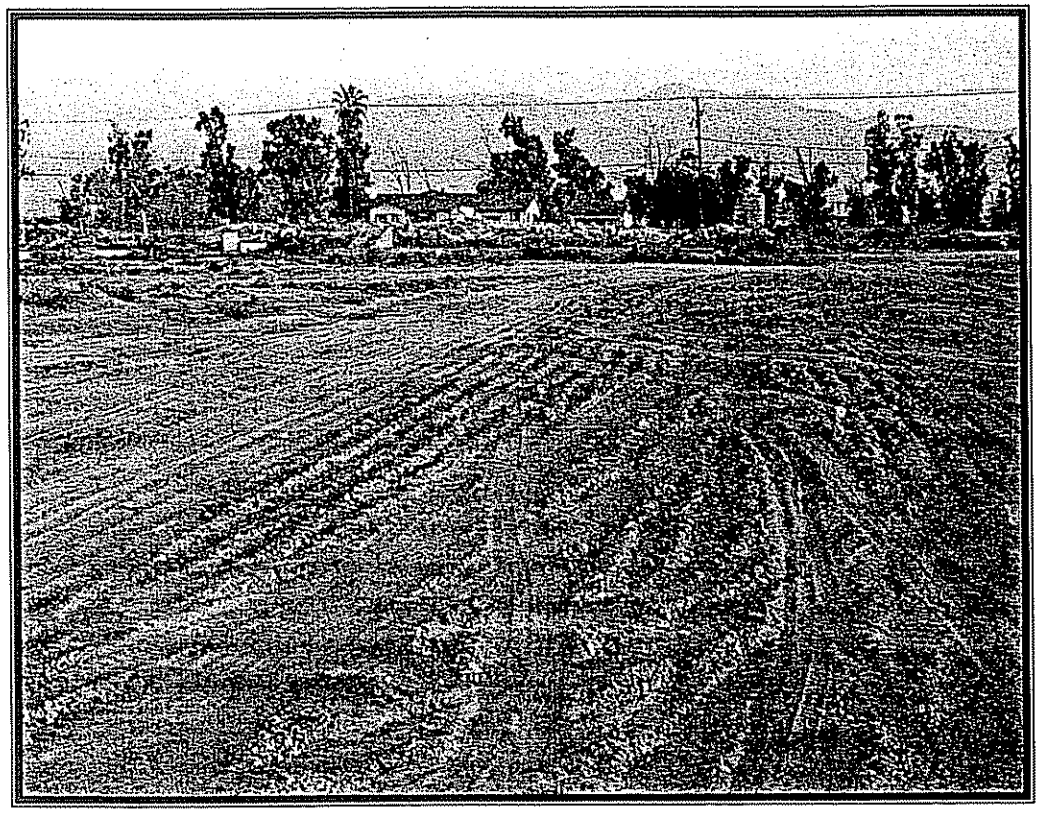


Photoplate 5 and 6: View of disturbed land with shade structures, old foundations, old feed bins and farm buildings in background.

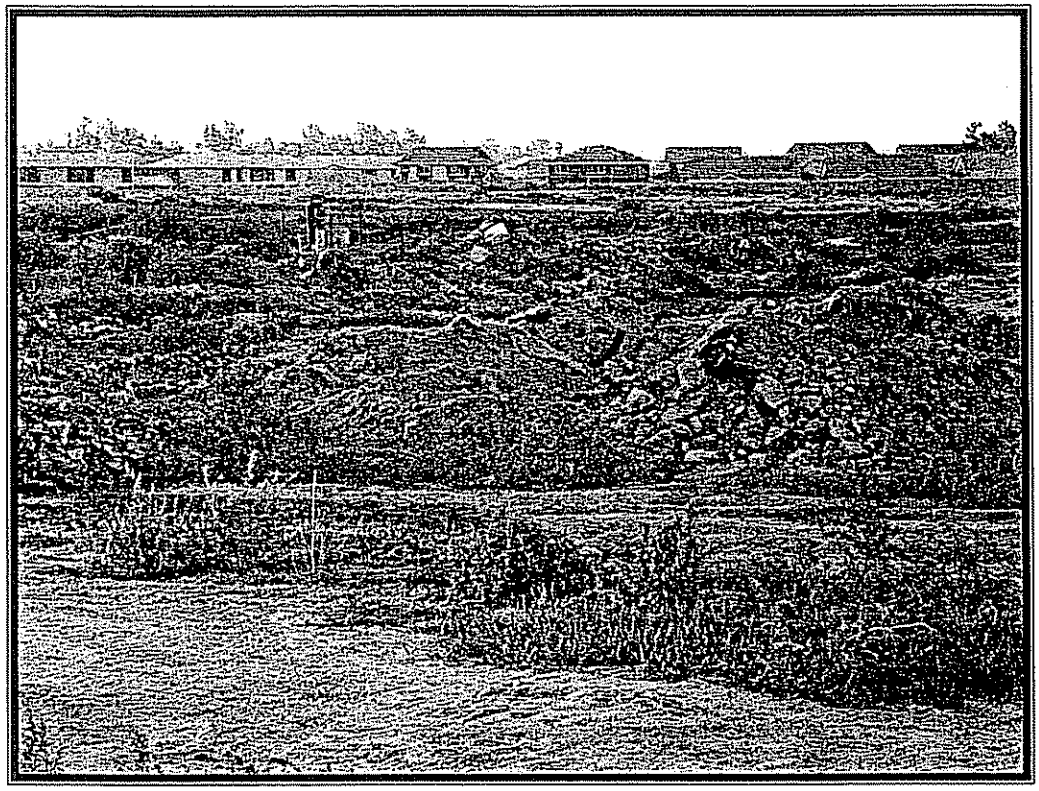




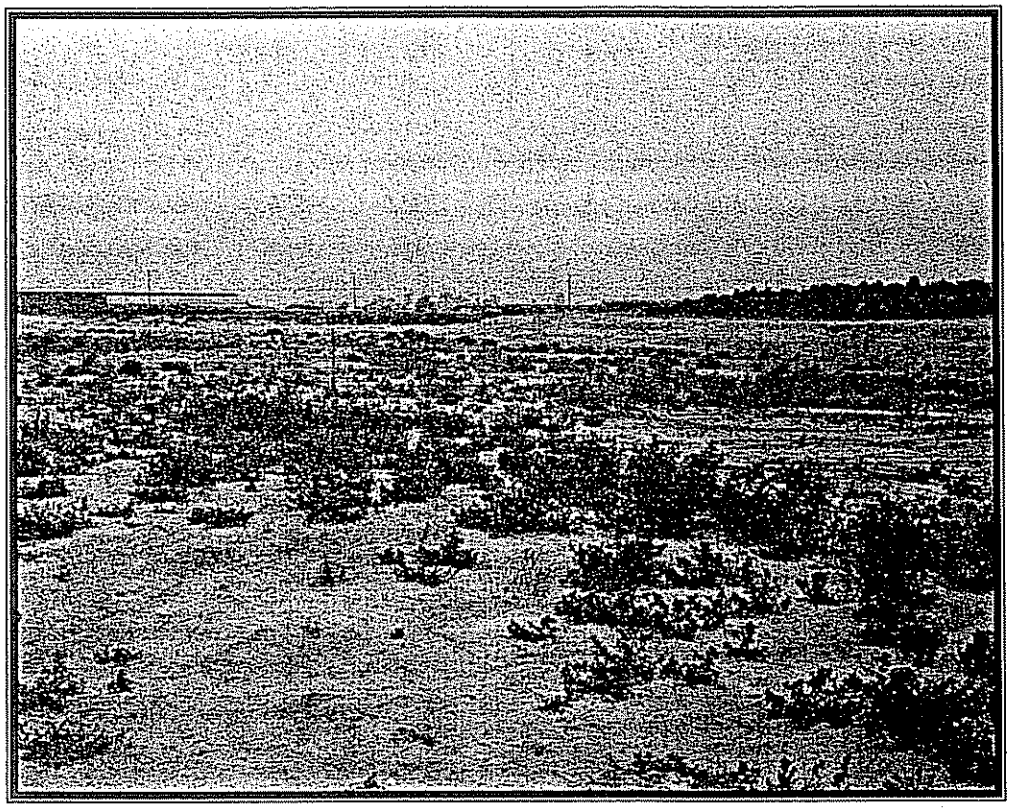
Photoplate 7 and 8: View of on-site residential and landscaped area.

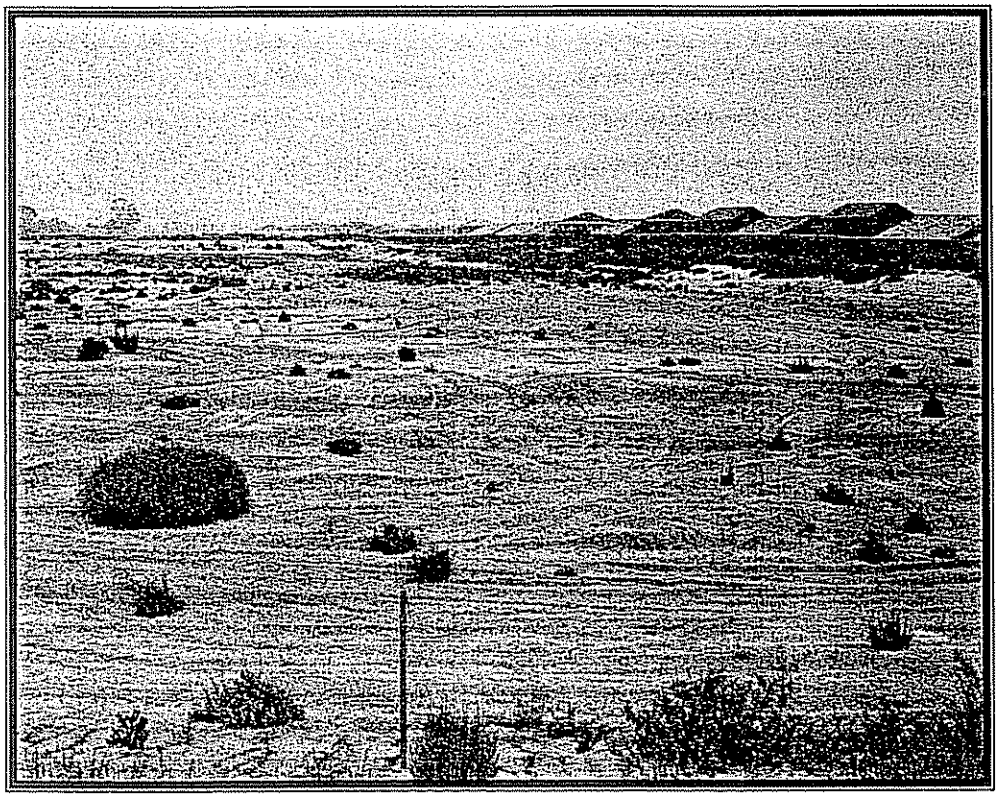


Photoplate 9 and 10: View of disturbed habitat Area 2, north of the retention basin.

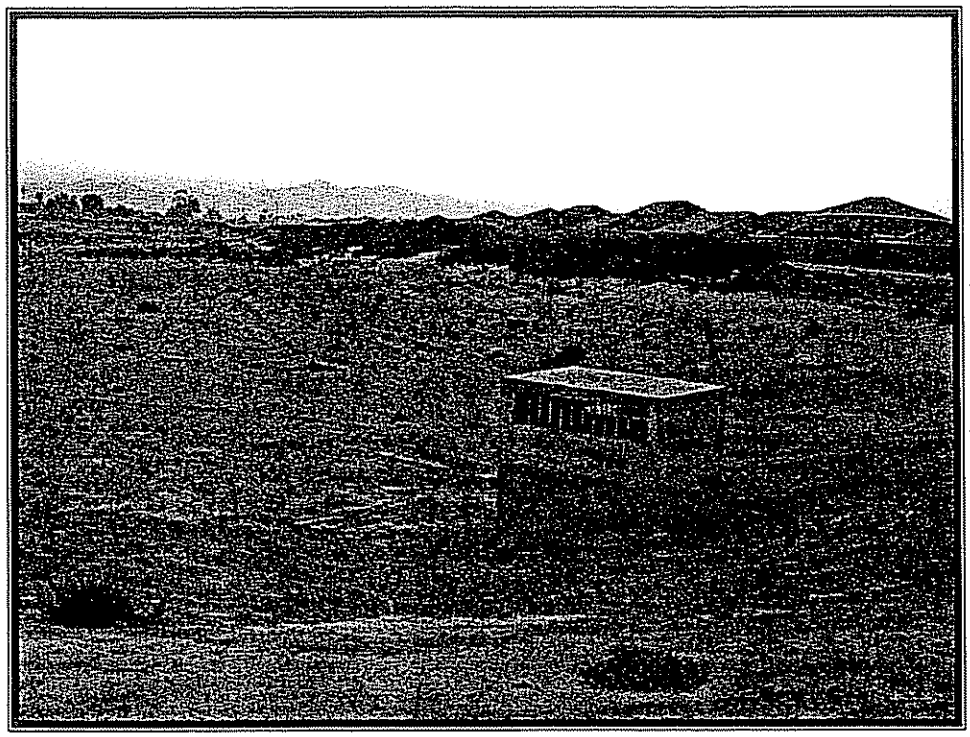


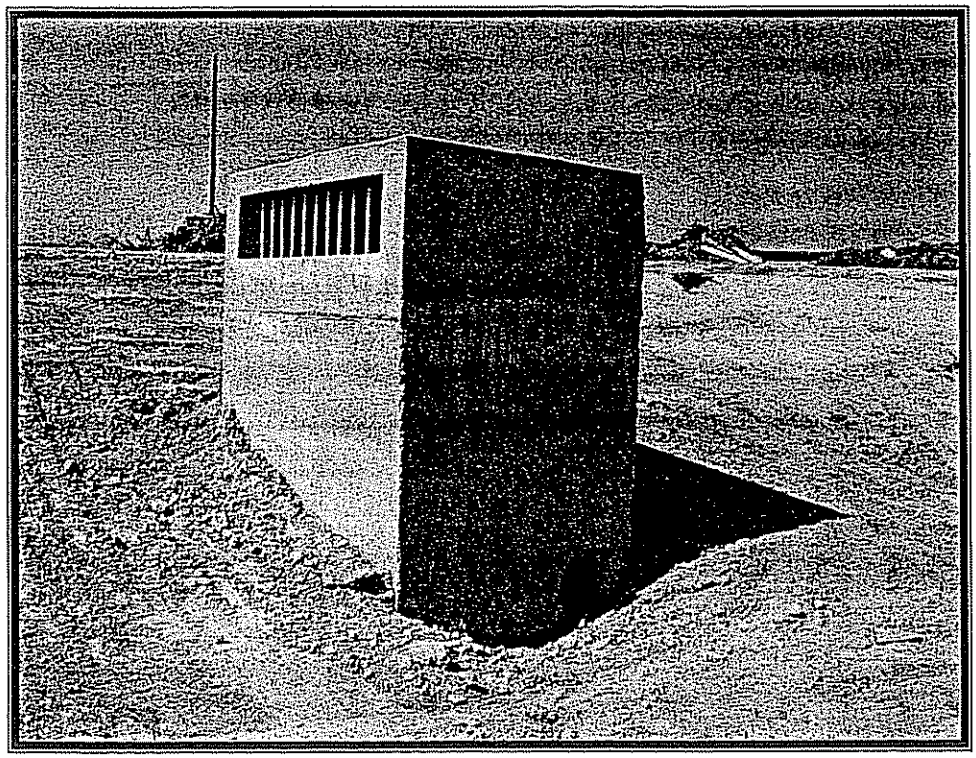
Photoplate 11 and 12: View of partially destroyed foundations and structures. Adjacent residential development visible in Photoplate 11.



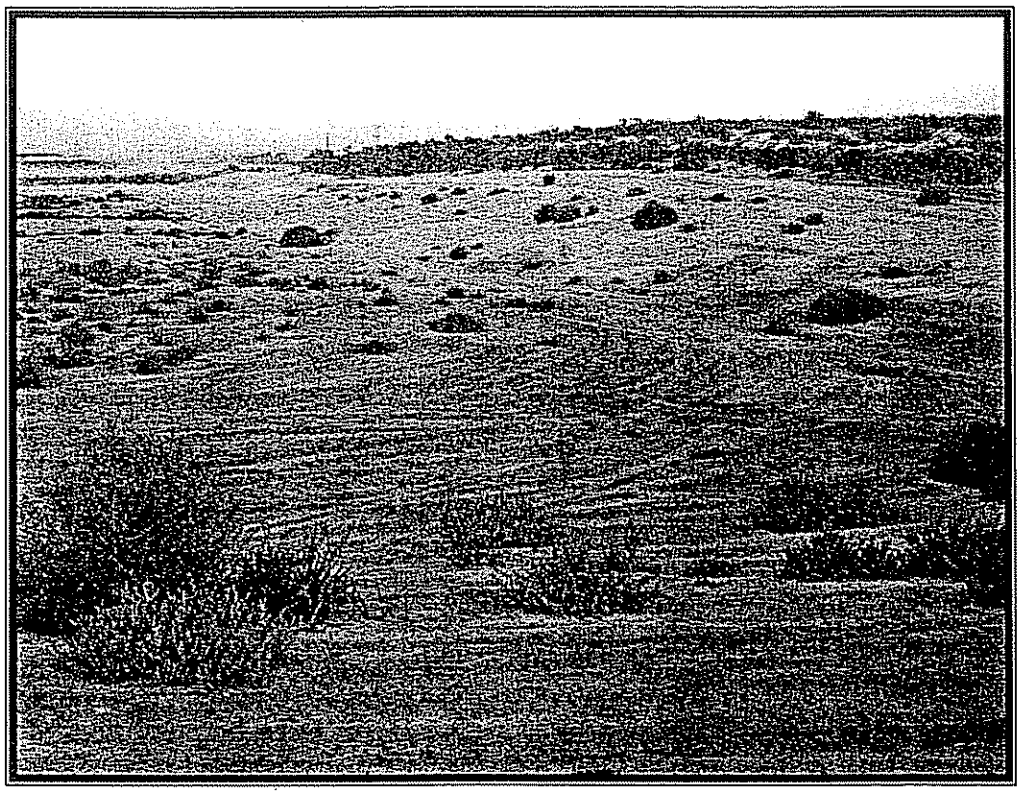


Photoplate 13 and 14: View of disturbed Area 2 facing south.





Photoplate 15 and 16: View of cement structure in southwest corner of the retention basin where the burrowing owl observed on site is residing.



Photoplate 17 and 18: View of unconsolidated soils on northern end of retention basin.

02-393

L&L ENVIRONMENTAL, INC.

BIOLOGICAL & CULTURAL INVESTIGATIONS & MONITORING

DELHI SANDS FLOWER-LOVING FLY PRESENCE / ABSENCE SURVEY ON THE ONTARIO SITE, TRACT 16261 COUNTY OF SAN BERNARDINO, CALIFORNIA

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1269 Pomona Road, Suite 102
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November 2002

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EXECUTIVE SUMMARY

L&L Environmental, Inc. (L&L) was retained by Empire Capital Advisors (ECA) to conduct the second of a two year presence/absence survey for the Delhi Sands Flower-loving Fly (herein DSF) on Assessors Parcels 218-252-004, 218-252-005, 218-332-001 and 218-332-002, Ontario, California. The purpose of the survey was to identify the presence or absence of the state and federally listed DSF and evaluate the effects of the proposed project on the listed species.

The proposed project, Tract 16261, is the development of 70 acres with single-family residential housing, situated within the City of Ontario. The survey area encompasses four parcels of land separated by Eucalyptus Avenue. The northern half of the project area, Area 1, lies at the northeastern corner of the junction of Eucalyptus and Cleveland Avenues. The southern half, Area 2, is located immediately south of Area 1 and Eucalyptus Avenue.

The project area is heavily disturbed by long-term agricultural, residential and other development. The natural vegetation and soil conditions have been highly altered due to these activities, and now contain mostly non-native grasses and other weedy vegetation. Native habitats are not present, adjacent to or within the survey area.

Focused surveys were conducted during the 2002 survey season, from July to September. A mound of unconsolidated soils, compromising approximately eight (8) to ten (10) acres, creates the only potential habitat on the project site and is considered very poor habitat. The survey resulted in no DSF, DSF eggs, larvae or pupae observations. The results were entirely negative. This corresponds with the 2001 survey results, which were also negative. Due to the site location, poor habitat and survey results, the Delhi Sands Flower-loving Fly is determined not to occur within the project boundary or the adjacent habitat. No further surveys or mitigation for the species is recommended.

1.0) INTRODUCTION

The following report was written for Empire Capital Advisors (ECA). It describes the results of the second year of a two year Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis,* herein DSF) Presence / Absence Survey conducted on the Ontario site, County of San Bernardino, California.

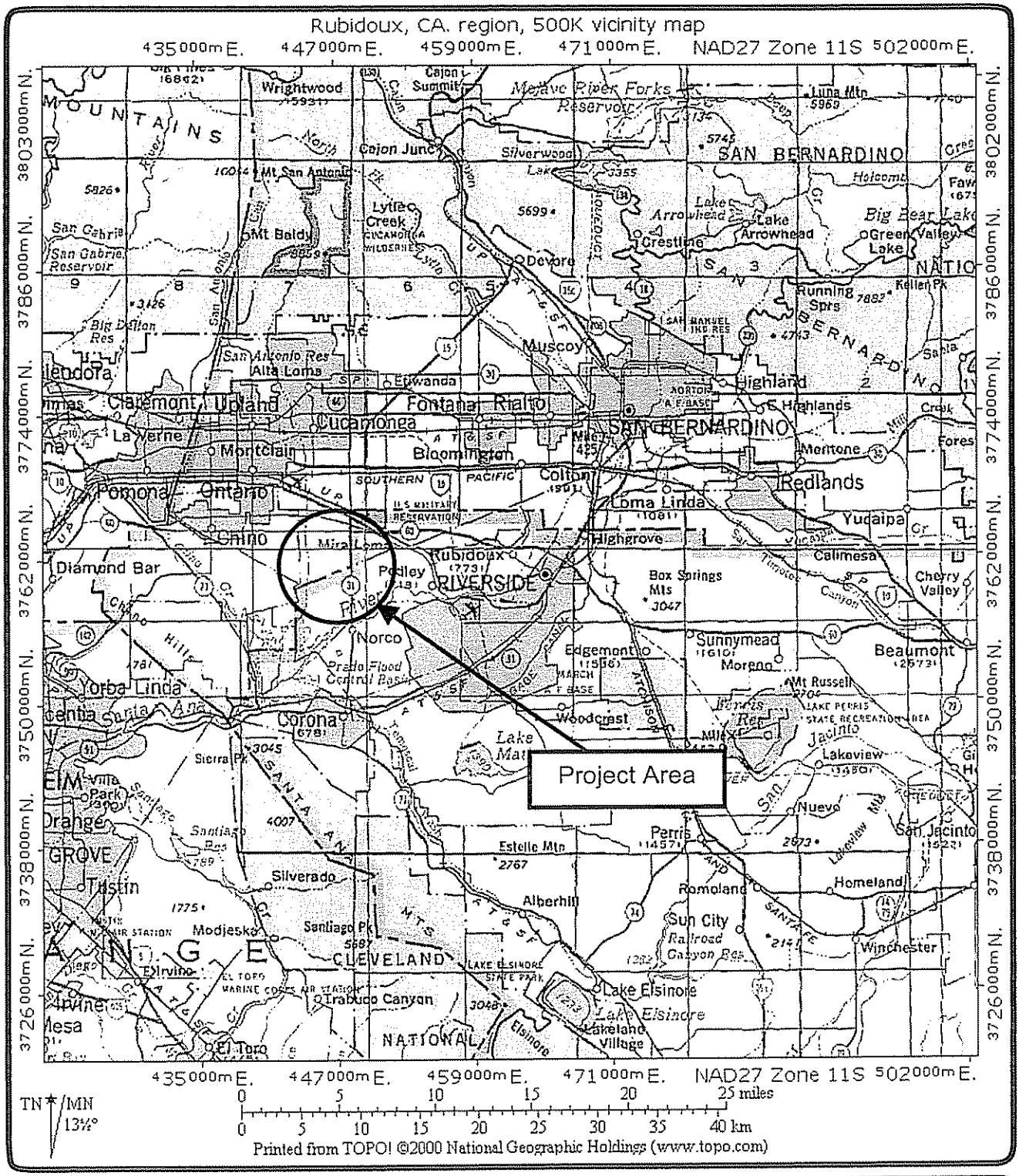
The purpose of the survey was to identify the presence or absence of the DSF and to evaluate the effects the project may have on the species. This information is needed since the adoption of the project plan has the potential to result in adverse effects to the species.

Our survey consisted of: (1) a records search and literature review, to determine the location of known DSF sightings (2) a protocol survey for the DSF to determine this species presence or absence on the project site.

1.1) Project Location

The survey area encompasses properties north and south of Eucalyptus Avenue, totaling approximately 70 acres, in the City of Ontario, southwestern San Bernardino County (Figure 1). The northern half of the project area, Area 1, lies at the northeastern corner of the intersection of Eucalyptus and Cleveland Avenues. This portion of the project area is bounded to the north by pasture lands and an active feed lot and to the west by rural residential units and similarly disturbed empty lots. The southern half, Area 2, is located immediately south of Area 1 and Eucalyptus Avenue. This portion of the project area is bounded to the south by Bellegrave Avenue and the Riverside County line.

The subject property is situated within Sections 13 and 24, Township 2 South, Range 7 West, as shown on a portion of the USGS Corona North 7.5' Topographic Quadrangle (Figure 2). Adjacent land, like the survey area, varies, to include such disturbances as actively cultivated in-use agricultural fields, pasture lands, feed lots, fallow fields, rural residential areas, paved and unimproved roads, and other developments (Figure 3). The proposed project is the construction of a residential development.



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BIOLOGICAL AND CULTURAL INVESTIGATIONS AND MONITORING

ECA-02-178
November 2002

Figure 1

Project Vicinity Map

Westra Dairy, Ontario
County of San Bernardino, California

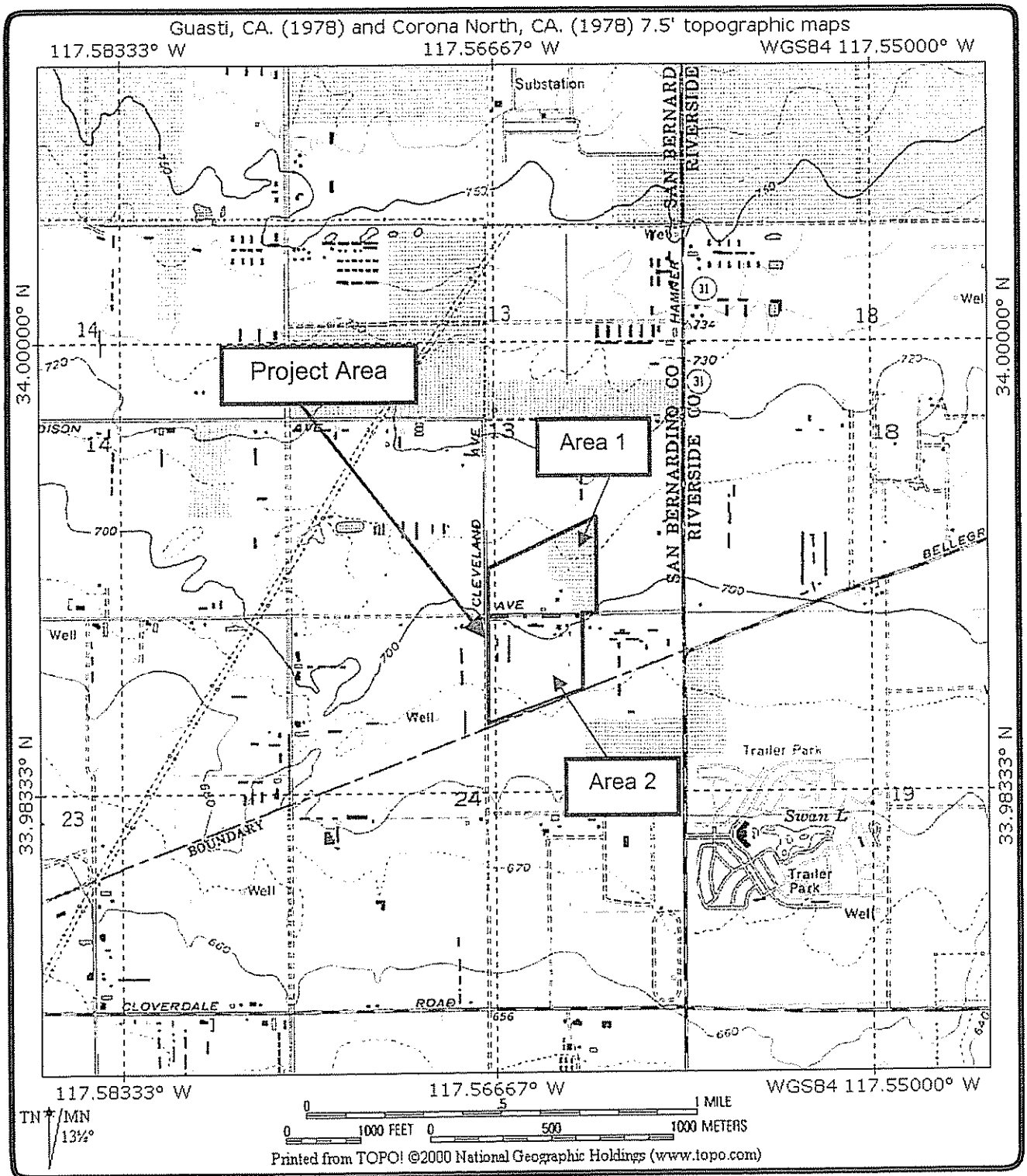

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Figure 2

Project Location Map

Westra Dairy, Ontario
County of San Bernardino, California

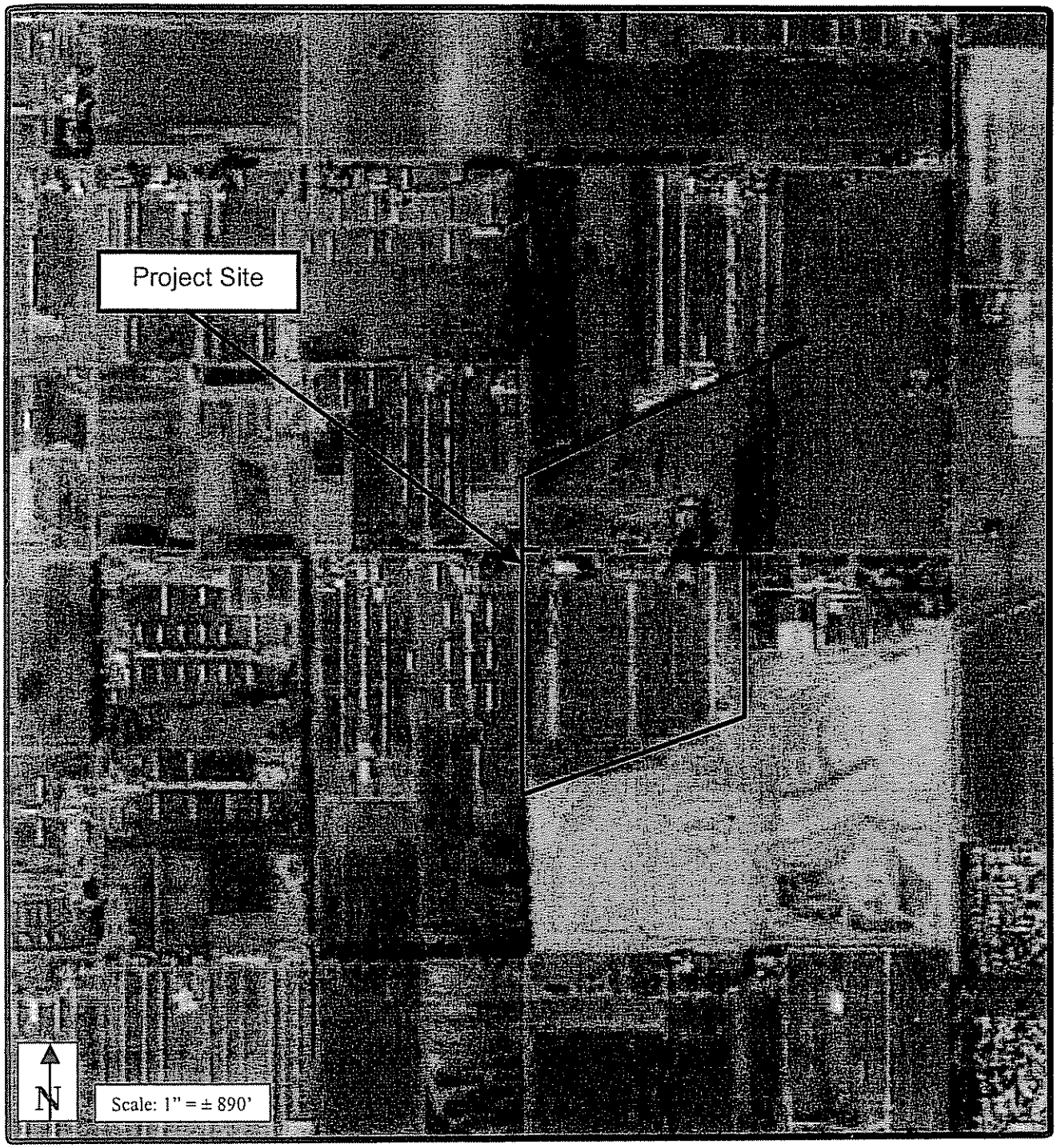

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Figure 3

Aerial Photograph

(taken 2001: www.airphotousa.com)

Westra Dairy, Ontario
County of San Bernardino, California

2.0) REGULATORY ENVIRONMENT

2.1) Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS), under the Federal Endangered Species Act of 1973, as amended (FESA), protects species listed as endangered or threatened. Endangered species are defined as a species "in danger of extinction throughout all or a significant portion of its range" while a threatened species is "likely to become endangered in the foreseeable future."

Take of listed species is prohibited under section 9 of the FESA. Take includes the direct killing, harming, or harassing of a species, and destruction of habitat that may be important for the species survival and recovery. Harm is further defined as significant habitat alteration that results in death or injury to listed species by significantly impairing behavior patterns such as breeding, feeding, or sheltering. The USFWS is empowered to permit "take" of listed species incidental to otherwise lawful activities. Procedures for obtaining a permit for incidental take are identified under Section 7 of the FESA for federal actions and Section 10 for non-federal actions.

The USFWS monitors species that are candidates for listing. As part of the normal listing process, a species is proposed for listing (proposed rule) and then listed (final rule). The proposed and final rules are published in the Federal Register. If a species is known to be on the brink of extinction, the USFWS can make an emergency listing, which skips the proposed rule step. Species are not protected until they are listed. However, consultation with the USFWS regarding candidate species or species proposed for listing can prevent project delays should the species be listed prior to project completion.

2.2) California Department Of Fish And Game (CDFG)

2.2.1) California Endangered Species Act

California Endangered Species Act (CESA) definitions of endangered and threatened species parallel those defined in the FESA. Endangered species are in serious danger of becoming extinct and threatened species are likely to become an endangered species in the foreseeable future according to Sections 2062 and 2067, respectively, of the California Fish and Game Code. Candidate species are species that are under formal review by CDFG for addition to the endangered or threatened species list (Section 2067). Prior to being considered for protected status, the CDFG designates a species as being of special concern. Species of special concern

are those species for which CDFG has information indicating that the species is declining.

2.3) California Environmental Quality Act

The California Environmental Quality Act requires identification of environmental effects from discretionary projects. Significant effects are to be mitigated by avoidance, minimization, rectification, or compensation whenever possible.

Effects to all State and Federally listed species are considered significant under the California Environmental Quality Act (CEQA). In addition to formally listed species, Section 15380(d) of CEQA considers effects to species that are demonstrably endangered or rare as important or significant within CEQA terms. These definitions can include State designated species of special concern, federal candidate and proposed species, NDDB tracked species, and California Native Plant Society List 1B and 2 plants.

3.0) SPECIES INFORMATION

Species: **Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*)**
Federal Status: **Endangered**
State Status: **Endangered**

The DSF was listed by the United States Fish & Wildlife Service (Service) under the Federal Endangered Species Act of 1973, as amended, on September 23, 1993 (USFWS, 1993). The DSF is a geographic race (subspecies) of *Rhaphiomidas terminatus*. The nominate form of this species, known as the El Segundo Flower-loving Fly *(Rhaphiomidas terminatus terminatus)* is historically known from coastal dune systems in the El Segundo and Palos Verdes areas of Los Angeles County. Presumed extinct since the late 1960's, a small surviving population of this subspecies was rediscovered on the Palos Verdes peninsula in August 2001.

DSF is restricted in distribution to the Colton Dune system, which covers an area of approximately 40 square miles in the cities of Colton, Rialto, Fontana, and Ontario. Historically, it is believed that the DSF occurred throughout much of this area. It is estimated that as much as 97 percent of the formerly known DSF habitat has been converted for human uses or has been adversely impacted by various anthropogenic disturbances.

The DSF is a large-sized fly (approximately 21-26mm in length) and is primarily orange-brown with dark brown colored oval spots on the abdominal tergites. The wings are primarily clear, but have a light brown edge along the forewing costal margin. A distinguishing characteristic of the DSF from all other sympatric insects is its relatively large size and iridescent green eyes. An additional characteristic for DSF and other members of the genus *Rhaphiomidas* is the presence of a non-retractable proboscis (mouthpart), which the DSF uses for extracting nectar from flowers. Males can be easily distinguished from females by the presence of greatly enlarged terminalia (claspers) at the end of their abdomens. Like other members of this genus, DSF is a strong flier, capable of hovering and rapid flight.

The DSF was once thought to be a member of the flower-loving fly family Apioceridae, but has undergone recent taxonomic revisions and is now considered a member of the fly family Mydidae. Unfortunately the common name for DSF has not changed along with this revision, since it is rarely observed nectaring (feeding) on flowers. Although few DSF feeding behaviors have been observed by researchers to date, indications are that the flowers of California buckwheat (*Eriogonum fasciculatum*) may be a potentially important nectar resource (GPB, pers. obs.). Researchers have observed DSF feeding on other native plant species, including (but not limited to) slender tarweed (*Hemizonia fasciculata*).

Most DSF are observed perching on the soil surface or on plants in sparsely vegetated areas (such as unpaved roads or trails) adjacent to or within occupied habitat. Male flies are most often observed, usually defending territories or flying in search of females for mating. Adult flies are active during the late summer months of August and September, when temperatures in the region often rise above 100° Fahrenheit. Detailed life history accounts (food source, lifespan, etc. of the immature stages) of DSF are not currently known. It is known that DSF larval development takes place underground within Delhi Series sands for the remaining months of the year, and that adult flies emerge from pupal cases located just under the soil surface.

4.0) METHODS AND PERSONNEL

A literature review was conducted to identify local occurrences, habitat requirements of the Delhi Sands Flower-loving Fly occurring in the region and survey protocol. Literature reviewed included the 1992 U.S. Fish and Wildlife Service (USFWS) DSF Protocol and associated documents as well as the California Natural Diversity Data Base for the Corona North and Riverside West USGS topographical quadrangles. Plant community designations are based primarily on "A Manual of California Vegetation" (Sawyer and Keeler-Wolf 1995). Latin names of plants follow the "Jepson Manual" (Hickman 1993).

The Delhi Sands Flower-loving Fly (DSF) survey was conducted in accordance with the USFWS field survey protocol for presence/absence survey (USFWS 1997). This survey was conducted over the second year for a two-year survey protocol. Guy Bruyea, L&L field biologist, conducted surveys on July 15, 19, 22, 26, 29, August 3, 5, 10, 12, 17, 19, 24, 26, 31 and September 2, 7, 9, 14, and 16, 2002. All field surveys were conducted during daylight hours, with suitable weather conditions. Survey times are presented in Table 1 and survey forms (Appendix C).

The site surveys were conducted on foot by conducting a series of transects across the subject property where possible, stopping periodically for observations and notations. Digital photographs were taken to record the condition of the site during the surveys (Appendix B).

Table 1: Empire Capital Advisors Survey Data

Date	Time	Purpose	Biologist(s)	Results
July 15	1000-1400	DSF Survey	Guy Bruyea	Negative
July 19	0930-1330	DSF Survey	Guy Bruyea	Negative
July 22	1000-1400	DSF Survey	Guy Bruyea	Negative
July 26	1035-1430	DSF Survey	Guy Bruyea	Negative
July 29	0930-1315	DSF Survey	Guy Bruyea	Negative
August 03	0930-1120 1240-1400	DSF Survey	Guy Bruyea	Negative
August 05	0930-1320	DSF Survey	Guy Bruyea	Negative
August 10	1040-1430	DSF Survey	Guy Bruyea	Negative
August 12	0930-1100 1230-1400	DSF Survey	Guy Bruyea	Negative
August 17	0930-1315	DSF Survey	Guy Bruyea	Negative
August 19	1050-1430	DSF Survey	Guy Bruyea	Negative
August 24	1105-1400	DSF Survey	Guy Bruyea	Negative
August 26	0930-1130 1240-1430	DSF Survey	Guy Bruyea	Negative
August 31	0930-1305	DSF Survey	Guy Bruyea	Negative
September 02	1040-1430	DSF Survey	Guy Bruyea	Negative
September 07	1050-1430	DSF Survey	Guy Bruyea	Negative
September 09	0930-1300	DSF Survey	Guy Bruyea	Negative
September 14	1050-1415	DSF Survey	Guy Bruyea	Negative
September 16	0930-1300	DSF Survey	Guy Bruyea	Negative

5.0) RESULTS

5.1) Disturbance

Land use varies within and adjacent to the survey area, and includes anthropomorphic disturbances such as actively cultivated in-use agricultural fields, pasture lands, feed lots, fallow fields, rural residential areas, paved and unimproved roads, and other developments. Other disturbances associated with off-road vehicle use, dumping and removal of debris, demolition, horseback riding, paintball activities, and target shooting was observed. Native habitats are not present adjacent to or within the survey area. All areas have been subjected to various human disturbances, mostly in the form of agricultural activities related to the presence of cornfields, feed lots, pastures, manure, or other farm related disturbances (Figure 3).

Three homes on or adjacent to the subject property were razed during the 2002 focused survey season. Two were unoccupied at the initiation of surveys, and one was vacated on or about the fourth week of surveys. Two homes were located on or adjacent to Area 1 north of Eucalyptus Avenue, and one home was located south of Eucalyptus Avenue in Area 2. Bulldozers, hauling equipment, and other vehicles were parked adjacent to these residences for approximately 4 of the focused survey visits.

5.2) Vegetation

The natural vegetation and soil conditions have been highly altered due to these anthropomorphic activities. Native vegetation communities are not present on the ECA site. Mostly non-native and ornamental plant species were detected during the vegetation mapping and general botanical surveys of the ECA property. Weedy vegetation within the retention basin was much more abundant in 2002, with fireweed (*Kochia scoparia*) and Russian thistle (*Salsola tragus*) being the dominant species. In addition, individual mulefat (*Baccharis salicifolia*), willow (*Salix* sp.), and poplar (*Populus* sp.) are beginning to grow at the western end of this basin.

Disturbed habitat includes areas that contain mostly non-native plant species including ornamentals and ruderal exotics. Mostly non-native, weedy species have invaded the ECA site, including common dandelion (*Taraxacum* sp.), horehound (*Marrubium vulgare*), puncture vine (*Tribulus terrestris*), Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), cheeseweed (*Malva parviflora*), and bermuda grass (*Cynodon dactylon*). Other plant species observed on the subject property include short-pod mustard (*Hirschfeldia incana*), lamb's

quarters (*Chenopodium album*), flax-leaf fleabane (*Conyza boniarensis*), Palmer's amaranth (*Amaranthus palmeri*), tree tobacco (*Nicotiana glauca*), golden crown beard (*Verbecinia encelioides*), and spiny cocklebur (*Xanthium spinosum*).

Large eucalyptus trees can be found bordering the ECA property at the northern boundary of Area 1, which separates the ECA property from neighboring pasture and other agricultural lands and along Eucalyptus Avenue at the northeast corner of Area 2.

Developed areas include lands that have been altered due to the placement of permanent structures and paved roads, thereby preventing the growth of vegetation. On the site developed areas currently include various farm buildings and shade structures, rubble and old foundations and abandoned feed bins and associated paved areas. Non-native ornamental landscaping is present on both Areas 1 and 2 of the site, mostly in association with the areas where two rural residential units were once present along Eucalyptus Avenue. Trees such as mulberry (*Morus* sp.), gumtree (*Eucalyptus* sp.), liquidamber (*Liquidamber* sp.). oleander (*Nerium oleander*), ash (*Fraxinis* sp.), and Mexican fan palm (*Washingtonia robusta*) were observed.

5.3) Soils

A large retention basin (estimated at 8 to 10 acres) is present at the southern portion of this area adjacent to Bellegrave Avenue. An artificial mound (estimated at approximately 8 to 10 acres) that contains consolidated and unconsolidated silt soils is located immediately north of this basin, presumably created when soils were moved in the basin construction process.

5.4) Literature Review

Preliminary site data indicated that no delhi sands flower-loving fly had been identified on the project site or within the vicinity. The closest recorded DSF sighting appears to be approximately two (2) miles north of the project site (USFWS).

In 1998 Tierra Madre Consultants conducted a DSF habitat assessment on approximately 450 acres of farmland for Regent/Forecast Homes, including the 70-acre proposed project site. In their report, Area 2 is described as an active cattle feedlot, with rural residences and a small amount of weedy vegetation (Tierra Madre Consultants, 1998). Although this area has been modified, cattle have been removed and some farm buildings leveled since the 1998 habitat evaluation by Tierra Madre Consultants, it still remains highly disturbed due to long term and ongoing disturbances.

Tierra Madre identified the location of recorded Delhi series soils and concluded they were no longer present within the project area. They concluded with a recommendation for no further focused surveys.

In 2001, L&L in agreement with Forecast Homes, decided to conduct the focused surveys for the DSF. During this survey the habitat on site was heavily disturbed and provided a maximum of ten (10) acres of very poor habitat for the DSF. No DSF adults, eggs, larvae or pupae were observed during the 2001 focused survey.

5.5) Presence / Absence Survey

The project site lies within the historic range of the Delhi Sands Flower-loving Fly and contains poorly suitable habitat. During the protocol surveys no DSF adults, eggs, larvae or pupae were observed. The results were entirely negative.

Although unconsolidated soils are present and the site has been mapped as containing Delhi series sand deposits, it is highly unlikely that DSF is present based on the lack of native vegetation, highly altered soil conditions, ongoing disturbances, and the lack of data indicating its presence south of Highway 60.

The project site contained a moderate insect diversity for this general area due to the presence of nectar resources, although the resource species were mainly non-native. Previous and ongoing disturbances associated with agricultural activities and residential development onsite and in adjacent areas has caused extensive disturbance.

A list of species encountered during the surveys is found in Appendix A of this report. An active burrowing owl burrow and owls were identified onsite during the 2001 protocol survey in a cement structure in the retention basin. However, this species was not observed on site during 2002 and in particular, not in association with the earlier identified nest. The nest showed no sign of activity this season. While owls can return at a later date, the surrounding development and onsite agricultural disturbances may have caused the bird to abandon the nest. One other sensitive species, the loggerhead shrike, was observed on the project site, but no nest of this species was observed. No threatened or endangered species were encountered during the surveys.

6.0) CONCLUSIONS

Despite the earlier results of Tierra Madre, L&L with the agreement of Empire Capital Advisors, conducted the two year U.S. Fish and Wildlife Service (USFWS) protocol survey. This was decided due to the mapped Delhi series soils on site, a small area of unconsolidated soils and as a precaution, in order to provide additional data to the U.S. Fish and Wildlife Service (USFWS) as to the absence of the species within the project boundaries.

Very poorly suitable habitat for the Delhi Sands Flower-loving Fly occurs within a small portion of the project boundaries. This species is state and federally listed as endangered. No DSF adults, eggs, larvae or pupae were observed during the focused survey. Nor were any DSF identified on the project site during the first year of the protocol surveys. The development of the property is likely to have little or no impact to the Delhi Sands Flower-loving Fly.

Due to the site location, poor habitat and survey results, the Delhi Sands Flower-loving Fly is determined not to occur within the project boundary or the adjacent habitat. No further surveys or mitigation for the species is recommended.

7.0) REFERENCES AND CITATIONS

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Table 2: List of Invertebrate Species Observed

Order - Family	Scientific Name
Diptera	
Asilidae	*Efferia albibarbis*
Asilidae	*Mallophora fautrix*
Bombyliidae	*Mythicomyia* species
Bombyliidae	*Thyridanthrax atrata*
Bombyliidae	*Toxophora pellucida*
Bombyliidae	*Villa atrata*
Bombyliidae	*Villa pretiosa*
Bombyliidae	Unidentified
Calliphoridae	*Phaenicia* species
Calliphoridae	*Calliphora* species
Conopidae	*Physocephala texana*
Dolichopodidae	*Condylostylus sp.*
Drosophilidae	*Ceritítus capitata*
Muscidae	*Musca domestica*
Mydidae	*Nemomydas pantherinus*
Sarcophagidae	*Sarcophaga sp*
Syrphidae	*Allograpta obliqua*
Syrphidae	*Eristalis tenax*
Syrphidae	Unidentified
Tabanidae	*Tabanus punctifer*
Tachnidae	*Cylindromyia* species
Tachnidae	*Gymnosoma* species
Tachinidae	Unidentified

Hymenoptera	
Andrenidae	*Perdita species*
Anthophoridae	*Anthophora urbana*
Anthophoridae	*Melissodes* sp.
Apidae	*Apis mellifera*
Chrysididae	*Parnopes edwardsii*
Formicidae	*Pogonomyrmex californicus*
Formicidae	Unidentified
Halictidae	*Agapostemon texana*
Halictidae	Unidentified
Ichneumonidae	Unidentified
Megachilidae	*Megachile* sp.
Mutilidae	*Dasymutilla coccineohirta*
Mutilidae	*Dasymutilla californica*
Pompillidae	Unidentified
Sphecidae	*Ammophila* sp.
Sphecidae	*Ammophila alberti*

Hymenoptera cont.	
Sphecidae	*Bembix comata*
Sphecidae	*Microbembix californica*
Sphecidae	*Cerceris* species
Sphecidae	*Chalybion californicum*
Sphecidae	*Chlorion aerarium*
Sphecidae	*Hoplisoides diversus*
Sphecidae	*Hoplisoides punctifrons*
Sphecidae	*Philanthus multimaculatus*
Sphecidae	*Philanthus ventilabris*
Sphecidae	*Podalonia* species
Sphecidae	*Prionyx foxi*
Sphecidae	*Sceliphron caementarium*
Sphecidae	Unidentified
Vespidae	*Polistes apachus*
Vespidae	*Polistes fuscatus*
Vespidae	Unidentified

Coleoptera	
Carabidae	Unidentified
Chrysomelidae	*Trachymela sloanei*
Chrysomelidae	*Diabrotica balteata*
Chrysomelidae	*Diabrotica undecimpunctata*
Chrysomelidae	*Lema trilineata*
Coccinellidae	*Coccinella californica*
Coccinellidae	*Hippodamia convergens*
Coccinellidae	*Harmonia axyridis*
Curculionidae	Unidentified
Melyridae	*Collops* species
Mordellidae	Unidentified
Scarabaeidae	*Cotinus mutabilis*
Tenebrionidae	*Eleodes* species
Tenebrionidae	Unidentified

Dermaptera	
Forficulidae	*Forficula auricularia*

Hemiptera	
Lygaeidae	*Geocoris* sp.
Lygaeidae	*Nysius* sp.
Lygaeidae	*Lygaeus kalmii*
Miridae	*Lygus* sp.

Hemiptera cont.	
Pentatomidae	*Chlorochroa sayi / uhleri*
Pentatomidae	*Thyanta pallidovirens*
Pentatomidae	*Trichopepla aurora*
Pentatomidae	*Murgantia histrionica*
Pentatomidae	Unidentified
Reduviidae	*Zelus tetracanthus*
Rhopalidae	*Arhyssus lateralis*

Homoptera	
Aphididae	Unidentified
Membracidae	*Homolodisca lacerta*
Psyllidae	*Glycaspis brimblecombei*

Neuroptera	
Chrysopidae	*Green Lacewing*
Myrmeleontidae	*Brachynemurus* species

Lepidoptera	
Arctiidae	*Estigmene acraea*
Danaidae	*Danaus plexippus*
Hesperiidae	*Hylephila phyleus*
Hesperiidae	*Lerodea eufala*
Hesperiidae	*Atalopedes campestris*
Hesperiidae	*Pyrgus communis albescens*
Lycaenidae	*Brephidium exilis*
Lycaenidae	*Plebejus acmon*
Lycaenidae	*Strymon melinus*
Nymphalidae	*Vanessa cardui*
Nymphalidae	*Vanessa annabella*
Papilionidae	*Papilio cresphontes*
Pieridae	*Colias eurytheme*
Pieridae	*Colias cesonia*
Pieridae	*Pieris rapae*
Pieridae	*Pontia protodice*
Noctuidae	Unidentified
Pyralidae	Unidentified

Odonata	
Aeshnidae	*Aeshna multicolor*
Aeshnidae	*Anax junius*
Coenagrionidae	*Argia* sp.
Libellulidae	*Libellula saturata*
Libellulidae	*Pantala* species
Libellulidae	*Sympetrum corruptum*
Libellulidae	*Tramea lacerta*
Libellulidae	*Tramea onusta*

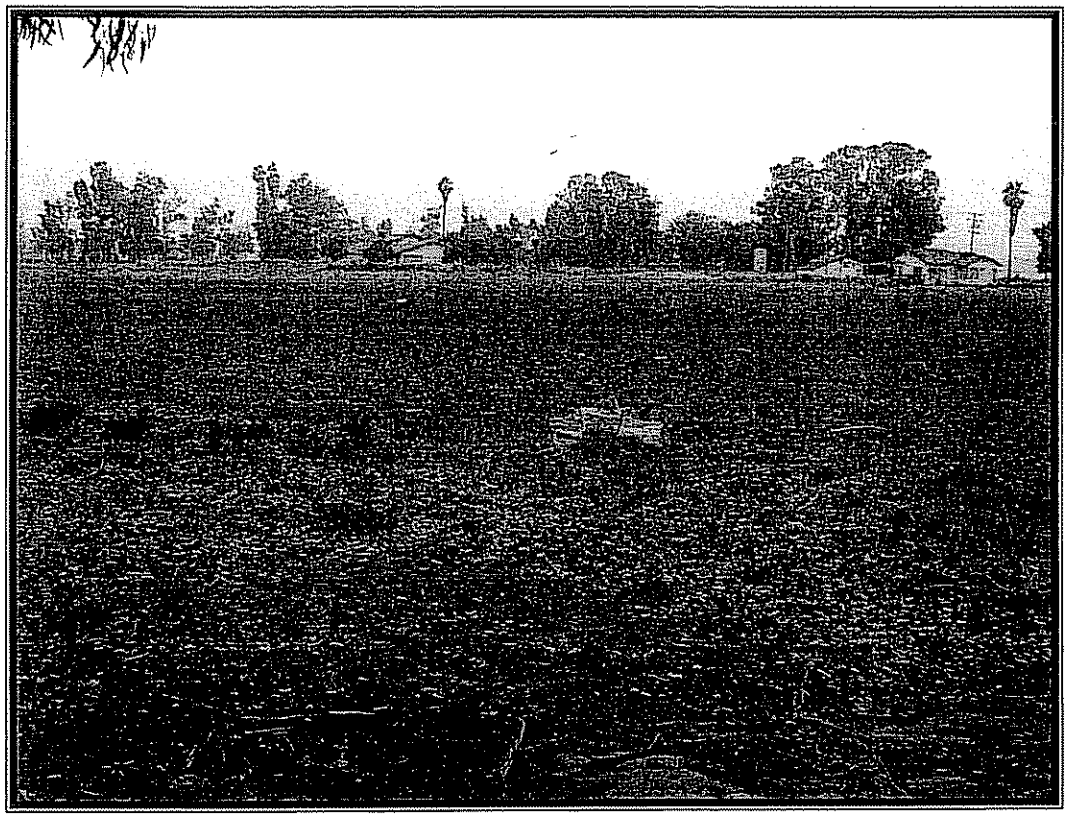
Orthoptera	
Acrididae	*Trimerotropis californica*
Acrididae	*Trimerotropis* species
Acrididae	*Malanoplus complanatipes*
Acrididae	*Trimerotropis pallidipennis*
Gryllidae	*Gryllus* sp.
Mantidae	*Iris oratoria*

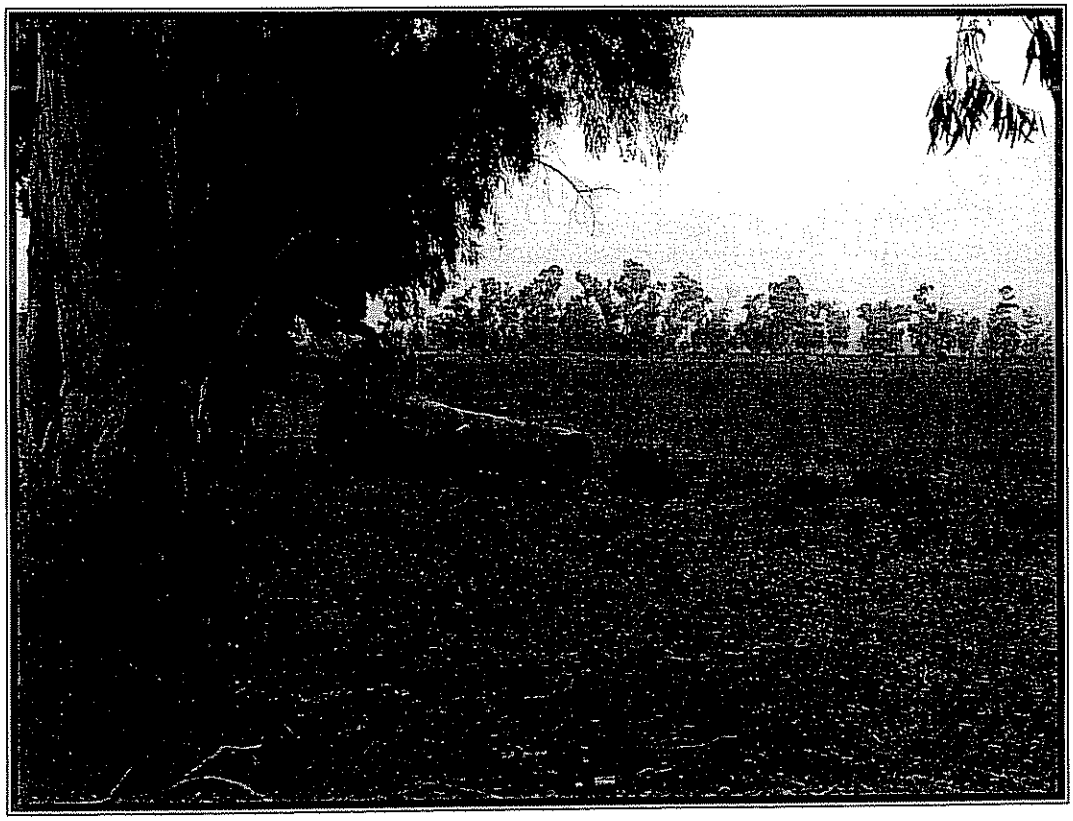
Arachnida	
Salticidae	Unidentified
Dipluridae	Unidentified
Theriidae	*Latrodectus hesperus*
Oxyopidae	*Peucetia viridins*
Agelinidae	Unidentified

Table 3. List of Other Wildlife Species Observed

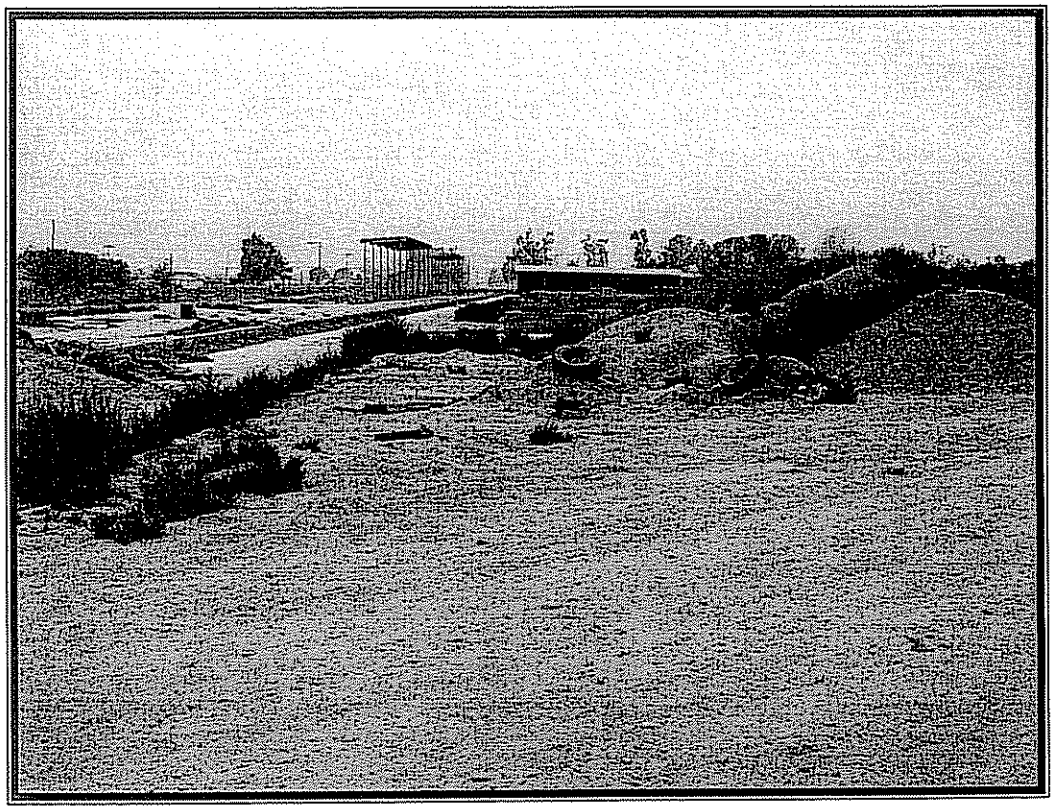
Latin Name	*Common Name*
VERTEBRATE ANIMALS	
REPTILIA	**REPTILES**
IGUANIDAE	IGUANID LIZARDS
Uta stansburiana	Side-blotched lizard
AVES	**BIRDS**
DIOMEDEIDAE	ALBATROSSES
Phoebastria immutabilis	Laysan albatross
PHALACROCORACIDAE	CORMORANTS
Phalacrocorax auritus	Double-crested cormorant
ARDEIDAE	HERONS
Casmerodius albus	Great egret
Bubulcus ibis	Cattle egret
ANATIDAE	DUCKS, GEESE AND SWANS
Anas platyrhynchos	Mallard
CATHARTIDAE	VULTURES
Cathartes aura	Turkey vulture
ACCIPITRIDAE	HAWKS, EAGLES, HARRIERS
Buteo jamaicensis	Red-tailed hawk
FALCONIDAE	FALCONS
Falco sparverius	American kestrel
CHARADRIIDAE	PLOVERS
Charadrius vociferus	Killdeer
RECURVIROSTRIDAE	STILTS AND AVOCETS
Himantopus mexicanus	Black-necked stilt
COLUMBIDAE	PIGEONS AND DOVES
Columba livia	Rock dove
Zenaida macroura	Mourning dove
APODIDAE	SWIFTS
Aeronautes saxatalis	White-throated swift
TROCHILIDAE	HUMMINGBIRDS
Calypte anna	Anna's hummingbird
TYRANNIDAE	TYRANT FLYCATCHERS
Sayornis nigricans	Black phoebe
Tyrannus verticalis	Western kingbird
HIRUNDINIDAE	SWALLOWS
Hirundo rustica	Barn swallow
CORVIDAE	CROWS AND JAYS
Corvus brachyrhynchos	American crow
MIMIDAE	MOCKINGBIRDS AND THRASHERS
Mimus polyglottos	Northern mockingbird
LANIIDAE	SHRIKES
Lanius ludovicianus	Loggerhead shrike
STURNIDAE	STARLINGS
* *Sturnus vulgaris*	European starling

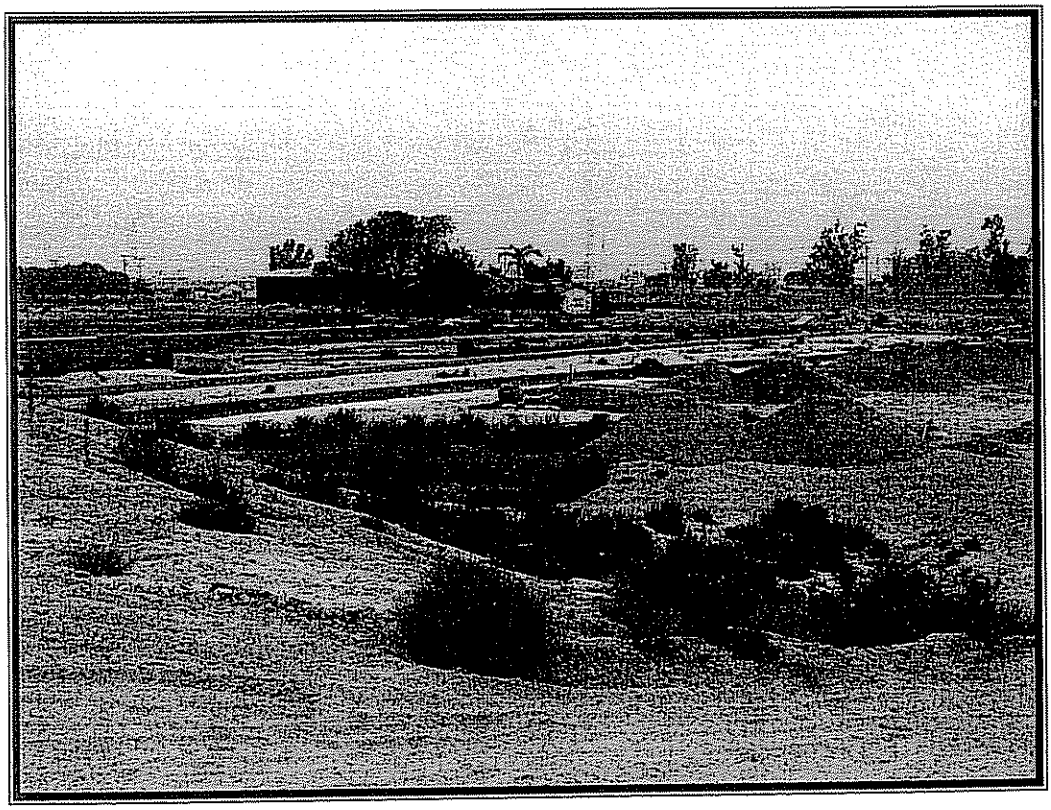
Latin Name	***Common Name***
AVES cont.	**BIRDS**
EMBERIZIDAE	SPARROWS, WARBLERS, TANAGERS
Euphagus cyanocephalus	Brewer's blackbird
Molothrus ater	Brown-headed cowbird
FRINGILLIDAE	FINCHES
Carpodacus mexicanus	House finch
Carduelis psaltria	Lesser goldfinch
PASSERIDAE	WEAVERS
* *Passer domesticus*	House sparrow
MAMMALIA	**MAMMALS**
LEPORIDAE	HARES AND RABBITS
Sylvilagus sp.	Cottontail
SCIURIDAE	SQUIRRELS
Spermophilus beecheyi	California ground squirrel



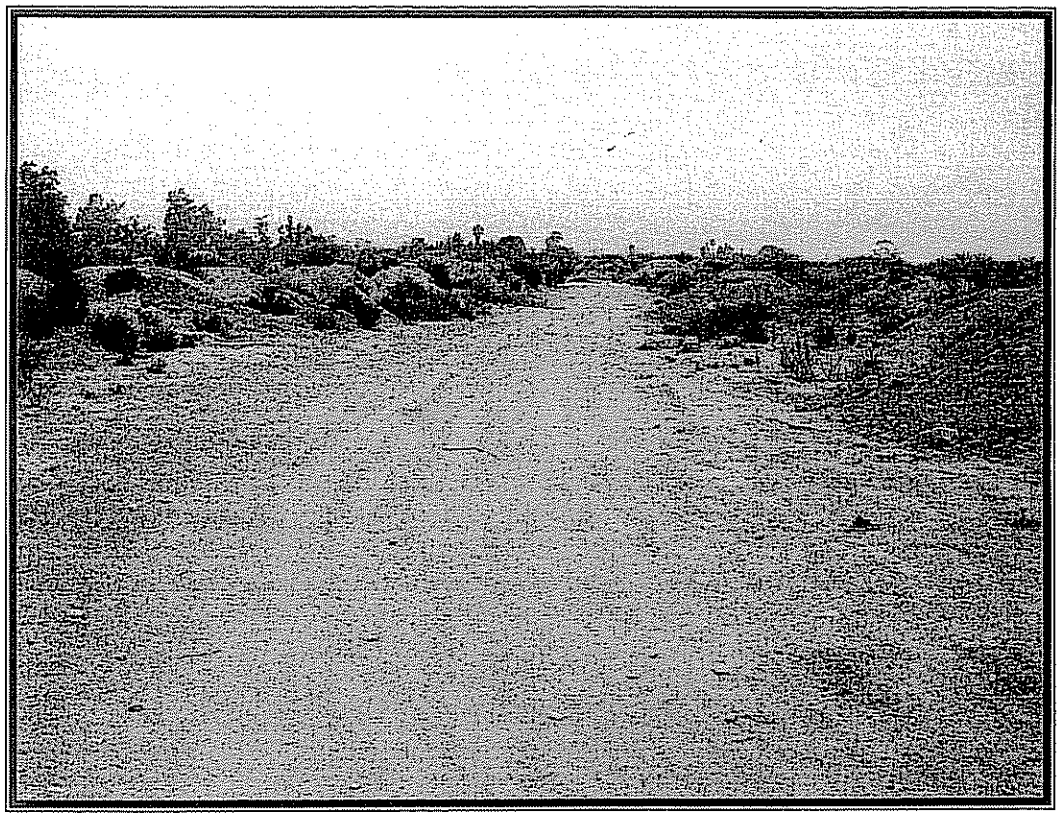


Photoplate 1 and 2: View of disced agricultural land and eucalyptus trees Area 1.

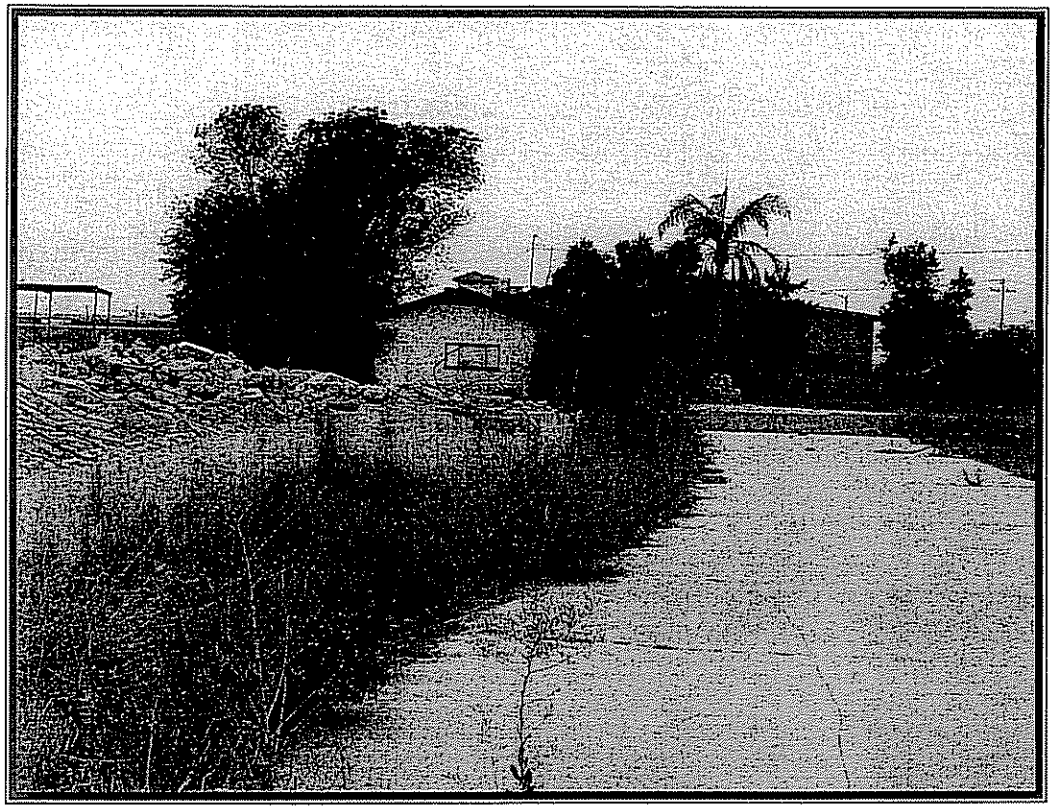


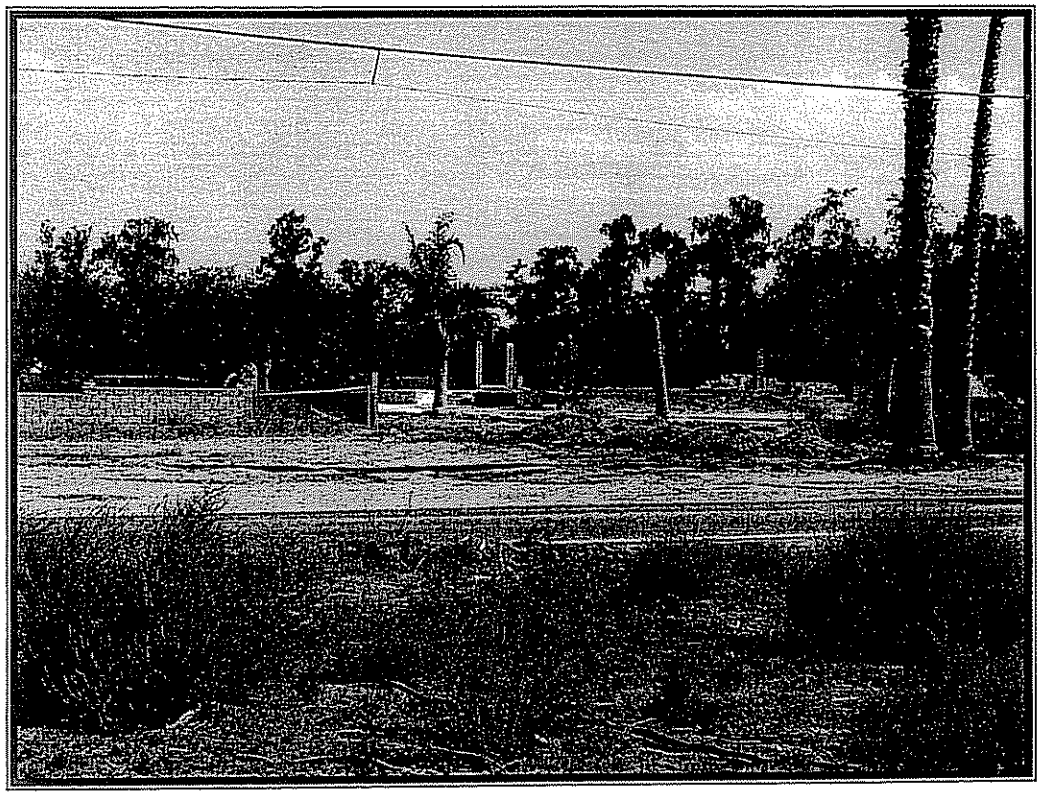


Photoplate 3 and 4: View of disturbed land with shade structures, old foundations and farm buildings in background.



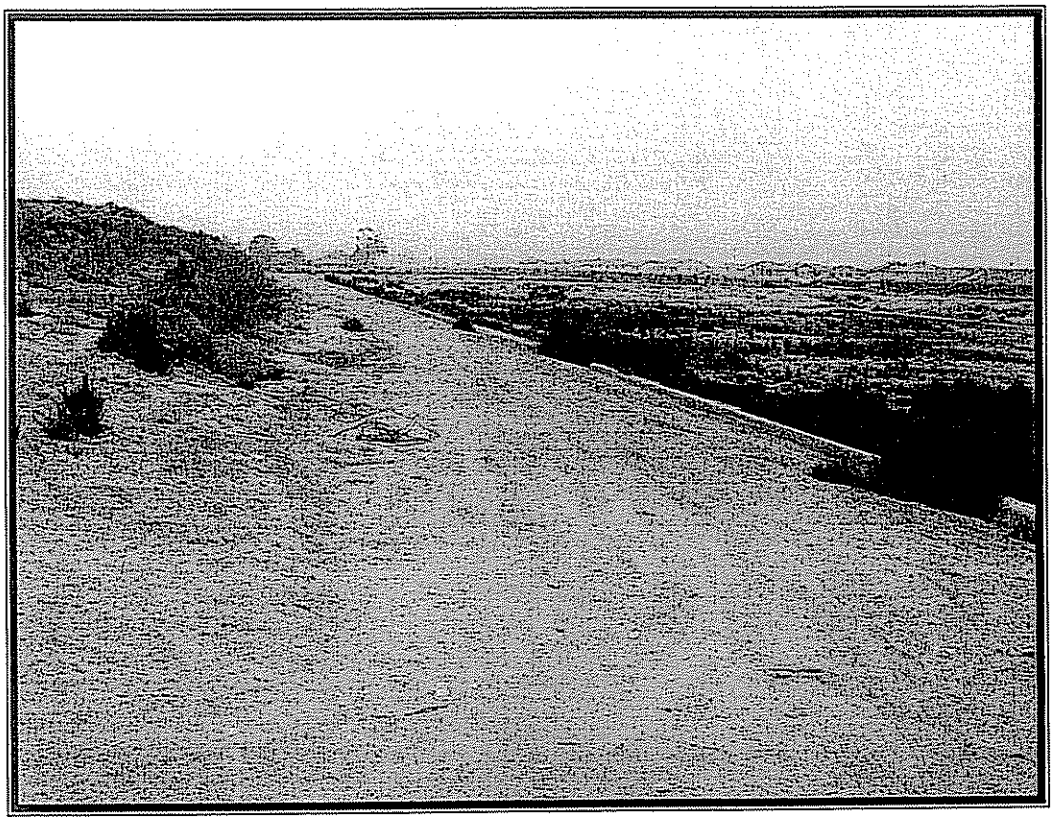
Photoplate 5 and 6: View of dumping areas on the project site.

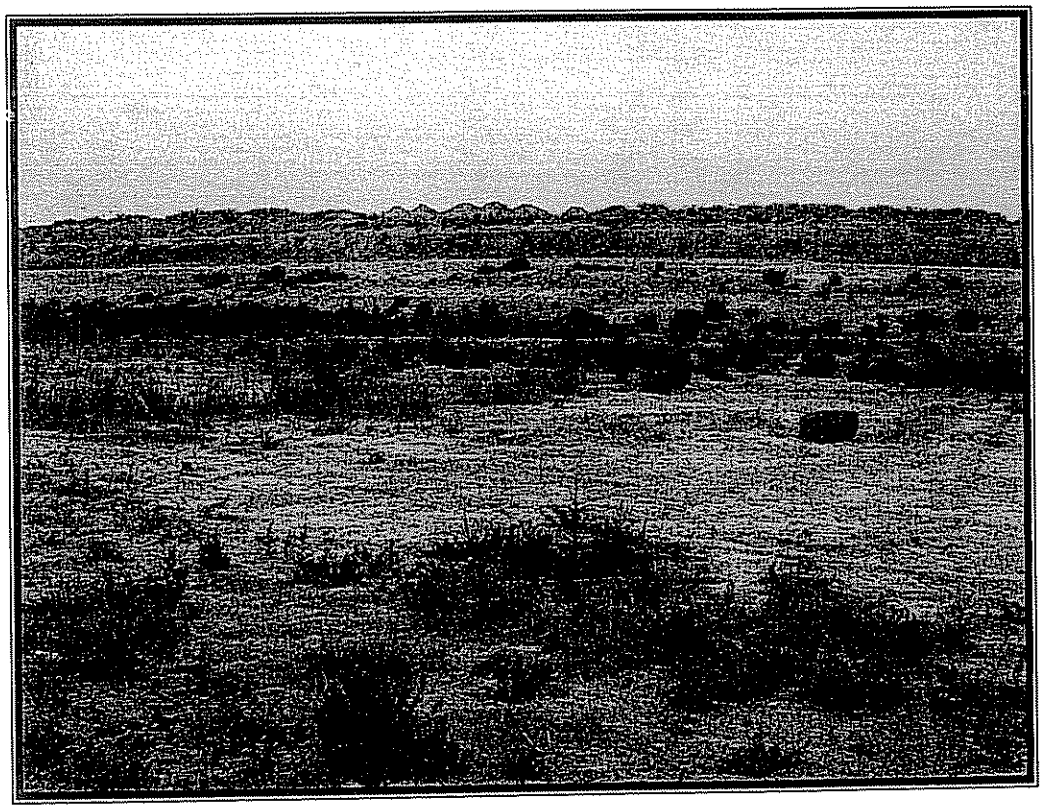




Photoplate 7 and 8: View of partially destroyed foundations and structures. Adjacent to residential development in Photoplate 7.

Photoplate 9 and 10: View of Area 2 retention basin.





Photoplate 13 and 14: View of disturbed Area 2 retention basin and area to the north of unconsolidated soils.

Delhi Signature Page

October 2002

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

Date 10/16/02

Guy P. Bruyea, Biologist
43146 Sampson Court
Hemet, California 92544

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 7-15-02 Site Name: Forecast Acreage: 50 Times: Begin: 1000 End: 1400 Biologist(s): GPB

Other sites surveyed this date? Y (N) Specify: _____ DSFLF Observed?: Y (N) Weather: Begin 83 °F End 101 °F Cloud Cover 0 Wind 0-2

Lepidoptera:

Butterflies

__ *Hylephila phyleus*
__ *Lerodea eufala*
__ *Polites sabuleti*
__ *Paratrytone melane*
__ *Atalopedes campestris*
__ *Pyrgus communis albescens*
__ *Heliopetes ericetorum*
__ *Erynnis funeralis*
__ *Brephidium exilis*
__ *Leptotes marina*
__ *Icaricia acmon*
__ *Strymon melinus pudica*
__ *Atlides halesus corcorani*
__ *Apodemia mormo*
__ *Papilio rutulus*
__ *Papilio cresphontes*
__ *Danaus plexippus*
__ *Danaus gilippus*
__ *Agraulis vanillae*
__ *Vanessa cardui*
__ *Vanessa atalanta*
__ *Vanessa annabella*
__ *Vanessa virginiensis*
__ *Limenitis lorquini*
__ *Junonia coenia*
X *Pontia protodice*
__ *Pieris rapae*
X *Colias eurytheme*
__ *Colias cesonia*
__ *Eurema nicippe*
__ *Nathalis iole*
__ *Phoebis sennae*

__ Other _____

Moths

__ *Manduca sexta*
__ *Hyles lineata*
__ *Parinthrene robinae*
__ *Helicoverpa zea*
__ *Catocala irene*

__ Noctuidae
__ Arctiidae
__ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

__ *Rhaphiomidas terminatus abdominalis*
__ *Apiocera convergens*
__ *Apiocera chrysolasia*
__ *Apiocera* sp. undetermined
__ *Nemomydas pantherinus*
__ *Sarapogon luteus*
__ *Stenopogon breviusculus*
__ *Proctocanthus* species
__ *Promachus aldrichii*
__ *Mallophora fautrix*
__ *Eferia albibarbaris*
__ *Exoprosopa doris*
__ *Ligyra gazophylax*
__ *Villa atrata* / black-winged
__ *Villa pretiosa*
__ *Toxophora epullicida*
__ *Tabanus punctifer*
__ *Palpada testaceicornis*
__ *Copestylum mexicana*
__ *Copestylum marinata*
__ *Eritstalis tenax*
__ *Cylindromyia* species
__ *Pseudodoris clavatus*
__ *Poecilanthrax effrena*
__ *Physocephala texana*
__ *Hermetia illuscens*
__ *Hedriodiscus binotatus*
__ *Ceritits capitata*
__ *Musca domestica*
__ *Gymnosoma fuliginosum*
__ *Phaenicia* species
__ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
__ Syrphidae (Hover Flies)
__ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

__ *Homalodisca lacerta*
__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

Hymenoptera:

Ants

✓ *Pogonomyrmex californicus*
__ *Formica* species
__ *Mrymecocystus* species
__ *Solenopsis* species
__ Formicidae (Ants)

Wasps

__ *Dasymutilla californica* (sm.r)
__ *Dasymutilla coccineohirta* (lg.r)
__ *Dasymutilla clytinestra* (sm.w)
__ *Dasymutilla sackeni* (lg.w)
__ *Campsomeris tolteca*
__ *Triellis alcione*
__ *Stizoides remicinctum*
__ *Vespula pensylvanica*
__ *Polistes apachus*
__ *Polistes dorsali*
__ *Polistes fuscatuss*
__ *Polistes exclamans*
__ *Parancistrocerus toltecus*
__ *Leptochilus boharti*
__ *Eumenes bollii*
__ *Eumenes crucifera*
__ *Bembix comata*
__ *Bembix melanaspis*
__ *Ammophila* species
__ *Sphex ichneumonius*
__ *Prionyx foxi*
__ *Prionyx* species
__ *Tachysphex* species
__ *Podalonia* species
__ *Isodontia elegans*
__ *Chalybion californica*
__ *Chlorion aerarium*
__ *Pepsis chrysothemis*
__ *Pepsis thysbe*
__ *Pepsis mildei*
X *Sceliphron caementarium*
__ *Aphilanthops laticinctus*
__ *Bicyrtes ventralis parata*
__ *Bicyrtes capnoptera annulata*
__ *Cerceris femurrubrum*
__ *Cerceris bicornuta*
__ *Eucerceris insignis*
__ *Eucerceris arenaria*
__ *Hoplisoides diversus*
__ *Hoplisoides punctifrons*
__ *Microbembix californica*
__ *Philanthus ventilabris*
__ *Philanthus multimaculatus*
__ *Tachysphex* species
__ *Tachytes elongatus*

Hymenoptera / Odonata

__ *Parnopes edwardsii*
__ *Argochrysis mesillae*
__ Vespidae (Paper Wasps)
__ Scoliidae (Scoliid Wasps)
__ Ichneumonidae (Ichneumons)
__ Chrysididae (Cuckoo Wasps)
__ Mutillidae (Velvet Ants)
__ Pompilidae (Spider Wasps)
__ Sphecidae (Sphecid Wasps)
__ Tiphiidae (Tiphiid Wasps)
__ Other: _____

Bees

__ *Perdita* species
__ *Dialyctus* species
__ *Agapostemon* species
__ *Nomia nevadensis*
__ *Xylocopa varipuncta*
__ *Anthophora urbana*
__ *Diadasia* species
__ *Melissodes* species
__ *Svastra obliqua*
__ *Triepeolus* sp
__ *Diadasia* species
__ *Nomia nevadensis*
__ *Anthidium notatum*
__ *Anthidium placitum*
__ *Megachile* species
✓ *Apis mellifera*
__ *Bombus sonorus*
__ *B. vosnesenskii*
__ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

__ *Anax janius*
__ *Aeshna multicolor*
__ *Libellula saturata*
✓ *Sympetrum corruptum*
__ *Sympetrum illiotum*
__ *Tramea lacerata*
__ *Tramea onusta*
__ *Pantala flavescens*
__ *Parithemis intensa*
__ *Erythemis collocata*
__ Other _____

Superfamily Coccoidea

__ Scale Insects
hostplant : _____

Various

Damselflies

__ *Argia species*
__ *Enallagma civile*
__ *Ischnura denticollis*
__ Unidentified

Neuroptera:

__ *Brachynemurus species*
__ *Myrmeleon* species
__ Chrysopidae (Lacewings)
__ Rhaphididae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

✓ *Eleodes species*
__ *Olla v-nigrum*
__ *Hippodamia convergens*
__ *Cotinus mutibilis*
__ *Paracatalpa ursina*
__ *Coccinella* species
__ *Diabrotica balteata*
__ *D. undecimpunctata*
__ *Nanularia brunneata*
__ *Macrosiagon flavipenne*
__ *Nemognatha lurida apicalis*
__ *Apleurus albovestitus*
__ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

__ *Schistocerca* species
__ *Malanoplus complanatipes*
__ *Trimerotropis rebellis*
__ *T. californicus*
✓ *T. palladipennis*
__ *Trimerotropis* species
__ Unidentified Grasshopper
__ *Stenopelmatus* n. species
__ *Iris oratoria*
__ *Stagmomantis californica*
__ *Parabacillus hesperus*
__ *Arenivaga* n. species
__ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

__ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

__ *Chlorochroa uhleri/sayi*
__ *Chlorochroa ligata*
__ *Thyanta pallidovirens*
__ *Murgantia histrionica*
✓ *Lygaeus kalmii*
__ *Oncopeltus fasciatus*
__ *Geocoris* species
__ *Zelus tetracanthus*
__ *Sinea diadema*
__ *Rhynocoris ventralis*
__ *Orius* sp
__ *Largus cinctus*
__ *Arhyssus lateralis*
__ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

__ *Forficula auricularia*

Arachnida

Spiders

__ *Latrodectus hesperus*
__ *Peucetia viridins*
__ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) _____
_____

Scorpions

__ Unidentified

Acari

__ Mites
__ Ticks

Birds: __RODO X MODO __AMCR __NOMO __WEME A HOFI A HOSP __EUST __BHCO __ANHU A TUVU X RTHA __COHA __AMKE __BUOW A CAEG __WEKI __Other _____

Mammals: __ CA Ground Squirrel X Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: A SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 7-19-02 Site Name: Forecast Acreage: 70 Times: Begin: 0930 End 1330 Biologist(s): GPB

Other sites surveyed this date? Y / (N) Specify: _____ DSFLF Observed?: Y (N) Weather: Begin 61 °F End 93 °F Cloud Cover __ Wind </−

Lepidoptera:

Butterflies

__ *Hylephila phyleus*
__ *Lerodea eufala*
__ *Polites sabuleti*
__ *Paratrytone melane*
__ *Atalopedes campestris*
✓ *Pyrgus communis albescens*
__ *Heliopetes ericetorum*
__ *Erynnis funeralis*
__ *Brephidium exilis*
__ *Leptotes marina*
__ *Icaricia acmon*
__ *Strymon melinus pudica*
__ *Atlides halesus corcorani*
__ *Apodemia mormo*
__ *Papilio rutulus*
__ *Papilio cresphontes*
__ *Danaus plexippus*
__ *Danaus gilippus*
__ *Agraulis vanillae*
__ *Vanessa cardui*
__ *Vanessa atalanta*
__ *Vanessa annabella*
__ *Vanessa virginiensis*
__ *Limenitis lorquini*
__ *Junonia coenia*
__ *Pontia protodice*
__ *Pieris rapae*
✓ *Colias eurytheme*
__ *Colias cesonia*
__ *Eurema nicippe*
__ *Nathalis iole*
__ *Phoebis sennae*

__ Other _____

Moths

__ *Manduca sexta*
__ *Hyles lineata*
__ *Parinthrene robinae*
__ *Helicoverpa zea*
__ *Catocala irene*

__ Noctuidae
__ Arctiidae
✓ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

__ *Rhaphiomidas terminatus abdominalis*
__ *Apiocera convergens*
__ *Apiocera chrysolasia*
__ *Apiocera* sp. undetermined
__ *Nemomydas pantherinus*
__ *Sarapogon luteus*
__ *Stenopogon breviusculus*
__ *Proctocanthus* species
__ *Promachus aldrichii*
__ *Mallophora fautrix*
__ *Eferia albibarbaris*
__ *Exoprosopa doris*
__ *Ligyra gazophylax*
__ *Villa atrata* / black-winged
__ *Villa pretiosa*
__ *Toxophora epullicida*
__ *Tabanus punctifer*
__ *Palpada testaceicornis*
__ *Copestylum mexicana*
__ *Copestylum marinata*
__ *Eristalis tenax*
__ *Cylindromyia* species
__ *Pseudodoris clavatus*
__ *Poecilanthrax effrena*
__ *Physocephala texana*
__ *Hermetia illuscens*
__ *Hedriodiscus binotatus*
__ *Ceritilus capitata*
✓ *Musca domestica*
__ *Gymnosoma fuliginosum*
✓ *Phaenicia* species
__ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
__ Syrphidae (Hover Flies)
__ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apioceridids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

__ *Homalodisca lacerta*
__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)
✓ Psyllids

Hymenoptera:

Ants

✓ *Pogonomyrmex californicus*
__ *Formica* species
__ *Mrymecocystus* species
__ *Solenopsis* species
__ Formicidae (Ants)

Wasps

__ *Dasymutilla californica* (sm.r)
__ *Dasymutilla coccineohirta* (lg.r)
__ *Dasymutilla clytinestra* (sm.w)
__ *Dasymutilla sackeni* (lg.w)
__ *Campsomeris tolteca*
__ *Triellis alcione*
__ *Stizoides remicinctum*
__ *Vespula pensylvanica*
__ *Polistes apachus*
__ *Polistes dorsali*
✓ *Polistes fuscatuss*
__ *Polistes exclamans*
__ *Parancistrocerus toltecus*
__ *Leptochilus boharti*
__ *Eumenes bollii*
__ *Eumenes crucifera*
__ *Bembix comata*
__ *Bembix melanaspis*
__ *Ammophila* species
__ *Sphex ichneumonius*
__ *Prionyx foxi*
__ *Prionyx* species
__ *Tachysphex* species
__ *Podalonia* species
__ *Isodontia elegans*
__ *Chalybion californica*
__ *Chlorion aerarium*
__ *Pepsis chrysothemis*
__ *Pepsis thysbe*
__ *Pepsis mildei*
✓ *Sceliphron caementarium*
__ *Aphilanthops laticinctus*
__ *Bicyrtes ventralis parata*
__ *Bicyrtes capnoptera annulata*
__ *Cerceris femurrubrum*
__ *Cerceris bicornuta*
__ *Eucerceris insignis*
__ *Eucerceris arenaria*
__ *Hoplisoides diversus*
__ *Hoplisoides punctifrons*
__ *Microbembix californica*
__ *Philanthus ventilabris*
__ *Philanthus multimaculatus*
__ *Tachysphex* species
__ *Tachytes elongatus*

Hymenoptera / Odonata

__ *Parnopes edwardsii*
__ *Argochrysis mesillae*
__ Vespidae (Paper Wasps)
__ Scoliidae (Scoliid Wasps)
__ Ichneumonidae (Ichneumons)
__ Chrysididae (Cuckoo Wasps)
__ Mutillidae (Velvet Ants)
__ Pompilidae (Spider Wasps)
__ Sphecidae (Sphecid Wasps)
__ Tiphiidae (Tiphiid Wasps)
__ Other: _____

Bees

__ *Perdita* species
__ *Dialyctus* species
__ *Agapostemon* species
__ *Nomia nevadensis*
__ *Xylocopa varipuncta*
__ *Anthophora urbana*
__ *Diadasia* species
__ *Melissodes* species
__ *Svastra obliqua*
__ *Triepeolus* sp
__ *Diadasia* species
__ *Nomia nevadensis*
__ *Anthidium notatum*
__ *Anthidium placitum*
__ *Megachile* species
✓ *Apis mellifera*
__ *Bombus sonorus*
__ *B. vosnesenskii*
__ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

✓ *Anax janius*
__ *Aeshna multicolor*
__ *Libellula saturata*
__ *Sympetrum corruptum*
__ *Sympetrum illiotum*
__ *Tramea lacerata*
__ *Tramea onusta*
__ *Pantala flavescens*
__ *Parithemis intensa*
__ *Erythemis collocata*
__ Other _____

Superfamily Coccoidea
__ Scale Insects
hostplant : _____

Various

Damselflies

__ *Argia species*
__ *Enallagma civile*
__ *Ischnura denticollis*
__ Unidentified

Neuroptera:

__ *Brachynemurus species*
__ *Myrmeleon* species
__ Chrysopidae (Lacewings)
__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

__ *Eleodes species*
__ *Olla v-nigrum*
✓ *Hippodamia convergens*
✓ *Cotinus mutibilis*
__ *Paracatalpa ursina*
__ *Coccinella* species
✓ *Diabrotica balteata*
✓ *D. undecimpunctata*
__ *Nanularia brunneata*
__ *Macrosiagon flavipenne*
__ *Nemognatha lurida apicalis*
__ *Apleurus albovestitus*
__ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

__ *Schistocerca* species
__ *Malanoplus complanatipes*
__ *Trimerotropis rebellis*
__ *T. californicus*
__ *T. palladipennis*
__ *Trimerotropis* species
__ Unidentified Grasshopper
__ *Stenopelmatus* n. species
__ *Iris oratoria*
__ *Stagmomantis californica*
__ *Parabacillus hesperus*
__ *Arenivaga* n. species
__ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

~100% marine layer to

Isoptera:
__ *Reticulitermes hesperus*

Embioptera
__ Unidentified

Thysanoptera
__ Unidentified

Hemiptera:

__ *Chlorochroa uhleri/sayi*
__ *Chlorochroa ligata*
__ *Thyanta pallidovirens*
__ *Murgantia histrionica*
✓ *Lygaeus kalmii*
__ *Oncopeltus fasciatus*
__ *Geocoris* species
__ *Zelus tetracanthus*
__ *Sinea diadema*
__ *Rhynocoris ventralis*
__ *Orius* sp
__ *Largus cinctus*
__ *Arlyssus lateralis*
__ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

__ *Forficula auricularia*

Arachnida

Spiders

__ *Latrodectus hesperus*
__ *Peucetia viridins*
__ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) SMALL

Scorpions
__ Unidentified

Acari
__ Mites
__ Ticks

RLST
WTSW
GTGR

Birds: ✓ RODO ✓ MODO ✓ AMCR ✓ NOMO __ WEME __ HOFI ✓ HOSP ✓ EUST __ BHCO __ ANHU ✓ TUVU ✓ RTHA __ COHA __ AMKE __ BUOW ✓ CAEG ✓ WEKI __ Other _____

Mammals: ✓ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: __ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 7-22-02 Site Name: Forecast Acreage: ____ Times: Begin: 1000 End 1400 Biologist(s): GPB

Other sites surveyed this date? Y / N Specify: ____ DSFLF Observed?: Y (N) Weather: Begin 75°F End 77°F Cloud Cover 0 Wind 1-2

Lepidoptera:

Butterflies

__ *Hylephila phyleus*
__ *Lerodea eufala*
__ *Polites sabuleti*
__ *Paratrytone melane*
__ *Atalopedes campestris*
__ *Pyrgus communis albescens*
__ *Heliopetes ericetorum*
__ *Erynnis funeralis*
✓ *Brephidium exilis*
__ *Leptotes marina*
__ *Icaricia acmon*
__ *Strymon melinus pudica*
__ *Atlides halesus corcorani*
__ *Apodemia mormo*
__ *Papilio rutulus*
__ *Papilio cresphontes*
__ *Danaus plexippus*
__ *Danaus gilippus*
__ *Agraulis vanillae*
__ *Vanessa cardui*
__ *Vanessa atalanta*
__ *Vanessa annabella*
__ *Vanessa virginiensis*
__ *Liminetis lorquini*
__ *Junonia coenia*
__ *Pontia protodice*
✓ *Pieris rapae*
✓ *Colias eurytheme*
__ *Colias cesonia*
__ *Eurema nicippe*
__ *Nathalis iole*
__ *Phoebis sennae*

__ Other ____

Moths

__ *Manduca sexta*
__ *Hyles lineata*
__ *Parinthrene robinae*
__ *Helicoverpa zea*
__ *Catocala irene*

__ Noctuidae
__ Arctiidae
__ Pyralidae
__ Geometridae
__ Other ____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

__ *Rhaphiomidas terminatus abdominalis*
__ *Apiocera convergens*
__ *Apiocera chrysolasia*
__ *Apiocera* sp. undetermined
__ *Nemomydas pantherinus*
__ *Sarapogon luteus*
__ *Stenopogon breviusculus*
__ *Proctocanthus* species
__ *Promachus aldrichii*
__ *Mallophora fautrix*
__ *Eferia albibarbaris*
__ *Exoprosopa doris*
__ *Ligyra gazophylax*
__ *Villa atrata* / black-winged
✓ *Villa pretiosa*
__ *Toxophora epullicida*
__ *Tabanus punctifer*
__ *Palpada testaceicornis*
__ *Copestylum mexicana*
__ *Copestylum marinata*
__ *Eritstalis tenax*
__ *Cylindromyia* species
__ *Pseudodoris clavatus*
__ *Poecilanthrax effrena*
__ *Physocephala texana*
__ *Hermetia illuscens*
__ *Hedriodiscus binotatus*
__ *Ceritius capitata*
✓ *Musca domestica*
__ *Gymnosoma fuliginosum*
__ *Phaenicia* species
__ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies)
__ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

__ *Homalodisca lacerta*
__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)
✓ Leaf Psyllid

Hymenoptera:

Ants

✓ *Pogonomyrmex californicus*
__ *Formica* species
__ *Mrymecocystus* species
__ *Solenopsis* species
__ Formicidae (Ants)

Wasps

✓ *Dasymutilla californica* (sm.r)
__ *Dasymutilla coccineohirta* (lg.r)
__ *Dasymutilla clytinestra* (sm.w)
__ *Dasymutilla sackeni* (lg.w)
__ *Campsomeris tolteca*
__ *Triellis alcione*
__ *Stizoides remicinctum*
__ *Vespula pensylvanica*
__ *Polistes apachus*
__ *Polistes dorsali*
__ *Polistes fuscatuss*
__ *Polistes exclamans*
__ *Parancistrocerus toltecus*
__ *Leptochilus boharti*
__ *Eumenes bollii*
__ *Eumenes crucifera*
✓ *Bembix comata*
__ *Bembix melanaspis*
✓ *Ammophila* species
__ *Sphex ichneumonius*
__ *Prionyx foxi*
__ *Prionyx* species
__ *Tachysphex* species
__ *Podalonia* species
__ *Isodontia elegans*
✓ *Chalybion californica*
✓ *Chlorion aerarium*
__ *Pepsis chrysothemis*
__ *Pepsis thysbe*
__ *Pepsis mildei*
__ *Sceliphron caementarium*
__ *Aphilanthops laticinctus*
__ *Bicyrtes ventralis parata*
__ *Bicyrtes capnoptera annulata*
__ *Cerceris femurrubrum*
__ *Cerceris bicornuta*
__ *Eucerceris insignis*
__ *Eucerceris arenaria*
__ *Hoplisoides diversus*
__ *Hoplisoides punctifrons*
✓ *Microbembix californica*
__ *Philanthus ventilabris*
✓ *Philanthus multimaculatus*
__ *Tachysphex* species
__ *Tachytes elongatus*

Hymenoptera / Odonata

✓ *Parnopes edwardsii*
__ *Argochrysis mesillae*
__ Vespidae (Paper Wasps)
__ Scoliidae (Scoliid Wasps)
✓ Ichneumonidae (Ichneumons)
__ Chrysididae (Cuckoo Wasps)
__ Mutillidae (Velvet Ants)
__ Pompilidae (Spider Wasps)
__ Sphecidae (Sphecid Wasps)
__ Tiphiidae (Tiphiid Wasps)
__ Other: ____

Bees

__ *Perdita* species
__ *Dialyctus* species
__ *Agapostemon* species
__ *Nomia nevadensis*
__ *Xylocopa varipuncta*
__ *Anthophora urbana*
__ *Diadasia* species
__ *Melissodes* species
__ *Svastra obliqua*
__ *Triepeolus* sp
__ *Diadasia* species
__ *Nomia nevadensis*
__ *Anthidium notatum*
__ *Anthidium placitum*
__ *Megachile* species
✓ *Apis mellifera*
__ *Bombus sonorus*
__ *B. vosnesenskii*
__ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

__ *Anax janius*
__ *Aeshna multicolor*
✓ *Libellula saturata*
✓ *Sympetrum corruptum*
__ *Sympetrum illiotum*
__ *Tramea lacerata*
__ *Tramea onusta*
__ *Pantala flavescens*
__ *Parithemis intensa*
__ *Erythemis collocata*
__ Other ____

Superfamily Coccoidea

__ Scale Insects
hostplant : ____

Various

Damselflies

__ *Argia species*
__ *Enallagma civile*
__ *Ischnura denticollis*
__ Unidentified

Neuroptera:

__ *Brachynemurus species*
__ *Myrmeleon* species
__ Chrysopidae (Lacewings)
__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

__ *Eleodes species*
__ *Olla v-nigrum*
__ *Hippodamia convergens*
✓ *Cotinus mutibilis*
__ *Paracatalpa ursina*
__ *Coccinella* species
__ *Diabrotica balteata*
✓ *D. undecimpunctata*
__ *Nanularia brunneata*
__ *Macrosiagon flavipenne*
__ *Nemognatha lurida apicalis*
__ *Apleurus albovestitus*
__ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

__ *Schistocerca* species
__ *Malanoplus complanatipes*
__ *Trimerotropis rebellis*
__ *T. californicus*
✓ *T. palladipennis*
✓ *Trimerotropis* species
__ Unidentified Grasshopper
__ *Stenopelmatus* n. species
__ *Iris oratoria*
__ *Stagnomantis californica*
__ *Parabacillus hesperus*
__ *Arenivaga* n. species
✓ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

__ *Reticulitermes hesperus*

Embioptera

__ Unidentified
✓ Eggs

Thysanoptera

__ Unidentified

Hemiptera:

__ *Chlorochroa uhleri/sayi*
__ *Chlorochroa ligata*
__ *Thyanta pallidovirens*
__ *Murgantia histrionica*
__ *Lygaeus kalmii*
__ *Oncopeltus fasciatus*
__ *Geocoris* species
✓ *Zelus tetracanthus*
__ *Sinea diadema*
__ *Rhynocoris ventralis*
__ *Orius* sp
__ *Largus cinctus*
__ *Arhyssus lateralis*
__ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other ____

Dermaptera:

__ *Forficula auricularia*

Arachnida

Spiders

__ *Latrodectus hesperus*
__ *Peucetia viridins*
__ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) ____

Scorpions

__ Unidentified

Acari COSH
__ Mites WTSW
__ Ticks

Birds: ✓RODO ✓MODO __AMCR __NOMO __WEME __HOFI ✓HOSP ✓EUST __BHCO __ANHU ✓TUVU __RTHA __COHA __AMKE __BUOW ✓CAEG ✓WEKI __Other____

Mammals: __ CA Ground Squirrel ✓Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): ____

Reptiles: ✓SB Lizard __ WF Lizard __ Horned Lizard __ other ____

Arroyo Biological Consulting

Delhi Fly Survey Insect List

Date: 7-26-02 Site Name: Forecast Acreage: less 50 Times: Begin: 1035 End 1430 Biologist(s): GPB

Other sites surveyed this date? (Y) N Specify: CCL 12 DSFLF Observed?: Y / (N) Weather: Begin 87 °F End 102 °F Cloud Cover 0 Wind 1-3

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- __ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- __ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- __ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Limenetis lorquini*
- __ *Junonia coenia*
- ✓ *Pontia protodice*
- ✓ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala irene*

__ Noctuidae
__ Arctiidae
__ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

- __ *Rhaphiomidas terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- ✓ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- ✓ *Mallophora fautrix* ✓
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged ✓
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- __ *Eritstalis tenax*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- ✓ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritilus capitata*
- ✓ *Musca domestica* ✓
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- __ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies) ✓
✓ Bombyliidae (Bee Flies) ✓
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca lacerta*

__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species

__ Formicidae (Ants)

Wasps

- ✓ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- __ *Polistes apachus*
- __ *Polistes dorsali*
- __ *Polistes fuscatuss*
- __ *Polistes exclamans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- ✓ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- ✓ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- ✓ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- ✓ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: _____

Bees

- ✓ *Perdita* species
- __ *Dialyctus* species
- ✓ *Agapostemon* species
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- __ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- __ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- ✓ *Anax janius*
- __ *Aeshna multicolor*
- ✓ *Libellula saturata*
- __ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- ✓ *Tramea lacerata*
- __ *Tramea onusta*
- __ *Pantala flavescens*
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other _____

Superfamily Coccoidea
__ Scale Insects
hostplant : _____

Various

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
- __ *Ischnura denticollis*

__ Unidentified

Neuroptera:

- __ *Brachynemurus species*
- __ *Myrmeleon* species

__ Chrysopidae (Lacewings)
__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes species*
- __ *Olla v-nigrum*
- __ *Hippodamia convergens*
- ✓ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- __ *Coccinella* species
- __ *Diabrotica balteata*
- ✓ *D. undecimpunctata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- ✓ *Trimerotropis* species

__ Unidentified Grasshopper

- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- ✓ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

- __ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

- __ *Forficula auricularia*

Arachnida

Spiders

- __ *Latrodectus hesperus*
- __ *Peucetia viridins*

__ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) _____

Scorpions
__ Unidentified

Acari
__ Mites COSH
__ Ticks

Birds: ✓ RODO __ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP __ EUST __ BHCO __ ANHU ✓ TUVU ✓ RTHA __ COHA __ AMKE __ BUOW ✓ CAEG __ WEKI ✓ Other _____

Mammals: ✓ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____ Reptiles: __ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

ORV activity onsite ... dumping on basin hill also observed by heavy truck

Delhi Fly Survey Insect List

Date: 7-27-02 Site Name: Forecast Acreage: ____ Times: Begin: 0930 End 1315 Biologist(s): GDB

Other sites surveyed this date? (Y) N Specify: L2 L13 DSFLF Observed?: Y (N) Weather: Begin 81 °F End 97 °F Cloud Cover 0 Wind <1 - 2

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- __ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- __ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- __ *Strymon melinus pudica*
- ✓ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- ✓ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Limenitis lorquini*
- __ *Junonia coenia*
- ✓ *Pontia protodice*
- __ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala irene*

__ Noctuidae
__ Arctiidae
✓ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

- __ *Rhaphiomidas terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- __ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- __ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- ✓ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eritstalis tenax*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- ✓ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritittus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- __ *Calliphora* species

✓ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies)
✓ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca lacerta*

__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
✓ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species

✓ Formicidae (Ants)

Wasps

- __ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- __ *Polistes apachus*
- __ *Polistes dorsali*
- ✓ *Polistes fuscatuss*
- __ *Polistes exclamans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- ✓ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- ✓ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- __ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- ✓ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- ✓ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: _____

Bees

- __ *Perdita* species
- __ *Dialyctus* species
- ✓ *Agapostemon* species
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- ✓ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- ✓ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
✓ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- ✓ *Anax junius*
- __ *Aeshna multicolor*
- __ *Libellula saturata*
- ✓ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- __ *Tramea lacerata*
- __ *Tramea onusta*
- __ *Pantala flavescens*
- __ *Parithemis intensa*
- __ *Erythemis collocata*

__ Other _____

Superfamily Coccoidea
__ Scale Insects
hostplant : _____

Various

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
- __ *Ischnura denticollis*

__ Unidentified

Neuroptera:

- __ *Brachynemurus species*
- __ *Myrmeleon* species

__ Chrysopidae (Lacewings)
__ Rhaphididae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes species*
- __ *Olla v-nigrum*
- __ *Hippodamia convergens*
- ✓ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- __ *Coccinella* species
- ✓ *Diabrotica balteata*
- ✓ *D. undecimpunctata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- ✓ *Trimerotropis* species

__ Unidentified Grasshopper

- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- ✓ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

- __ *Forficula auricularia*

Arachnida

Spiders

- __ *Latrodectus hesperus*
- __ *Peucetia viridins*
- ✓ Salticidae (Jumping)
- __ Araneidae (Orb-weavers)
- __ Theraphosidae (Tarantulas)
- __ Ctenizidae (Trap-door)
- __ Dipluridae (Funnel-web)
- __ Agelinidae (Grass)
- ✓ Thomisidae (Crab)
- __ Unidentified

prey item(s) _____
_____

Scorpions
__ Unidentified

Acari
__ Mites
__ Ticks

Birds: ✓ RODO ✓ MODO __ AMCR ✓ NOMO __ WEME __ HOFI __ HOSP ✓ EUST __ BHCO __ ANHU ✓ TUVU __ RTHA __ COHA __ AMKE __ BUOW ✓ CAEG __ WEKI __ Other _____

Mammals: ✓ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 8-3-02 Site Name: Forecast Acreage: ____ Times: Begin: 0930 End 11:20 Biologist(s): GPB

Other sites surveyed this date? (Y) N Specify: LL12 DSFLF Observed?: Y (N) 12:40 1400 Weather: Begin 72 °F End 79 °F Cloud Cover 2 Wind <1

forecast - marine layer humid

Lepidoptera:

Butterflies

__ *Hylephila phyleus*
__ *Lerodea eufala*
__ *Polites sabuleti*
__ *Paratrytone melane*
__ *Atalopedes campestris*
__ *Pyrgus communis albescens*
__ *Heliopetes ericetorum*
__ *Erynnis funeralis*
✓ *Brephidium exilis*
__ *Leptotes marina*
__ *Icaricia acmon*
__ *Strymon melinus pudica*
__ *Atlides halesus corcorani*
__ *Apodemia mormo*
__ *Papilio rutulus*
__ *Papilio cresphontes*
__ *Danaus plexippus*
__ *Danaus gilippus*
__ *Agraulis vanillae*
__ *Vanessa cardui*
__ *Vanessa atalanta*
__ *Vanessa annabella*
__ *Vanessa virginiensis*
__ *Limenitis lorquini*
__ *Junonia coenia*
__ *Pontia protodice*
__ *Pieris rapae*
__ *Colias eurytheme*
__ *Colias cesonia*
__ *Eurema nicippe*
__ *Nathalis iole*
__ *Phoebis sennae*

__ Other _____

Moths

__ *Manduca sexta*
__ *Hyles lineata*
__ *Parinthrene robinae*
__ *Helicoverpa zea*
__ *Catocala irene*

__ Noctuidae
__ Arctiidae
__ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

__ *Rhaphiomidas terminatus abdominalis*
__ *Apiocera convergens*
__ *Apiocera chrysolasia*
__ *Apiocera* sp. undetermined
__ *Nemomydas pantherinus*
__ *Sarapogon luteus*
__ *Stenopogon breviusculus*
__ *Proctocanthus* species
__ *Promachus aldrichii*
✓ *Mallophora fautrix*
__ *Eferia albibarbaris*
__ *Exoprosopa doris*
__ *Ligyra gazophylax*
__ *Villa atrata* / black-winged
__ *Villa pretiosa*
__ *Toxophora epullicida*
__ *Tabanus punctifer*
__ *Palpada testaceicornis*
__ *Copestylum mexicana*
__ *Copestylum marinata*
__ *Eritstalis tenax*
__ *Cylindromyia* species
__ *Pseudodoris clavatus*
__ *Poecilanthrax effrena*
__ *Physocephala texana*
__ *Hermetia illuscens*
__ *Hedriodiscus binotatus*
__ *Ceritits capitata*
✓ *Musca domestica* VERY ABUNDANT!
__ *Gymnosoma fuliginosum*
__ *Phaenicia* species
__ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
__ Syrphidae (Hover Flies)
__ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

__ *Homalodisca lacerta*
__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

Hymenoptera:

Ants

✓ *Pogonomyrmex californicus*
__ *Formica* species
__ *Mrymecocystus* species
__ *Solenopsis* species
__ Formicidae (Ants)

Wasps

✓ *Dasymutilla californica* (sm.r)
__ *Dasymutilla coccineohirta* (lg.r)
__ *Dasymutilla clytinestra* (sm.w)
__ *Dasymutilla sackeni* (lg.w)
__ *Campsomeris tolteca*
__ *Triellis alcione*
__ *Stizoides remicinctum*
__ *Vespula pensylvanica*
__ *Polistes apachus*
__ *Polistes dorsali*
__ *Polistes fuscatuss*
__ *Polistes exclamans*
__ *Parancistrocerus toltecus*
__ *Leptochilus boharti*
__ *Eumenes bollii*
__ *Eumenes crucifera*
✓ *Bembix comata*
__ *Bembix melanaspis*
✓ *Ammophila* species
__ *Sphex ichneumonius*
__ *Prionyx foxi*
__ *Prionyx* species
__ *Tachysphex* species
__ *Podalonia* species
__ *Isodontia elegans*
__ *Chalybion californica*
__ *Chlorion aerarium*
__ *Pepsis chrysothemis*
__ *Pepsis thysbe*
__ *Pepsis mildei*
__ *Sceliphron caementarium*
__ *Aphilanthops laticinctus*
__ *Bicyrtes ventralis parata*
__ *Bicyrtes capnoptera annulata*
__ *Cerceris femurrubrum*
__ *Cerceris bicornuta*
__ *Eucerceris insignis*
__ *Eucerceris arenaria*
__ *Hoplisoides diversus*
__ *Hoplisoides punctifrons*
✓ *Microbembix californica*
__ *Philanthus ventilabris*
__ *Philanthus multimaculatus*
__ *Tachysphex* species
__ *Tachytes elongatus*

Hymenoptera / Odonata

__ *Parnopes edwardsii*
__ *Argochrysis mesillae*
__ Vespidae (Paper Wasps)
__ Scoliidae (Scoliid Wasps)
__ Ichneumonidae (Ichneumons)
__ Chrysididae (Cuckoo Wasps)
__ Mutillidae (Velvet Ants)
__ Pompilidae (Spider Wasps)
__ Sphecidae (Sphecid Wasps)
__ Tiphiidae (Tiphiid Wasps)
__ Other: _____

Bees

__ *Perdita* species
__ *Dialyctus* species
__ *Agapostemon* species
__ *Nomia nevadensis*
__ *Xylocopa varipuncta*
__ *Anthophora urbana*
__ *Diadasia* species
__ *Melissodes* species
__ *Svastra obliqua*
__ *Triepeolus* sp
__ *Diadasia* species
__ *Nomia nevadensis*
__ *Anthidium notatum*
__ *Anthidium placitum*
__ *Megachile* species
__ *Apis mellifera*
__ *Bombus sonorus*
__ *B. vosnesenskii*
__ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

__ *Anax junius*
✓ *Aeshna multicolor*
__ *Libellula saturata*
__ *Sympetrum corruptum*
__ *Sympetrum illiotum*
__ *Tramea lacerata*
__ *Tramea onusta*
__ *Pantala flavescens*
__ *Parithemis intensa*
__ *Erythemis collocata*
__ Other _____

Superfamily Coccoidea

__ Scale Insects
hostplant : _____

Various

Damselflies

__ *Argia species*
__ *Enallagma civile*
__ *Ischnura denticollis*
__ Unidentified

Neuroptera:

__ *Brachynemurus species*
__ *Myrmeleon* species
__ Chrysopidae (Lacewings)
__ Rhaphididae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

__ *Eleodes species*
__ *Olla v-nigrum*
__ *Hippodamia convergens*
✓ *Cotinus mutibilis*
__ *Paracatalpa ursina*
__ *Coccinella* species
__ *Diabrotica balteata*
__ *D. undecimpunctata*
__ *Nanularia brunneata*
__ *Macrosiagon flavipenne*
__ *Nemognatha lurida apicalis*
__ *Apleurus albovestitus*
__ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

__ *Schistocerca* species
__ *Malanoplus complanatipes*
__ *Trimerotropis rebellis*
__ *T. californicus*
✓ *T. palladipennis*
__ *Trimerotropis* species
__ Unidentified Grasshopper
__ *Stenopelmatus* n. species
__ *Iris oratoria*
__ *Stagmomantis californica*
__ *Parabacillus hesperus*
__ *Arenivaga* n. species
__ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

__ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

__ *Chlorochroa uhleri/sayi*
__ *Chlorochroa ligata*
__ *Thyanta pallidovirens*
__ *Murgantia histrionica*
__ *Lygaeus kalmii*
__ *Oncopeltus fasciatus*
__ *Geocoris* species
__ *Zelus tetracanthus*
__ *Sinea diadema*
__ *Rhynocoris ventralis*
__ *Orius* sp
__ *Largus cinctus*
__ *Arhyssus lateralis*
__ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

__ *Forficula auricularia*

Arachnida

Spiders

__ *Latrodectus hesperus*
__ *Peucetia viridins*
__ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Clenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) _____
_____

Scorpions

__ Unidentified

Acari

__ Mites
__ Ticks

Birds: ✓ RODO ✓ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP __ EUST __ BHCO __ ANHU ✓ TUVU __ RTHA __ COHA __ AMKE __ BUOW __ CAEG __ WEKI __ Other _____

Mammals: __ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: __ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 8-5-02 Site Name: Forecast Acreage: heat 50 Times: Begin: 0930 End 1320 Biologist(s): GPB

Other sites surveyed this date? (Y) N Specify: LL2 DSFLF Observed?: Y / (N) Weather: Begin 79°F End 97 °F Cloud Cover 0 Wind 1-2

Lepidoptera:

Butterflies

__ *Hylephila phyleus*
__ *Lerodea eufala*
__ *Polites sabuleti*
__ *Paratrytone melane*
__ *Atalopedes campestris*
✓ *Pyrgus communis albescens*
__ *Heliopetes ericetorum*
__ *Erynnis funeralis*
✓ *Brephidium exilis*
__ *Leptotes marina*
__ *Icaricia acmon*
__ *Strymon melinus pudica*
__ *Atlides halesus corcorani*
__ *Apodemia mormo*
__ *Papilio rutulus*
__ *Papilio cresphontes*
__ *Danaus plexippus*
__ *Danaus gilippus*
__ *Agraulis vanillae*
__ *Vanessa cardui*
__ *Vanessa atalanta*
✓ *Vanessa annabella*
__ *Vanessa virginiensis*
__ *Liminetis lorquini*
__ *Junonia coenia*
✓ *Pontia protodice*
✓ *Pieris rapae*
✓ *Colias eurytheme*
__ *Colias cesonia*
__ *Eurema nicippe*
__ *Nathalis iole*
__ *Phoebis sennae*

__ Other _____

Moths

__ *Manduca sexta*
__ *Hyles lineata*
__ *Parinthrene robinae*
__ *Helicoverpa zea*
__ *Catocala irene*

__ Noctuidae
__ Arctiidae
✓ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

__ *Rhaphiomidas terminatus abdominalis*
__ *Apiocera convergens*
__ *Apiocera chrysolasia*
__ *Apiocera* sp. undetermined
✓ *Nemomydas pantherinus*
__ *Sarapogon luteus*
__ *Stenopogon breviusculus*
__ *Proctocanthus* species
__ *Promachus aldrichii*
✓ *Mallophora fautrix*
__ *Eferia albibarbaris*
__ *Exoprosopa doris*
__ *Ligyra gazophylax*
✓ *Villa atrata* / black-winged
__ *Villa pretiosa*
__ *Toxophora epullicida*
✓ *Tabanus punctifer*
__ *Palpada testaceicornis*
__ *Copestylum mexicana*
__ *Copestylum marinata*
✓ *Eritstalis tenax*
✓ *Cylindromyia* species
__ *Pseudodoris clavatus*
__ *Poecilanthrax effrena*
__ *Physocephala texana*
__ *Hermetia illuscens*
__ *Hedriodiscus binotatus*
__ *Cerititus capitata*
✓ *Musca domestica*
__ *Gymnosoma fuliginosum*
✓ *Phaenicia* species
__ *Calliphora* species

✓ Sarcophagidae (Flesh Flies)
✓ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies)
__ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

__ *Homalodisca lacerta*
__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
✓ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

Hymenoptera:

Ants

✓ *Pogonomyrmex californicus*
__ *Formica* species
__ *Mrymecocystus* species
__ *Solenopsis* species
✓ Formicidae (Ants)

Wasps

✓ *Dasymutilla californica* (sm.r)
__ *Dasymutilla coccineohirta* (lg.r)
__ *Dasymutilla clytinestra* (sm.w)
__ *Dasymutilla sackeni* (lg.w)
__ *Campsomeris tolteca*
__ *Triellis alcione*
__ *Stizoides remicinctum*
__ *Vespula pensylvanica*
✓ *Polistes apachus*
__ *Polistes dorsali*
__ *Polistes fuscatuss*
__ *Polistes exclamans*
__ *Parancistrocerus toltecus*
__ *Leptochilus boharti*
__ *Eumenes bollii*
__ *Eumenes crucifera*
✓ *Bembix comata*
__ *Bembix melanaspis*
✓ *Ammophila* species
__ *Sphex ichneumonius*
__ *Prionyx foxi*
__ *Prionyx* species
__ *Tachysphex* species
__ *Podalonia* species
__ *Isodontia elegans*
__ *Chalybion californica*
✓ *Chlorion aerarium*
__ *Pepsis chrysothemis*
__ *Pepsis thysbe*
__ *Pepsis mildei*
__ *Sceliphron caementarium*
__ *Aphilanthops laticinctus*
__ *Bicyrtes ventralis parata*
__ *Bicyrtes capnoptera annulata*
__ *Cerceris fumurrubrum*
__ *Cerceris bicornuta*
__ *Eucerceris insignis*
__ *Eucerceris arenaria*
__ *Hoplisoides diversus*
__ *Hoplisoides punctifrons*
✓ *Microbembix californica*
__ *Philanthus ventilabris*
__ *Philanthus multimaculatus*
__ *Tachysphex* species
__ *Tachytes elongatus*

Hymenoptera / Odonata

✓ *Parnopes edwardsii*
__ *Argochrysis mesillae*
__ Vespidae (Paper Wasps)
__ Scoliidae (Scoliid Wasps)
✓ Ichneumonidae (Ichneumons)
__ Chrysididae (Cuckoo Wasps)
__ Mutillidae (Velvet Ants)
__ Pompilidae (Spider Wasps)
__ Sphecidae (Sphecid Wasps)
__ Tiphiidae (Tiphiid Wasps)
__ Other: _____

Bees

__ *Perdita* species
__ *Dialyctus* species
✓ *Agapostemon* species
__ *Nomia nevadensis*
__ *Xylocopa varipuncta*
__ *Anthophora urbana*
__ *Diadasia* species
__ *Melissodes* species
__ *Svastra obliqua*
__ *Triepeolus* sp
__ *Diadasia* species
__ *Nomia nevadensis*
__ *Anthidium notatum*
__ *Anthidium placitum*
__ *Megachile* species
✓ *Apis mellifera*
__ *Bombus sonorus*
__ *B. vosnesenskii*
__ *B. crotchii*

✓ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

__ *Anax janius*
__ *Aeshna multicolor*
✓ *Libellula saturata*
✓ *Sympetrum corruptum*
__ *Sympetrum illiotum*
__ *Tramea lacerata*
__ *Tramea onusta*
__ *Pantala flavescens*
__ *Parithemis intensa*
__ *Erythemis collocata*
__ Other _____

Superfamily Coccoidea

__ Scale Insects
hostplant : _____

Various

Damselflies

__ *Argia species*
__ *Enallagma civile*
__ *Ischnura denticollis*
__ Unidentified

Neuroptera:

__ *Brachynemurus species*
__ *Myrmeleon* species
__ Chrysopidae (Lacewings)
__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

✓ *Eleodes species* (dead)
__ *Olla v-nigrum*
__ *Hippodamia convergens*
✓ *Cotinus mutibilis*
__ *Paracatalpa ursina*
__ *Coccinella* species
__ *Diabrotica balteata*
✓ *D. undecimpunctata*
__ *Nanularia brunneata*
__ *Macrosiagon flavipenne*
__ *Nemognatha lurida apicalis*
__ *Apleurus albovestitus*
__ *Trichobaris* species

__ Carabidae (Carabids)
✓ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

__ *Schistocerca* species
__ *Malanoplus complanatipes*
__ *Trimerotropis rebellis*
__ *T. californicus*
__ *T. palladipennis*
✓ *Trimerotropis* species
__ Unidentified Grasshopper
__ *Stenopelmatus* n. species
__ *Iris oratoria*
__ *Stagmomantis californica*
__ *Parabacillus hesperus*
__ *Arenivaga* n. species
✓ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

__ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

__ *Chlorochroa uhleri/sayi*
__ *Chlorochroa ligata*
__ *Thyanta pallidovirens*
__ *Murgantia histrionica*
__ *Lygaeus kalmii*
__ *Oncopeltus fasciatus*
__ *Geocoris* species
__ *Zelus tetracanthus*
__ *Sinea diadema*
__ *Rhynocoris ventralis*
__ *Orius* sp
__ *Largus cinctus*
__ *Arhyssus lateralis*
__ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

__ *Forficula auricularia*

Arachnida

Spiders

__ *Latrodectus hesperus*
__ *Peucetia viridins*
✓ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) _____
_____

Scorpions

__ Unidentified

Acari

__ Mites BASW
__ Ticks

Birds: ✓ RODO ✓ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP __ EUST __ BHCO __ ANHU ✓ TUVU __ RTHA __ COHA __ AMKE __ BUOW ✓ CAEG __ WEKI ✓ Other _____

Mammals: __ CA Ground Squirrel ✓ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 8-10-22 Site Name: Forecast Acreage: 5ac Times: Begin: 1070 End 1430 Biologist(s): GPB

Other sites surveyed this date? (Y) N Specify: LL12 DSFLF Observed?: Y (N) Weather: Begin 91 °F End ___ °F Cloud Cover 0 Wind 1-2 HOT!

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- ___ *Lerodea eufala*
- ___ *Polites sabuleti*
- ___ *Paratrytone melane*
- ✓ *Atalopedes campestris*
- ___ *Pyrgus communis albescens*
- ___ *Heliopetes ericetorum*
- ___ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- ___ *Leptotes marina*
- ___ *Icaricia acmon*
- ___ *Strymon melinus pudica*
- ___ *Atlides halesus corcorani*
- ___ *Apodemia mormo*
- ___ *Papilio rutulus*
- ___ *Papilio cresphontes*
- ___ *Danaus plexippus*
- ___ *Danaus gilippus*
- ___ *Agraulis vanillae*
- ___ *Vanessa cardui*
- ___ *Vanessa atalanta*
- ___ *Vanessa annabella*
- ___ *Vanessa virginiensis*
- ___ *Limenitis lorquini*
- ___ *Junonia coenia*
- ___ *Pontia protodice*
- ___ *Pieris rapae*
- ✓ *Colias eurytheme*
- ___ *Colias cesonia*
- ___ *Eurema nicippe*
- ___ *Nathalis iole*
- ___ *Phoebis sennae*

___ Other _____

Moths

- ___ *Manduca sexta*
- ___ *Hyles lineata*
- ___ *Parinthrene robinae*
- ___ *Helicoverpa zea*
- ___ *Catocala irene*

___ Noctuidae
✓ Arctiidae
___ Pyralidae
___ Geometrjdae
___ Other Est. juncea acrea mating pair

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

- ___ *Rhaphiomidas terminatus abdominalis*
- ___ *Apiocera convergens*
- ___ *Apiocera chrysolasia*
- ___ *Apiocera* sp. undetermined
- ___ *Nemomydas pantherinus*
- ___ *Sarapogon luteus*
- ___ *Stenopogon breviusculus*
- ___ *Proctocanthus* species
- ___ *Promachus aldrichii*
- ✓ *Mallophora fautrix*
- ___ *Eferia albibarbaris*
- ___ *Exoprosopa doris*
- ___ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- ✓ *Villa pretiosa*
- ___ *Toxophora epullicida*
- ___ *Tabanus punctifer*
- ___ *Palpada testaceicornis*
- ___ *Copestylum mexicana*
- ___ *Copestylum marinata*
- ___ *Eritstalis tenax*
- ___ *Cylindromyia* species
- ___ *Pseudodoris clavatus*
- ___ *Poecilanthrax effrena*
- ✓ *Physocephala texana*
- ___ *Hermetia illuscens*
- ___ *Hedriodiscus binotatus*
- ___ *Ceritilus capitata*
- ✓ *Musca domestica*
- ✓ *Gymnosoma fuliginosum*
- ___ *Phaenicia* species
- ___ *Calliphora* species

___ Sarcophagidae (Flesh Flies)
___ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies)
___ Bombyliidae (Bee Flies)
___ Asilidae (Robber Flies)
___ Apioceridae (Apiocerids)
___ Stratiomyidae (Soldier Flies
___ Drosophilidae (Fruit Flies)
___ Tipulidae (Crane Flies)
___ Dolichopodidae (Longleg)

Homoptera

- ___ *Homalodisca lacerta*

___ Cercopidae (Spittlebugs)
___ Cicadidae (Cicadas)
___ Membracidae (Treehoppers)
___ Aphididae (Aphids)
___ Aleyrodidae (Whiteflies)

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- ___ *Formica* species
- ___ *Mrymecocystus* species
- ___ *Solenopsis* species

___ Formicidae (Ants)

Wasps

- ✓ *Dasymutilla californica* (sm.r)
- ___ *Dasymutilla coccineohirta* (lg.r)
- ___ *Dasymutilla clytinestra* (sm.w)
- ___ *Dasymutilla sackeni* (lg.w)
- ___ *Campsomeris tolteca*
- ___ *Triellis alcione*
- ___ *Stizoides remicinctum*
- ___ *Vespula pensylvanica*
- ___ *Polistes apachus*
- ___ *Polistes dorsali*
- ___ *Polistes fuscatuss*
- ___ *Polistes exclamans*
- ___ *Parancistrocerus toltecus*
- ___ *Leptochilus boharti*
- ___ *Eumenes bollii*
- ___ *Eumenes crucifera*
- ✓ *Bembix comata*
- ___ *Bembix melanaspis*
- ✓ *Ammophila* species
- ___ *Sphex ichneumonius*
- ___ *Prionyx foxi*
- ___ *Prionyx* species
- ___ *Tachysphex* species
- ✓ *Podalonia* species
- ___ *Isodontia elegans*
- ✓ *Chalybion californica*
- ✓ *Chlorion aerarium*
- ___ *Pepsis chrysothemis*
- ___ *Pepsis thysbe*
- ___ *Pepsis mildei*
- ___ *Sceliphron caementarium*
- ___ *Aphilanthops laticinctus*
- ___ *Bicyrtes ventralis parata*
- ___ *Bicyrtes capnoptera annulata*
- ___ *Cerceris femurrubrum*
- ___ *Cerceris bicornuta*
- ___ *Eucerceris insignis*
- ___ *Eucerceris arenaria*
- ✓ *Hoplisoides diversus*
- ✓ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- ✓ *Philanthus ventilabris*
- ___ *Philanthus multimaculatus*
- ___ *Tachysphex* species
- ___ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- ___ *Argochrysis mesillae*
- ___ Vespidae (Paper Wasps)
- ___ Scoliidae (Scoliid Wasps)
- ✓ Ichneumonidae (Ichneumons)
- ___ Chrysididae (Cuckoo Wasps)
- ___ Mutillidae (Velvet Ants)
- ✓ Pompilidae (Spider Wasps)
- ___ Sphecidae (Sphecid Wasps)
- ___ Tiphiidae (Tiphiid Wasps)
- ___ Other: _____

Bees

- ___ *Perdita* species
- ___ *Dialyctus* species
- ___ *Agapostemon* species
- ___ *Nomia nevadensis*
- ___ *Xylocopa varipuncta*
- ___ *Anthophora urbana*
- ___ *Diadasia* species
- ___ *Melissodes* species
- ___ *Svastra obliqua*
- ___ *Triepeolus* sp
- ___ *Diadasia* species
- ___ *Nomia nevadensis*
- ___ *Anthidium notatum*
- ___ *Anthidium placitum*
- ___ *Megachile* species
- ✓ *Apis mellifera*
- ___ *Bombus sonorus*
- ___ *B. vosnesenskii*
- ___ *B. crotchii*

___ Halictidae (Halictid Bees)
___ Anthophoridae (Digger Bees)
___ Andrenidae (Andrenid Bees)
___ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- ___ *Anax janius*
- ___ *Aeshna multicolor*
- ✓ *Libellula saturata*
- ___ *Sympetrum corruptum*
- ___ *Sympetrum illiotum*
- ___ *Tramea lacerata*
- ___ *Tramea onusta*
- ___ *Pantala flavescens*
- ___ *Parithemis intensa*
- ___ *Erythemis collocata*

___ Other _____

Superfamily Coccoidea
___ Scale Insects
hostplant : _____

Various

Damselflies

- ___ *Argia species*
- ___ *Enallagma civile*
- ___ *Ischnura denticollis*

___ Unidentified

Neuroptera:

- ✓ *Brachynemurus species*
- ___ *Myrmeleon* species

___ Chrysopidae (Lacewings)
___ Rhaphididae (Snakeflies)
___ Ascalaphidae (Owlflies)
✓ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- ___ *Eleodes species*
- ___ *Olla v-nigrum*
- ___ *Hippodamia convergens*
- ✓ *Cotinus mutibilis*
- ___ *Paracatalpa ursina*
- ___ *Coccinella* species
- ___ *Diabrotica balteata*
- ✓ *D. undecimpunctata*
- ___ *Nanularia brunneata*
- ___ *Macrosiagon flavipenne*
- ___ *Nemognatha lurida apicalis*
- ___ *Apleurus albovestitus*
- ___ *Trichobaris* species

___ Carabidae (Carabids)
___ Curculionidae (Weevils)
✓ Tenebrionidae
___ Mordellidae
___ Staphylinidae (Rove Beetle)
✓ Melyridae (Colops)

Orthoptera:

Grasshoppers, Mantids, etc.

- ___ *Schistocerca* species
- ___ *Malanoplus complanatipes*
- ___ *Trimerotropis rebellis*
- ___ *T. californicus*
- ___ *T. palladipennis*
- ✓ *Trimerotropis* species
- ✓ Unidentified Grasshopper
- ___ *Stenopelmatus* n. species
- ___ *Iris oratoria*
- ___ *Stagmomantis californica*
- ___ *Parabacillus hesperus*
- ___ *Arenivaga* n. species
- ___ *Gryllus* species

___ Acrididae (Short-horned)
___ Tettigoniidae (Katydids)

Isoptera:

- ___ *Reticulitermes hesperus*

Embioptera

___ Unidentified

Thysanoptera

___ Unidentified

Hemiptera:

- ✓ *Chlorochroa uhleri/sayi*
- ___ *Chlorochroa ligata*
- ___ *Thyanta pallidovirens*
- ___ *Murgantia histrionica*
- ___ *Lygaeus kalmii*
- ___ *Oncopeltus fasciatus*
- ___ *Geocoris* species
- ✓ *Zelus tetracanthus*
- ___ *Sinea diadema*
- ___ *Rhynocoris ventralis*
- ___ *Orius* sp
- ___ *Largus cinctus*
- ___ *Arhyssus lateralis*
- ___ *Harmostes reflexulus*

___ Reduviidae (Assassin Bugs)
___ Lygaeidae (Seed Bugs)
___ Pentatomidae (Stink Bugs)
✓ Other Miridae (Lygus)

Dermaptera:

- ___ *Forficula auricularia*

Arachnida

Spiders

- ___ *Latrodectus hesperus*
- ___ *Peucetia viridins*
- ✓ Salticidae (Jumping)
- ___ Araneidae (Orb-weavers)
- ___ Theraphosidae (Tarantulas)
- ___ Ctenizidae (Trap-door)
- ___ Dipluridae (Funnel-web)
- ___ Agelinidae (Grass)
- ___ Thomisidae (Crab)
- ___ Unidentified

prey item(s) _____

Scorpions

___ Unidentified

Acari

___ Mites
___ Ticks

Birds: ✓ RODO ✓ MODO ___ AMCR ___ NOMO ___ WEME ___ HOFI ___ HOSP ___ EUST ___ BHCO ___ ANHU ✓ TUVU ___ RTHA ___ COHA ___ AMKE ___ BUOW ✓ CAEG ___ WEKI ___ Other _____

Mammals: ___ CA Ground Squirrel ___ Cottontail ___ BT Jackrabbit ___ Gopher ___ Other (specify): _____ Reptiles: ___ SB Lizard ___ WF Lizard ___ Horned Lizard ___ other _____

house on site

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 8-12-02 Site Name: Forecast Acreage: host 52 Times: Begin: 0930 End 1102 Biologist(s): GBB

Other sites surveyed this date? (Y)/N Specify: LL12 DSFLF Observed?: Y/(N) 1230 1400 Weather: Begin 82 °F End 93 °F Cloud Cover 0 Wind <4

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- __ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- ✓ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- __ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Liminetis lorquini*
- __ *Junonia coenia*
- ✓ *Pontia protodice*
- __ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala irene*

__ Noctuidae
✓ Arctiidae
✓ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

compiled and updated by Guy Bruyea, 2001

Diptera / Homoptera:

Flies

- __ *Rhaphiomidas terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- ✓ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- __ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eristalis tenax*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- __ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritits capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- __ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies)
✓ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca lacerta*

__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
✓ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

Leafhopper

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- ✓ Formicidae (Ants)

Wasps

- __ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- ✓ *Polistes apachus*
- __ *Polistes dorsali*
- __ *Polistes fuscatuss*
- __ *Polistes exclamans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- __ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- __ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- __ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- __ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- ✓ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: _____

Bees

- __ *Perdita* species
- __ *Dialyctus* species
- __ *Agapostemon* species
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- __ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- ✓ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
✓ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- __ *Anax junius*
- __ *Aeshna multicolor*
- ✓ *Libellula saturata*
- __ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- __ *Tramea lacerata*
- __ *Tramea onusta*
- ✓ *Pantala flavescens*
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other _____

Superfamily Coccoidea
__ Scale Insects
hostplant : _____

Various 101 F

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:

- __ *Brachynemurus species*
- __ *Myrmeleon* species
- __ Chrysopidae (Lacewings)
- __ Rhaphidiidae (Snakeflies)
- __ Ascalaphidae (Owlflies)
- __ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes species*
- __ *Olla v-nigrum*
- __ *Hippodamia convergens*
- ✓ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- __ *Coccinella* species
- __ *Diabrotica balteata*
- __ *D. undecimpunctata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- ✓ *Trimerotropis* species
- __ Unidentified Grasshopper
- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- __ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- ✓ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

- ✓ *Forficula auricularia*

Arachnida

Spiders

- __ *Latrodectus hesperus*
- __ *Peucetia viridins*
__ Salticidae (Jumping)
__ Aranciidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) _____

Scorpions
__ Unidentified

Acari
__ Mites
__ Ticks

Birds: ✓ RODO __ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP __ EUST __ BHCO ✓ ANHU ✓ TUVU __ RTHA __ COHA __ AMKE __ BUOW ✓ CAEG ✓ WEKI __ Other _____

Mammals: ✓ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 8-24-02 Site Name: Forecast Acreage: Lost 5u Times: Begin: 1105 End 1400 Biologist(s): GPB

Other sites surveyed this date? (Y)/N Specify: LL 12 DSFLF Observed?: Y (N) Weather: Begin 78°F End 94°F Cloud Cover 0 Wind 1-2

Lepidoptera:

Butterflies
- __ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- ✓ *Atalopedes campestris*
- ✓ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- ✓ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- __ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- __ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Liminetis lorquini*
- __ *Junonia coenia*
- __ *Pontia protodice*
- ✓ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*
- __ Other ______

Moths
- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala Irene*
- __ *Estigmene acrea*
- __ Noctuidae
- __ Arctiidae
- __ Pyralidae
- __ Geometridae
- __ Other ______

Lepidoptera Immatures / Host

Compiled by Guy Bruyea, updated 2002

Diptera / Homoptera:

Flies
- __ *R. terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- ✓ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- ✓ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- ✓ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Mythicomyia* species
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- __ *Eritstalis tenax*
- __ *Allograpta obliqua*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- ✓ *Poecilanthrax effrena*
- ✓ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Cerititus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- __ *Calliphora* species
- __ Sarcophagidae (Flesh Flies)
- __ Tachinidae (Tachinids)
- ✓ Syrphidae (Hover Flies)
- ✓ Bombyliidae (Bee Flies)
- __ Asilidae (Robber Flies)
- __ Apioceridae (Apiocerids)
- __ Stratiomyidae (Soldier Flies
- __ Drosophilidae (Fruit Flies)
- __ Tipulidae (Crane Flies)
- __ Dolichopodidae (Longleg)

Homoptera
- __ *Homalodisca* sp.
- __ Cercopidae (Spittlebugs)
- __ Cicadidae (Cicadas)
- __ Membracidae (Treehoppers)
- __ Aphididae (Aphids)
- __ Aleyrodidae (Whiteflies)
- __ *Glycaspis brimblecombei*

Hymenoptera:

Ants
- __ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- __ Formicidae (Ants)

Wasps
- __ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- __ *Polistes apachus*
- __ *Polistes dorsalis*
- __ *Polistes fuscatus*
- __ *Polistes exclemans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- ✓ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila alberti*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- ✓ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- __ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- ✓ *Pepsis mildei*
- ✓ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- ✓ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- ✓ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata
- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- __ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- __ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: ______

Bees
- __ *Perdita* species
- ✓ *Dialyctus* species
- ✓ *Agapostemon texana*
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- __ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- __ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*
- __ Halictidae (Halictid Bees)
- __ Anthophoridae (Digger Bees)
- __ Andrenidae (Andrenid Bees)
- __ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies
- ✓ *Anax junius*
- ✓ *Aeshna multicolor*
- __ *Libellula saturata*
- __ *Sympetrum corruptum*
- ✓ *Sympetrum illiotum*
- ✓ *Tramea lacerata*
- __ *Tramea onusta*
- __ *Pantala* species
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other ______

Superfamily Coccoidea
- __ Scale Insects

hostplant : ______

Various

Damselflies
- __ *Argia* species
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:
- ✓ *Brachynemurus* species
- __ *Myrmeleon* species
- __ Chrysopidae (Lacewings)
- __ Rhaphididae (Snakeflies)
- __ Ascalaphidae (Owlflies)
- __ Myrmeleontidae (Antlions)

Coleoptera:

Beetles
- __ *Eleodes* species
- __ *Collops* species
- ✓ *Olla v-nigrum*
- ✓ *Hippodamia convergens*
- ✓ *Harmonia axyridis*
- ✓ *Coccinella* species
- ✓ *Cotinus mutibilis*
- ✓ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- __ *D. undecimpunctata*
- __ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- __ *Trachymela sloanei*
- __ Carabidae (Carabids)
- __ Curculionidae (Weevils)
- __ Tenebrionidae
- __ Mordellidae
- __ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.
- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- __ *Trimerotropis* species
- __ Unidentified Grasshopper
- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- ✓ *Arenivaga* n. species
- ✓ *Gryllus* species
- __ Acrididae (Short-horned)
- __ Tettigoniidae (Katydids)

Isoptera:
- __ *Reticulitermes hesperus*

Embioptera
- __ Unidentified

Thysanoptera
- __ Unidentified

Hemiptera:
- __ *Chlorochroa uhleri/sayi*
- ✓ *Chlorochroa ligata*
- ✓ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- ✓ *Trichopepla aurora*
- ✓ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- ✓ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- ✓ *Largus cinctus*
- ✓ *Arhyssus lateralis* Rhopalid
- __ *Harmostes reflexulus*
- ✓ Miridae (Leaf Bugs)
- __ Reduviidae (Assassin Bugs)
- __ Lygaeidae (Seed Bugs)
- __ Pentatomidae (Stink Bugs)
- __ Other ______

Dermaptera:
- __ *Forficula auricularia*

Arachnida

Spiders
- __ *Latrodectus hesperus*
- ✓ *Peucetia viridins*
- __ Salticidae (Jumping)
- __ Araneidae (Orb-weavers)
- __ Theraphosidae (Tarantulas)
- __ Ctenizidae (Trap-door)
- __ Dipluridae (Funnel-web)
- __ Agelinidae (Grass)
- __ Thomisidae (Crab)
- __ Unidentified

prey item(s) ______

Scorpions
- __ Unidentified

Acari
- __ Mites
- __ Ticks

Laysan Albatross CAAB

Birds: ✓ RODO __ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP __ EUST __ BLPH ✓ ANHU ✓ TUVU __ RTHA __ BASW __ AMKE __ BUOW ✓ CAEG __ WEKI __ Other ______

Mammals: __ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): ______

Reptiles: __ SB Lizard __ WF Lizard __ Horned Lizard __ other ______

Delhi Fly Survey Insect List

Date: 8-26-02 Site Name: Forecast Acreage: 50 Times: Begin: 0930 End 1130/12:40-1480 Biologist(s): GPB

Other sites surveyed this date? (Y) N Specify: CC12 DSFLF Observed?: Y / (N) Weather: Begin 80°F End 90 °F Cloud Cover 0 Wind <1-3

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- ✓ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- __ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- ✓ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- ✓ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Limenitis lorquini*
- __ *Junonia coenia*
- ✓ *Pontia protodice*
- ✓ *Pieris rapae*
- ✓ *Colias eurytheme*
- ✓ *Colias cesonia* !
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala Irene*
- __ *Estigmene acrea*

__ Noctuidae
✓ Arctiidae larvae
✓ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

Diptera / Homoptera:

Flies

- __ *R. terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- ✓ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- ✓ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Mythicomyia* species
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eritstalis tenax*
- __ *Allograpta obliqua*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- __ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritilus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- __ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
✓ Syrphidae (Hover Flies)
✓ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
✓ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca* sp.

__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
✓ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)

- __ *Glycaspis brimblecombei*

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- ✓ Formicidae (Ants)

Wasps

- ✓ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- ✓ *Polistes apachus*
- __ *Polistes dorsalis*
- __ *Polistes fuscatus*
- __ *Polistes exclemans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila alberti*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- __ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- ✓ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris fumurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- ✓ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- ✓ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- __ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: _____

Bees

- __ *Perdita* species
- __ *Dialyctus* species
- ✓ *Agapostemon texana*
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- __ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- ✓ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*

✓ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- ✓ *Anax janius*
- __ *Aeshna multicolor*
- ✓ *Libellula saturata*
- __ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- __ *Tramea lacerata*
- ✓ *Tramea onusta*
- ✓ *Pantala* species
- __ *Parithemis intensa*
- __ *Erythemis collocata*

__ Other _____

Superfamily Coccoidea
__ Scale Insects
hostplant : _____

Various

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:

- __ *Brachynemurus species*
- __ *Myrmeleon* species

__ Chrysopidae (Lacewings)
__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
✓ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes* species
- __ *Collops* species
- __ *Olla v-nigrum*
- __ *Hippodamia convergens*
- ✓ *Harmonia axyridis*
- __ *Coccinella* species
- ✓ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- __ *D. undecimpunctata*
- __ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- __ *Trachymela sloanei*

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- __ *Trimerotropis* species

__ Unidentified Grasshopper

- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- __ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera
__ Unidentified

Thysanoptera
__ Unidentified

Hemiptera:

- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- ✓ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Trichopepla aurora*
- __ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

✓ Miridae (Leaf Bugs)
✓ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

- __ *Forficula auricularia*

Arachnida

Spiders

- __ *Latrodectus hesperus*
- __ *Peucetia viridins*

✓ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
✓ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified
prey item(s) _____
_____

Scorpions
__ Unidentified

Acari
__ Mites
__ Ticks

Compiled by Guy Bruyea, updated 2002

Birds: ✓ RODO ✓ MODO ✓ AMCR ✓ NOMO __ WEME __ HOFI __ HOSP __ EUST __ BLPH __ ANHU ✓ TUVU ✓ RTHA ✓ BASW __ AMKE __ BUOW __ CAEG __ WEKI __ Other _____

Mammals: __ CA Ground Squirrel ✓ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 8-31-02 Site Name: Forecast Acreage: 52 Times: Begin: ~~0905~~ 0930 End 1305 Biologist(s): GRB

Other sites surveyed this date? Y / N Specify: LL12 DSFLF Observed? (Y) N Weather: Begin 81 °F End 95 °F Cloud Cover 50 Wind <1 monsoonal

Lepidoptera:

Butterflies
- ✓ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- ✓ *Atalopedes campestris*
- ✓ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- ✓ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- ✓ *Icaricia acmon*
- ✓ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- ✓ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Liminetis lorquini*
- ✓ *Junonia coenia*
- ✓ *Pontia protodice*
- ✓ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*
- __ Other ______

Moths
- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala Irene*
- __ *Estigmene acrea*
- ✓ Noctuidae
- __ Arctiidae
- __ Pyralidae
- __ Geometridae
- __ Other ______

Lepidoptera Immatures / Host

Diptera / Homoptera:

Flies
- __ *R. terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- __ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- ✓ *Promachus aldrichii*
- ✓ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- ✓ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- ✓ *Mythicomyia* species
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eritstalis tenax*
- ✓ *Allograpta obliqua*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- ✓ *Poecilanthrax effrena*
- ✓ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritits capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- ✓ *Phaenicia* species
- __ *Calliphora* species
- ✓ Sarcophagidae (Flesh Flies)
- __ Tachinidae (Tachinids)
- ✓ Syrphidae (Hover Flies)
- ✓ Bombyliidae (Bee Flies)
- __ Asilidae (Robber Flies)
- __ Apioceridae (Apiocerids)
- __ Stratiomyidae (Soldier Flies
- __ Drosophilidae (Fruit Flies)
- __ Tipulidae (Crane Flies)
- ✓ Dolichopodidae (Longleg)

Homoptera
- __ *Homalodisca* sp.
- __ Cercopidae (Spittlebugs)
- __ Cicadidae (Cicadas)
- __ Membracidae (Treehoppers)
- ✓ Aphididae (Aphids)
- __ Aleyrodidae (Whiteflies)
- __ *Glycaspis brimblecombei*

Hymenoptera:

Ants
- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- ✓ Formicidae (Ants)

Wasps
- ✓ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- __ *Polistes apachus*
- __ *Polistes dorsalis*
- __ *Polistes fuscatus*
- __ *Polistes exclemans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- ✓ *Bembix melanaspis*
- ✓ *Ammophila alberti*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- ✓ *Chalybion californica*
- ✓ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- __ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata
- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- ✓ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- ✓ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: ______

Bees
- __ *Perdita* species
- __ *Dialyctus* species
- __ *Agapostemon texana*
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- ✓ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- ✓ *Megachile* species
- ✓ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*
- ✓ Halictidae (Halictid Bees)
- __ Anthophoridae (Digger Bees)
- __ Andrenidae (Andrenid Bees)
- ✓ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies
- ✓ *Anax janius*
- __ *Aeshna multicolor*
- __ *Libellula saturata*
- __ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- ✓ *Tramea lacerata*
- ✓ *Tramea onusta*
- ✓ *Pantala* species
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other ______

Superfamily Coccoidea
- __ Scale Insects

hostplant : ______

Various

Damselflies
- ✓ *Argia* species
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:
- ✓ *Brachynemurus* species
- __ *Myrmeleon* species
- __ Chrysopidae (Lacewings)
- __ Rhaphididae (Snakeflies)
- __ Ascalaphidae (Owlflies)
- __ Myrmeleontidae (Antlions)

Coleoptera:

Beetles
- ✓ *Eleodes* species
- __ *Collops* species
- __ *Olla v-nigrum*
- ✓ *Hippodamia convergens*
- ✓ *Harmonia axyridis*
- ✓ *Coccinella* species
- ✓ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- __ *D. undecimpunctata*
- __ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- __ *Trachymela sloanei*
- __ Carabidae (Carabids)
- __ Curculionidae (Weevils)
- ✓ Tenebrionidae
- __ Mordellidae
- __ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.
- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- __ *Trimerotropis* species
- __ Unidentified Grasshopper
- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- __ *Gryllus* species
- __ Acrididae (Short-horned)
- __ Tettigoniidae (Katydids)

Isoptera:
- __ *Reticulitermes hesperus*

Embioptera
- __ Unidentified

Thysanoptera
- __ Unidentified

Hemiptera:
- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- ✓ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Trichopepla aurora*
- ✓ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- ✓ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*
- __ Miridae (Leaf Bugs)
- __ Reduviidae (Assassin Bugs)
- __ Lygaeidae (Seed Bugs)
- __ Pentatomidae (Stink Bugs)
- __ Other ______

Dermaptera:
- __ *Forficula auricularia*

Arachnida

Spiders
- __ *Latrodectus hesperus*
- ✓ *Peucetia viridins*
- ✓ Salticidae (Jumping)
- __ Araneidae (Orb-weavers)
- __ Theraphosidae (Tarantulas)
- __ Ctenizidae (Trap-door)
- ✓ Dipluridae (Funnel-web)
- __ Agelinidae (Grass)
- __ Thomisidae (Crab)
- __ Unidentified

prey item(s) ______

Scorpions
- __ Unidentified

Acari
- __ Mites
- __ Ticks

Compiled by Guy Bruyea, updated 2002

Birds: ✓ RODO ✓ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP ✓ EUST __ BLPH __ ANHU ✓ TUVU ✓ RTHA ✓ BASW ✓ AMKE __ BUOW ✓ CAEG __ WEKI __ Other ______

Mammals: __ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): ______

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other ______

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 4-02-02 Site Name: Forecast Acreage: NA 50 Times: Begin: 1040 End 1430 Biologist(s): GBB

Other sites surveyed this date? (Y) N Specify: LL12 DSFLF Observed?: Y /(N) Weather: Begin 90°F End 105°F Cloud Cover 10 Wind <1-3

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- __ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- ✓ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- ✓ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- ✓ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Limenitis lorquini*
- __ *Junonia coenia*
- ✓ *Pontia protodice*
- ✓ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala Irene*
- ✓ *Estigmene acrea*

- ✓ Noctuidae
- ✓ Arctiidae
- __ Pyralidae
- __ Geometridae
- __ Other _____

Lepidoptera Immatures / Host

Diptera / Homoptera:

Flies

- __ *R. terminatus abdominalis*
- __ *Aplocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- __ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- __ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Mythicomyia* species
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eristalis tenax*
- ✓ *Allograpta obliqua*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- __ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritittus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- ✓ *Phaenicia* species
- __ *Calliphora* species

- __ Sarcophagidae (Flesh Flies)
- __ Tachinidae (Tachinids)
- __ Syrphidae (Hover Flies)
- __ Bombyliidae (Bee Flies)
- __ Asilidae (Robber Flies)
- __ Apioceridae (Apiocerids)
- __ Stratiomyidae (Soldier Flies
- __ Drosophilidae (Fruit Flies)
- __ Tipulidae (Crane Flies)
- __ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca* sp.
- __ Cercopidae (Spittlebugs)
- __ Cicadidae (Cicadas)
- __ Membracidae (Treehoppers)
- ✓ Aphididae (Aphids)
- __ Aleyrodidae (Whiteflies)
- __ *Glycaspis brimblecombei*

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- ✓ Formicidae (Ants)

Wasps

- __ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides remicinctum*
- __ *Vespula pensylvanica*
- ✓ *Polistes apachus*
- __ *Polistes dorsalis*
- __ *Polistes fuscatus*
- __ *Polistes exclemans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila alberti*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- __ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- __ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- __ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- ✓ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: _____

Bees

- __ *Perdita* species
- __ *Dialyctus* species
- __ *Agapostemon texana*
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- __ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- ✓ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*

- ✓ Halictidae (Halictid Bees)
- __ Anthophoridae (Digger Bees)
- __ Andrenidae (Andrenid Bees)
- __ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- ✓ *Anax janius*
- __ *Aeshna multicolor*
- ✓ *Libellula saturata*
- __ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- __ *Tramea lacerata*
- __ *Tramea onusta*
- ✓ *Pantala* species
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other _____

Superfamily Coccoidea

- __ Scale Insects

hostplant : _____

Various

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:

- ✓ *Brachynemurus species*
- __ *Myrmeleon* species
- __ Chrysopidae (Lacewings)
- __ Rhaphidiidae (Snakeflies)
- __ Ascalaphidae (Owlflies)
- __ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes* species
- ✓ *Collops* species
- __ *Olla v-nigrum*
- __ *Hippodamia convergens*
- ✓ *Harmonia axyridis*
- __ *Coccinella* species
- ✓ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- __ *D. undecimpunctata*
- ✓ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- __ *Trachymela sloanei*
- __ Carabidae (Carabids)
- ✓ Curculionidae (Weevils)
- ✓ Tenebrionidae
- __ Mordellidae
- __ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- ✓ *Trimerotropis* species
- __ Unidentified Grasshopper
- __ *Stenopelmatus* n. species
- ✓ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- ✓ *Gryllus* species
- __ Acrididae (Short-horned)
- __ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera

- __ Unidentified

Thysanoptera

- __ Unidentified

Hemiptera:

- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Trichopepla aurora*
- ✓ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- __ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

- ✓ Miridae (Leaf Bugs)
- __ Reduviidae (Assassin Bugs)
- __ Lygaeidae (Seed Bugs)
- __ Pentatomidae (Stink Bugs)
- __ Other _____

Dermaptera:

- __ *Forficula auricularia*

Arachnida

Spiders

- __ *Latrodectus hesperus*
- __ *Peucetia viridins*
- ✓ Salticidae (Jumping)
- __ Aranciidae (Orb-weavers)
- __ Theraphosidae (Tarantulas)
- __ Ctenizidae (Trap-door)
- ✓ Dipluridae (Funnel-web)
- __ Agelinidae (Grass)
- __ Thomisidae (Crab)
- __ Unidentified

prey item(s) _____

_____

Scorpions

- __ Unidentified

Acari

- __ Mites
- __ Ticks

Compiled by: Gur Bruyea, updated 2002

Birds: ✓ RODO ✓ MODO __ AMCR __ NOMO __ WEME __ HOFI ✓ HOSP ✓ EUST __ BLPH ✓ ANHU ✓ TUVU __ RTHA __ BASW ✓ AMKE __ BUOW ✓ CAEG ✓ WEKI __ Other _____

Mammals: ✓ CA Ground Squirrel ✓ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 9-7-02 Site Name: Forecast Acreage: 50 Times: Begin: 1050 End 1430 Biologist(s): GRB

Other sites surveyed this date? (Y) / N Specify: Li 12 DSFLF Observed?: Y / (N) Weather: Begin ___°F End ___°F Cloud Cover 0 Wind 1-2

Lepidoptera:

Butterflies
- __ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- __ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- ✓ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- __ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- __ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Liminetis lorquini*
- __ *Junonia coenia*
- __ *Pontia protodice*
- ✓ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*
- __ Other ______

Moths
- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala Irene*
- __ *Estigmene acrea*
- __ Noctuidae
- __ Arctiidae
- __ Pyralidae
- __ Geometridae
- __ Other ______

Lepidoptera Immatures / Host

Diptera / Homoptera:

Flies
- __ *R. terminatus abdominalis*
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- __ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- __ *Mallophora fautrix*
- __ *Efferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- ✓ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Mythicomyia* species
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- __ *Eritstalis tenax*
- __ *Allograpta obliqua*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- __ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritilus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- ✓ *Calliphora* species
- __ Sarcophagidae (Flesh Flies)
- __ Tachinidae (Tachinids)
- ✓ Syrphidae (Hover Flies)
- ✓ Bombyliidae (Bee Flies)
- __ Asilidae (Robber Flies)
- __ Apioceridae (Apiocerids)
- __ Stratiomyidae (Soldier Flies)
- __ Drosophilidae (Fruit Flies)
- __ Tipulidae (Crane Flies)
- __ Dolichopodidae (Longleg)

Homoptera
- __ *Homalodisca* sp.
- __ Cercopidae (Spittlebugs)
- __ Cicadidae (Cicadas)
- __ Membracidae (Treehoppers)
- __ Aphididae (Aphids)
- __ Aleyrodidae (Whiteflies)
- __ *Glycaspis brimblecombei*

Hymenoptera:

Ants
- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Myrmecocystus* species
- __ *Solenopsis* species
- __ Formicidae (Ants)

Wasps
- __ *Dasymutilla californica* (sm.r)
- __ *Dasymutilla coccineohirta* (lg.r)
- __ *Dasymutilla clytinestra* (sm.w)
- __ *Dasymutilla sackeni* (lg.w)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
- __ *Stizoides renicinctum*
- __ *Vespula pensylvanica*
- __ *Polistes apachus*
- __ *Polistes dorsalis*
- __ *Polistes fuscatus*
- __ *Polistes exclemans*
- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- __ *Ammophila alberti*
- __ *Ammophila* species
- __ *Sphex ichneumonius*
- __ *Prionyx foxi*
- __ *Prionyx* species
- __ *Tachysphex* species
- ✓ *Podalonia* species
- __ *Isodontia elegans*
- __ *Chalybion californica*
- __ *Chlorion aerarium*
- __ *Pepsis chrysothemis*
- __ *Pepsis thysbe*
- __ *Pepsis mildei*
- __ *Sceliphron caementarium*
- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- ✓ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata
- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- __ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- __ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: ______

Bees
- __ *Perdita* species
- __ *Dialyctus* species
- __ *Agapostemon texana*
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- __ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- __ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*
- __ Halictidae (Halictid Bees)
- __ Anthophoridae (Digger Bees)
- __ Andrenidae (Andrenid Bees)
- __ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies
- __ *Anax junius*
- __ *Aeshna multicolor*
- ✓ *Libellula saturata*
- ✓ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- __ *Tramea lacerata*
- __ *Tramea onusta*
- __ *Pantala* species
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other ______

Superfamily Coccoidea
- __ Scale Insects

hostplant : ______

Various

Damselflies
- ✓ *Argia* species
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:
- __ *Brachynemurus* species
- __ *Myrmeleon* species
- __ Chrysopidae (Lacewings)
- __ Rhaphidiidae (Snakeflies)
- __ Ascalaphidae (Owlflies)
- __ Myrmeleontidae (Antlions)

Coleoptera:

Beetles
- __ *Eleodes* species
- __ *Collops* species
- __ *Olla v-nigrum*
- ✓ *Hippodamia convergens*
- __ *Harmonia axyridis*
- __ *Coccinella* species
- __ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- ✓ *D. undecimpunctata*
- ✓ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- __ *Trachymela sloanei*
- __ Carabidae (Carabids)
- __ Curculionidae (Weevils)
- __ Tenebrionidae
- __ Mordellidae
- __ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.
- __ *Schistocerca* species
- __ *Melanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- ✓ *Trimerotropis* species
- __ Unidentified Grasshopper
- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- ✓ *Gryllus* species
- __ Acrididae (Short-horned)
- __ Tettigoniidae (Katydids)

Isoptera:
- __ *Reticulitermes hesperus*

Embioptera
- __ Unidentified

Thysanoptera
- __ Unidentified

Hemiptera:
- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Trichopepla aurora*
- __ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- ✓ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*
- ✓ Miridae (Leaf Bugs)
- __ Reduviidae (Assassin Bugs)
- __ Lygaeidae (Seed Bugs)
- ✓ Pentatomidae (Stink Bugs)
- ✓ Other Rhopalidae

Dermaptera:
- __ *Forficula auricularia*

Arachnida

Spiders
- __ *Latrodectus hesperus*
- __ *Peucetia viridins*
- __ Salticidae (Jumping)
- __ Araneidae (Orb-weavers)
- __ Theraphosidae (Tarantulas)
- __ Ctenizidae (Trap-door)
- __ Dipluridae (Funnel-web)
- __ Agelinidae (Grass)
- __ Thomisidae (Crab)
- __ Unidentified

prey item(s) ______

Scorpions
- __ Unidentified

Acari
- __ Mites
- __ Ticks

WTSW ✓
GREG ✓
BNST ✓
BHCO

Compiled by Guy Bruyea, updated 2002

Birds: ✓ RODO __ MODO ✓ AMCR __ NOMO __ WEME __ HOFI __ HOSP ✓ EUST ✓ BLPH __ ANHU ✓ TUVU __ RTHA ✓ BASW __ AMKE __ BUOW ✓ CAEG ✓ WEKI ✓ Other ______

Mammals: __ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): ______

Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other ______

Dumping observed

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 9-09-02 Site Name: Forecast Acreage: 5+ Times: Begin: 0930 End 1300 Biologist(s): GAB

Other sites surveyed this date? Y (N) Specify: Li 12 DSFLF Observed?: Y (N) Weather: Begin 80 °F End 90 °F Cloud Cover 10 Wind <1-2

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- ✓ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- ✓ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- __ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- ✓ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Liminetis lorquini*
- __ *Junonia coenia*
- ✓ *Pontia protodice*
- __ *Pieris rapae*
- ✓ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala Irene*
- ✓ *Estigmene acrea* larvae on Kochia
- __ Noctuidae
- ✓ Arctiidae
- __ Pyralidae
- __ Geometridae
- __ Other _____

Lepidoptera Immatures / Host

Diptera / Homoptera:

Flies

- __ *R. terminatus abdominalis*
- __ *Aptocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- __ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
- __ *Proctocanthus* species
- __ *Promachus aldrichii*
- __ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- __ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Mythicomyia* species
- __ *Tabanus punctifer*
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- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eritstalis tenax*
- __ *Allograpta obliqua*
- __ *Cylindromyia* species
- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- __ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritittus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- ✓ *Phaenicia* species
- __ *Calliphora* species

- ✓ Sarcophagidae (Flesh Flies)
- ✓ Tachinidae (Tachinids)
- ✓ Syrphidae (Hover Flies)
- ✓ Bombyliidae (Bee Flies)
- __ Asilidae (Robber Flies)
- __ Apioceridae (Apiocerids)
- __ Stratiomyidae (Soldier Flies
- __ Drosophilidae (Fruit Flies)
- __ Tipulidae (Crane Flies)
- __ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca* sp.
- __ Cercopidae (Spittlebugs)
- __ Cicadidae (Cicadas)
- __ Membracidae (Treehoppers)
- __ Aphididae (Aphids)
- ✓ Aleyrodidae (Whiteflies)
- ✓ *Glycaspis brimblecombei*

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- __ Formicidae (Ants)

Wasps

- __ *Dasymutilla californica* (sm.r)
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- ✓ *Polistes fuscatus*
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- __ *Parancistrocerus toltecus*
- __ *Leptochilus boharti*
- __ *Eumenes bollii*
- __ *Eumenes crucifera*
- ✓ *Bembix comata*
- __ *Bembix melanaspis*
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- __ *Chalybion californica*
- __ *Chlorion aerarium*
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- __ *Pepsis mildei*
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- __ *Aphilanthops laticinctus*
- __ *Bicyrtes ventralis parata*
- __ *Bicyrtes capnoptera annulata*
- __ *Cerceris femurrubrum*
- __ *Cerceris bicornuta*
- __ *Eucerceris insignis*
- __ *Eucerceris arenaria*
- __ *Hoplisoides diversus*
- __ *Hoplisoides punctifrons*
- ✓ *Microbembix californica*
- __ *Philanthus ventilabris*
- __ *Philanthus multimaculatus*
- __ *Tachysphex* species
- __ *Tachytes elongatus*

Hymenoptera / Odonata

- ✓ *Parnopes edwardsii*
- __ *Argochrysis mesillae*
- ✓ Vespidae (Paper Wasps)
- __ Scoliidae (Scoliid Wasps)
- ✓ Ichneumonidae (Ichneumons)
- __ Chrysididae (Cuckoo Wasps)
- __ Mutillidae (Velvet Ants)
- __ Pompilidae (Spider Wasps)
- __ Sphecidae (Sphecid Wasps)
- __ Tiphiidae (Tiphiid Wasps)
- __ Other: _____

Bees

- __ *Perdita* species
- __ *Dialyctus* species
- __ *Agapostemon texana*
- __ *Nomia nevadensis*
- __ *Xylocopa varipuncta*
- __ *Anthophora urbana*
- __ *Diadasia* species
- ✓ *Melissodes* species
- __ *Svastra obliqua*
- __ *Triepeolus* sp
- __ *Diadasia* species
- __ *Nomia nevadensis*
- __ *Anthidium notatum*
- __ *Anthidium placitum*
- __ *Megachile* species
- ✓ *Apis mellifera*
- __ *Bombus sonorus*
- __ *B. vosnesenskii*
- __ *B. crotchii*

- __ Halictidae (Halictid Bees)
- __ Anthophoridae (Digger Bees)
- __ Andrenidae (Andrenid Bees)
- __ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

- ✓ *Anax janius*
- __ *Aeshna multicolor*
- ✓ *Libellula saturata*
- __ *Sympetrum corruptum*
- __ *Sympetrum illiotum*
- __ *Tramea lacerata*
- __ *Tramea onusta*
- ✓ *Pantala* species
- __ *Parithemis intensa*
- __ *Erythemis collocata*
- __ Other _____

Superfamily Coccoidea

- __ Scale Insects

hostplant : _____

Various

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
- __ *Ischnura denticollis*
- __ Unidentified

Neuroptera:

- __ *Brachynemurus species*
- __ *Myrmeleon* species
- __ Chrysopidae (Lacewings)
- __ Rhaphidiidae (Snakeflies)
- __ Ascalaphidae (Owlflies)
- __ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes* species
- __ *Collops* species
- __ *Olla v-nigrum*
- __ *Hippodamia convergens*
- __ *Harmonia axyridis*
- __ *Coccinella* species
- __ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- __ *D. undecimpunctata*
- ✓ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- ✓ *Trachymela sloanei*
- __ Carabidae (Carabids)
- ✓ Curculionidae (Weevils)
- ✓ Tenebrionidae
- __ Mordellidae
- __ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

- __ *Schistocerca* species
- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- ✓ *T. palladipennis*
- __ *Trimerotropis* species
- __ Unidentified Grasshopper
- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- __ *Arenivaga* n. species
- ✓ *Gryllus* species
- __ Acrididae (Short-horned)
- __ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera

- __ Unidentified

Thysanoptera

- __ Unidentified

Hemiptera:

- __ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- __ *Murgantia histrionica*
- __ *Trichopepla aurora*
- __ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- __ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

- __ Miridae (Leaf Bugs)
- __ Reduviidae (Assassin Bugs)
- __ Lygaeidae (Seed Bugs)
- __ Pentatomidae (Stink Bugs)
- __ Other _____

Dermaptera:

- ✓ *Forficula auricularia*

Arachnida

Spiders

- __ *Latrodectus hesperus*
- __ *Peucetia viridins*
- ✓ Salticidae (Jumping)
- __ Araneidae (Orb-weavers)
- __ Theraphosidae (Tarantulas)
- __ Ctenizidae (Trap-door)
- __ Dipluridae (Funnel-web)
- __ Agelinidae (Grass)
- ✓ Thomisidae (Crab)
- __ Unidentified

prey item(s) _____

Scorpions

- __ Unidentified

Acari BUST

- __ Mites WTSU
- __ Ticks

Compiled by Guy Bruyea, updated 2002

Birds: ✓ RODO ✓ MODO ✓ AMCR __ NOMO __ WEME ✓ HOFI ✓ HOSP __ EUST __ BLPH __ ANHU ✓ TUVU __ RTHA __ BASW __ AMKE __ BUOW ✓ CAEG ✓ WEKI ✓ Other _____

Mammals: __ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other (specify): _____ Reptiles: __ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Delhi Fly Survey Insect List

Date: 9-14-02 Site Name: Forecast Acreage: 52 Times: Begin: 1035 End 1415 Biologist(s): GAB

Other sites surveyed this date? (Y) / N Specify: Lot 12 DSFLF Observed?: Y / (N) Weather: Begin 87 °F End 96 °F Cloud Cover 0 Wind

Lepidoptera:

Butterflies

__ *Hylephila phyleus*
__ *Lerodea eufala*
__ *Polites sabuleti*
__ *Paratrytone melane*
__ *Atalopedes campestris*
__ *Pyrgus communis albescens*
__ *Heliopetes ericetorum*
__ *Erynnis funeralis*
__ *Brephidium exilis*
__ *Leptotes marina*
__ *Icaricia acmon*
__ *Strymon melinus pudica*
__ *Atlides halesus corcorani*
__ *Apodemia mormo*
__ *Papilio rutulus*
__ *Papilio cresphontes*
__ *Danaus plexippus*
__ *Danaus gilippus*
__ *Agraulis vanillae*
__ *Vanessa cardui*
__ *Vanessa atalanta*
__ *Vanessa annabella*
__ *Vanessa virginiensis*
__ *Limenitis lorquini*
__ *Junonia coenia*
__ *Pontia protodice*
__ *Pieris rapae*
__ *Colias eurytheme*
__ *Colias cesonia*
__ *Eurema nicippe*
__ *Nathalis iole*
__ *Phoebis sennae*

__ Other _____

Moths

__ *Manduca sexta*
__ *Hyles lineata*
__ *Parinthrene robinae*
__ *Helicoverpa zea*
__ *Catocala irene*
__ *Estigmene acrea*

__ Noctuidae
__ Arctiidae
__ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

Compiled by Guy Bruyea, updated 2002

Diptera / Homoptera:

Flies

__ ***R. terminatus abdominalis***
__ *Apiocera convergens*
__ *Apiocera chrysolasia*
__ *Apiocera* sp. undetermined
__ *Nemomydas pantherinus*
__ *Sarapogon luteus*
__ *Stenopogon breviusculus*
__ *Proctocanthus* species
__ *Promachus aldrichii*
__ *Mallophora fautrix*
__ *Eferia albibarbaris*
__ *Exoprosopa doris*
__ *Ligyra gazophylax*
__ *Villa atrata* / black-winged
__ *Villa pretiosa*
__ *Toxophora epullicida*
__ *Mythicomyia* species
__ *Tabanus punctifer*
__ *Palpada testaceicornis*
__ *Copestylum mexicana*
__ *Copestylum marinata*
__ *Eritstalis tenax*
__ *Allograpta obliqua*
__ *Cylindromyia* species
__ *Pseudodoris clavatus*
__ *Poecilanthrax effrena*
__ *Physocephala texana*
__ *Hermetia illuscens*
__ *Hedriodiscus binotatus*
__ *Ceritilus capitata*
__ *Musca domestica*
__ *Gymnosoma fuliginosum*
__ *Phaenicia* species
__ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
__ Tachinidae (Tachinids)
__ Syrphidae (Hover Flies)
__ Bombyliidae (Bee Flies)
__ Asilidae (Robber Flies)
__ Apioceridae (Apiocerids)
__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
__ Tipulidae (Crane Flies)
__ Dolichopodidae (Longleg)

Homoptera

__ *Homalodisca* sp.
__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)
__ *Glycaspis brimblecombei*

Hymenoptera:

Ants

__ *Pogonomyrmex californicus*
__ *Formica* species
__ *Mrymecocystus* species
__ *Solenopsis* species
__ Formicidae (Ants)

Wasps

__ *Dasymutilla* species (red)
__ *Dasymutilla* species (white)
__ *Campsomeris tolteca*
__ *Triellis alcione*
__ *Stizoides remicinctum*
__ *Vespula pensylvanica*
__ *Polistes apachus*
__ *Polistes dorsalis*
__ *Polistes fuscatus*
__ *Polistes exclemans*
__ *Parancistrocerus toltecus*
__ *Leptochilus boharti*
__ *Eumenes bollii*
__ *Eumenes crucifera*
__ *Bembix comata*
__ *Bembix melanaspis*
__ *Ammophila alberti*
__ *Ammophila* species
__ *Sphex ichneumonius*
__ *Prionyx foxi*
__ *Prionyx* species
__ *Tachysphex* species
__ *Podalonia* species
__ *Isodontia elegans*
__ *Chalybion californica*
__ *Chlorion aerarium*
__ *Pepsis chrysothemis*
__ *Pepsis thysbe*
__ *Pepsis mildei*
__ *Sceliphron caementarium*
__ *Aphilanthops laticinctus*
__ *Bicyrtes ventralis parata*
__ *Bicyrtes capnoptera annulata*
__ *Cerceris femurrubrum*
__ *Cerceris bicornuta*
__ *Eucerceris insignis*
__ *Eucerceris arenaria*
__ *Hoplisoides diversus*
__ *Hoplisoides punctifrons*
__ *Microbembix californica*
__ *Philanthus ventilabris*
__ *Philanthus multimaculatus*
__ *Tachysphex* species
__ *Tachytes elongatus*

Hymenoptera / Odonata

__ *Parnopes edwardsii*
__ *Argochrysis mesillae*
__ Vespidae (Paper Wasps)
__ Scoliidae (Scoliid Wasps)
__ Ichneumonidae (Ichneumons)
__ Chrysididae (Cuckoo Wasps)
__ Mutillidae (Velvet Ants)
__ Pompilidae (Spider Wasps)
__ Sphecidae (Sphecid Wasps)
__ Tiphiidae (Tiphiid Wasps)
__ Other: _____

Bees

__ *Perdita* species
__ *Dialyctus* species
__ *Agapostemon texana*
__ *Nomia nevadensis*
__ *Xylocopa varipuncta*
__ *Anthophora urbana*
__ *Diadasia* species
__ *Melissodes* species
__ *Svastra obliqua*
__ *Triepeolus* sp
__ *Diadasia* species
__ *Nomia nevadensis*
__ *Anthidium notatum*
__ *Anthidium placitum*
__ *Megachile* species
__ *Apis mellifera*
__ *Bombus sonorus*
__ *B. vosnesenskii*
__ *B. crotchii*

__ Halictidae (Halictid Bees)
__ Anthophoridae (Digger Bees)
__ Andrenidae (Andrenid Bees)
__ Megachilidae (Leafcutting Bees)

Odonata:

Dragonflies

__ *Anax janius*
__ *Aeshna multicolor*
__ *Libellula saturata*
__ *Sympetrum corruptum*
__ *Sympetrum illiotum*
__ *Tramea lacerata*
__ *Tramea onusta*
__ *Pantala* species
__ *Parithemis intensa*
__ *Erythemis collocata*
__ Other _____

Superfamily Coccoidea

__ Scale Insects

hostplant : _____

Various

Damselflies

__ *Argia species*
__ *Enallagma civile*
__ *Ischnura denticollis*
__ Unidentified

Neuroptera:

__ *Brachynemurus species*
__ *Myrmeleon* species
__ Chrysopidae (Lacewings)
__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

__ *Eleodes* species
__ *Collops* species
__ *Olla v-nigrum*
__ *Hippodamia convergens*
__ *Harmonia axyridis*
__ *Coccinella* species
__ *Cotinus mutibilis*
__ *Paracatalpa ursina*
__ *Diabrotica balteata*
__ *D. undecimpunctata*
__ *Lema trilineata*
__ *Nanularia brunneata*
__ *Macrosiagon flavipenne*
__ *Nemognatha lurida apicalis*
__ *Apleurus albovestitus*
__ *Trichobaris* species
__ *Trachymela sloanei*
__ Carabidae (Carabids)
__ Curculionidae (Weevils)
__ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

Orthoptera:

Grasshoppers, Mantids, etc.

__ *Schistocerca* species
__ *Malanoplus complanatipes*
__ *Trimerotropis rebellis*
__ *T. californicus*
__ *T. palladipennis*
__ *Trimerotropis* species
__ Unidentified Grasshopper
__ *Stenopelmatus* n. species
__ *Iris oratoria*
__ *Stagmomantis californica*
__ *Parabacillus hesperus*
__ *Arenivaga* n. species
__ *Gryllus* species
__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

__ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

__ *Chlorochroa uhleri/sayi*
__ *Chlorochroa ligata*
__ *Thyanta pallidovirens*
__ *Murgantia histrionica*
__ *Trichopepla aurora*
__ *Lygaeus kalmii*
__ *Oncopeltus fasciatus*
__ *Geocoris* species
__ *Zelus tetracanthus*
__ *Sinea diadema*
__ *Rhynocoris ventralis*
__ *Orius* sp
__ *Largus cinctus*
__ *Arhyssus lateralis*
__ *Harmostes reflexulus*

__ Miridae (Leaf Bugs)
__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

__ *Forficula auricularia*

Arachnida

Spiders

__ *Latrodectus hesperus*
__ *Peucetia viridins*
__ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
__ Thomisidae (Crab)
__ Unidentified

prey item(s) _____

_____

Scorpions

__ Unidentified

Acari

__ Mites
__ Ticks

Birds: __RODO __MODO __AMCR __CORA __NOMO __WEME __HOFI __HOSP __EUST __ANHU __TUVU __RTHA __COHA __AMKE __BUOW __BASW __CLSW __CAEG __BLPH __WEKI __LOSH __

Birds: _____ Mammals: __ CA Ground Squirrel __ Cottontail __ BT Jackrabbit __ Gopher __ Other _____ Reptiles: __ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

Bruyea Biological Consulting

Delhi Fly Survey Insect List

Date: 6-16-02 Site Name: Forest Acreage: 1mf 50 Times: Begin: 0930 End 1300 Biologist(s): GPB

Other sites surveyed this date? (Y) / N Specify: Lot 2 DSFLF Observed?: Y (N) Weather: Begin 81 °F End 93 °F Cloud Cover 0 Wind 4-1

Lepidoptera:

Butterflies

- ✓ *Hylephila phyleus*
- __ *Lerodea eufala*
- __ *Polites sabuleti*
- __ *Paratrytone melane*
- __ *Atalopedes campestris*
- ✓ *Pyrgus communis albescens*
- __ *Heliopetes ericetorum*
- __ *Erynnis funeralis*
- ✓ *Brephidium exilis*
- __ *Leptotes marina*
- __ *Icaricia acmon*
- ✓ *Strymon melinus pudica*
- __ *Atlides halesus corcorani*
- __ *Apodemia mormo*
- __ *Papilio rutulus*
- __ *Papilio cresphontes*
- __ *Danaus plexippus*
- __ *Danaus gilippus*
- __ *Agraulis vanillae*
- __ *Vanessa cardui*
- __ *Vanessa atalanta*
- __ *Vanessa annabella*
- __ *Vanessa virginiensis*
- __ *Limenetis lorquini*
- __ *Junonia coenia*
- __ *Pontia protodice*
- __ *Pieris rapae*
- __ *Colias eurytheme*
- __ *Colias cesonia*
- __ *Eurema nicippe*
- __ *Nathalis iole*
- __ *Phoebis sennae*

__ Other _____

Moths

- __ *Manduca sexta*
- __ *Hyles lineata*
- __ *Parinthrene robinae*
- __ *Helicoverpa zea*
- __ *Catocala irene*
- ✓ *Estigmene acrea*

__ Noctuidae
__ Arctiidae
✓ Pyralidae
__ Geometridae
__ Other _____

Lepidoptera Immatures / Host

Diptera / Homoptera:

Flies

- __ ***R. terminatus abdominalis***
- __ *Apiocera convergens*
- __ *Apiocera chrysolasia*
- __ *Apiocera* sp. undetermined
- __ *Nemomydas pantherinus*
- __ *Sarapogon luteus*
- __ *Stenopogon breviusculus*
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- __ *Promachus aldrichii*
- __ *Mallophora fautrix*
- __ *Eferia albibarbaris*
- __ *Exoprosopa doris*
- __ *Ligyra gazophylax*
- ✓ *Villa atrata* / black-winged
- __ *Villa pretiosa*
- __ *Toxophora epullicida*
- __ *Mythicomyia* species
- __ *Tabanus punctifer*
- __ *Palpada testaceicornis*
- __ *Copestylum mexicana*
- __ *Copestylum marinata*
- ✓ *Eritstalis tenax*
- ✓ *Allograpta obliqua*
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- __ *Pseudodoris clavatus*
- __ *Poecilanthrax effrena*
- __ *Physocephala texana*
- __ *Hermetia illuscens*
- __ *Hedriodiscus binotatus*
- __ *Ceritittus capitata*
- ✓ *Musca domestica*
- __ *Gymnosoma fuliginosum*
- __ *Phaenicia* species
- __ *Calliphora* species

__ Sarcophagidae (Flesh Flies)
✓ Tachinidae (Tachinids)
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__ Bombyliidae (Bee Flies)
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__ Stratiomyidae (Soldier Flies
__ Drosophilidae (Fruit Flies)
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__ Dolichopodidae (Longleg)

Homoptera

- __ *Homalodisca* sp.

__ Cercopidae (Spittlebugs)
__ Cicadidae (Cicadas)
__ Membracidae (Treehoppers)
__ Aphididae (Aphids)
__ Aleyrodidae (Whiteflies)
__ *Glycaspis brimblecombei*

Hymenoptera:

Ants

- ✓ *Pogonomyrmex californicus*
- __ *Formica* species
- __ *Mrymecocystus* species
- __ *Solenopsis* species
- ✓ Formicidae (Ants)

Wasps

- ✓ *Dasymutilla* species (red)
- __ *Dasymutilla* species (white)
- __ *Campsomeris tolteca*
- __ *Triellis alcione*
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- __ *Vespula pensylvanica*
- ✓ *Polistes apachus*
- __ *Polistes dorsalis*
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- __ *Polistes exclemans*
- __ *Parancistrocerus toltecus*
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- ✓ *Bembix comata*
- __ *Bembix melanaspis*
- ✓ *Ammophila alberti*
- ✓ *Ammophila* species
- __ *Sphex ichneumonius*
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- __ *Podalonia* species
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- __ Other: _____

Bees

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- __ *Agapostemon texana*
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Odonata:

Dragonflies

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- __ *Erythemis collocata*
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Superfamily Coccoidea
__ Scale Insects
hostplant : _____

Various

Damselflies

- __ *Argia species*
- __ *Enallagma civile*
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- __ Unidentified

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- __ *Myrmeleon* species

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__ Rhaphidiidae (Snakeflies)
__ Ascalaphidae (Owlflies)
__ Myrmeleontidae (Antlions)

Coleoptera:

Beetles

- __ *Eleodes* species
- ✓ *Collops* species
- __ *Olla v-nigrum*
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- __ *Harmonia axyridis*
- __ *Coccinella* species
- __ *Cotinus mutibilis*
- __ *Paracatalpa ursina*
- ✓ *Diabrotica balteata*
- ✓ *D. undecimpunctata*
- ✓ *Lema trilineata*
- __ *Nanularia brunneata*
- __ *Macrosiagon flavipenne*
- __ *Nemognatha lurida apicalis*
- __ *Apleurus albovestitus*
- __ *Trichobaris* species
- __ *Trachymela sloanei*

__ Carabidae (Carabids)
__ Curculionidae (Weevils)
✓ Tenebrionidae
__ Mordellidae
__ Staphylinidae (Rove Beetle)

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Grasshoppers, Mantids, etc.

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- __ *Malanoplus complanatipes*
- __ *Trimerotropis rebellis*
- __ *T. californicus*
- __ *T. palladipennis*
- ✓ *Trimerotropis* species

__ Unidentified Grasshopper

- __ *Stenopelmatus* n. species
- __ *Iris oratoria*
- __ *Stagmomantis californica*
- __ *Parabacillus hesperus*
- ✓ *Arenivaga* n. species
- ✓ *Gryllus* species

__ Acrididae (Short-horned)
__ Tettigoniidae (Katydids)

Isoptera:

- __ *Reticulitermes hesperus*

Embioptera

__ Unidentified

Thysanoptera

__ Unidentified

Hemiptera:

- ✓ *Chlorochroa uhleri/sayi*
- __ *Chlorochroa ligata*
- __ *Thyanta pallidovirens*
- ✓ *Murgantia histrionica*
- __ *Trichopepla aurora*
- ✓ *Lygaeus kalmii*
- __ *Oncopeltus fasciatus*
- __ *Geocoris* species
- __ *Zelus tetracanthus*
- __ *Sinea diadema*
- __ *Rhynocoris ventralis*
- __ *Orius* sp
- __ *Largus cinctus*
- __ *Arhyssus lateralis*
- __ *Harmostes reflexulus*

__ Miridae (Leaf Bugs)
__ Reduviidae (Assassin Bugs)
__ Lygaeidae (Seed Bugs)
__ Pentatomidae (Stink Bugs)
__ Other _____

Dermaptera:

- ✓ *Forficula auricularia*

Arachnida

Spiders

- ✓ *Latrodectus hesperus*
- __ *Peucetia viridins*

✓ Salticidae (Jumping)
__ Araneidae (Orb-weavers)
__ Theraphosidae (Tarantulas)
__ Ctenizidae (Trap-door)
__ Dipluridae (Funnel-web)
__ Agelinidae (Grass)
✓ Thomisidae (Crab)
__ Unidentified
prey item(s) _____

Scorpions
__ Unidentified

Acari
__ Mites
__ Ticks

Compiled by Guy Bruyea, updated 2002

Birds: ✓ RODO __ MODO ✓ AMCR __ CORA __ NOMO __ WEME __ HOFI __ HOSP __ EUST __ ANHU ✓ TUVU ✓ RTHA __ COHA __ AMKE __ BUOW __ BASW __ CLSW ✓ CAEG ✓ BLPH __ WEKI __ LOSH __

Birds: LEGO, BUST

Mammals: __ CA Ground Squirrel ✓ Cottontail __ BT Jackrabbit __ Gopher __ Other _____ Reptiles: ✓ SB Lizard __ WF Lizard __ Horned Lizard __ other _____

SETTLEMENT AND GENERAL RELEASE AGREEMENT

This Settlement and General Release Agreement ("Agreement") is made on the Effective Date defined herein and is by and between petitioners and appellants Endangered Habitats League, Inc. ("EHL") and Sierra Club, Inc. ("Sierra Club") (collectively "Petitioners"), and respondent City of Ontario ("Ontario" or "City"), a municipality organized under the laws of the State of California, all three of whom are collectively referred to as the "Parties," in connection with the settlement of any and all claims, demands, causes of action, obligations, damages, and liabilities of any kind that have arisen between the Parties.

RECITALS

A. On or about February 9, 1998, EHL commenced legal action against Ontario entitled Endangered Habitats League, Inc. v. City of Ontario et al., San Bernardino County Superior Court Case No. RCV 32616 (the "Action"). On March 13, 1998, Sierra Club joined EHL in filing a first amended petition for writ of mandate in the Action.

B. In the Action, Petitioners contested Ontario's approval in January 1998 of a general plan amendment (the "General Plan Amendment"), zoning changes and certification of a final environmental impact report ("Final EIR") involving 8,200 acres of land to the south of Ontario's current city limits and within Ontario's "sphere of influence," also referred to as Annexation Area 163 ("Annexation Area 163") as shown in the solid red-bordered, yellow shaded portion of the attached Exhibit "A." The Petitioners alleged that Ontario's actions and approvals on these matters, inter alia, violated the California Environmental Quality Act ("CEQA") and planning and zoning laws, including inconsistency with Ontario's existing General Plan ("General Plan"). Petitioners also alleged that Ontario violated Water Code sections 10910-10914 by not obtaining and disclosing pertinent public water system matters in the Final EIR. Ontario disputes all of Petitioners' contentions.

C. On or about March 16, 1999, San Bernardino County Superior Court Judge Jeffrey King denied Petitioners' first amended petition for writ of mandate in the Action. On or about April 8, 1999, Judge King issued a judgment and order to that effect.

D. On or about May 11, 1999, Petitioners filed a notice of appeal from Judge King's judgment and order in the Action. That appeal, No. E024964, is currently before the California Court of Appeal, Fourth District, Division 2 (the "Appellate Action").

E. Since the Petitioners filed their notice of appeal, the Parties have engaged in extensive settlement negotiations regarding the Appellate Action.

F. The purpose of this Agreement is to settle and release fully and completely all claims that Petitioners had, have, or may have against Ontario regarding: (1) the Action, (2) the Appellate Action, and (3) any present or future litigation involving development in Annexation Area 163, which conform to the terms of this Agreement, and make certain provisions for the further mitigation of environmental impacts attributable to Ontario's approval of the 1998 General Plan Amendment or future general plan amendments contemplated by this Agreement, as discussed herein.

G. Ontario has previously committed in the Final EIR prepared for the annexation of Annexation Area 163 and elsewhere to a comprehensive effort to protect the environment and maximize the conservation value of land set aside in Annexation Area 163. To that end, through the Final EIR and elsewhere (see Exhibit "B" attached hereto), Ontario has committed to achieving the following: (1) acquiring 145 acres within Annexation Area 163 as a Waterfowl and Raptor Conservation Area; (2) acquiring 160 acres of land or easements within the Chino Basin area to provide wetland and foraging habitat for waterfowl; and (3) coordinating with other governmental entities and making their best efforts in the Habitat Area to attempt to create an inter-jurisdictional plan pursuant to Senate Bill 831.

DEFINITIONS

"Advisory Committee" as used in this Agreement shall mean an advisory committee of stakeholders formed by the Parties pursuant to paragraph 5, below.

"Developable Acres" as used in this Agreement shall mean the actual net area to be developed, excluding only Publicly Dedicated Property. There are approximately 5,259 Developable Acres in Annexation Area 163 based on the current General Plan.

"Ecologically Functional Units" as used in this Agreement shall mean habitat with high or medium biological value or potentially high or medium biological value capable of sustaining species over the long term as a result of their size, location, conductivity, and/or edge effects as determined by a qualified biologist.

"Effective Date" as used in this Agreement shall mean the date on which the request for dismissal of the Appellate Action is filed with the court as provided in paragraph 19.

"Habitat Area" as used in this Agreement shall mean the area within the red and black-dashed border shown in Exhibit A, attached hereto, or other areas which the Land Trust finds to have a biologically functional relationship to waterfowl, Burrowing Owl or other raptors, Delhi Sands flower-loving fly, or other wildlife of the Chino Basin.

"Land Trust" as used in this Agreement shall mean a land trust, conservancy or other non-profit corporation or non-profit entity which is created or selected by the Parties to carry out the responsibilities, goals and objectives pertaining to mitigation of environmental impacts, as set forth in this Agreement, and any further responsibilities to which the Parties may mutually agree at a later time, and which shall be responsible for managing the mitigation as described in paragraphs 2 and 4, with oversight by the Parties.

"Livable Communities Policies" as used in this Agreement shall mean policies: (1) promoting a balance of land uses, "walkable" communities with mixed use community centers, pedestrian amenities with parks, trails and open spaces; and (2) encouraging more employment and related opportunities in proximity to residential development and mixed use activity clusters to allow potential opportunities for public transit and effective traffic circulation between residential and employment areas. The Parties agree that the current General Plan for Annexation Area 163 contains these policies as set forth in this definition.

"Mitigation Fee" as used in this Agreement shall mean a fee of two thousand dollars ($2,000) imposed on a per-acre basis on Developable Acres to be used for mitigation for potential future environmental impacts that may occur from development in Annexation Area 163. The Mitigation Fee amount may be revised upward by Ontario on its own initiative or at the request of any of the Parties or the Land Trust, but Ontario is not obligated at any time to change the Mitigation Fee amount. Ontario may revise the Mitigation Fee downward only if, and to the extent, it replaces any Mitigation Fee shortfall with separate funds.

"Publicly Dedicated Property" shall mean property dedicated to Ontario or any other public entity for schools, fire stations, public parks, public roads and streets, libraries, water well sites, or sewer treatment plants, or other comparable property dedicated or acquired for public uses or public purposes.

"Termination Date" as used in this Agreement shall mean the date on which Ontario determines in its sole and absolute discretion that full build out of all Developable Acres within Annexation Area 163 has occurred.

AGREEMENT AND RELEASE

NOW, THEREFORE, in consideration of the mutual covenants, promises and undertakings set forth herein, Petitioners and Ontario agree as follows:

1. Each recital set forth above is incorporated herein by reference and made a part of this Agreement.

2. The Parties agree that this Agreement is intended to address and provide mitigation for certain potential future environmental effects that could result from development occurring in Annexation Area 163. This Agreement is intended to cover potential environmental impacts in Annexation Area 163 to the Burrowing Owl, the Delhi Sands Flower-Loving Fly ("DSF"), raptor foraging and wildlife habitat, loss of open space, and actual and potential habitat and agricultural lands. This Agreement also covers other sensitive species, both listed and non-listed, that inhabit or may inhabit similar habitat in Annexation Area 163. To this end, the Parties agree to the measures ("Mitigation Measures") set forth below.

a. Ontario shall impose the Mitigation Fee on development of Developable Acres in Annexation Area 163 that requires discretionary approval or permitting from Ontario until the Termination Date. The Mitigation Fee shall be paid by the real property owner or developer on or before the time Ontario issues grading permits for development within Annexation Area 163. The Mitigation Fee shall not be required for discretionary approvals or permits issued under the Agricultural Overlay Ordinance.

b. Notwithstanding subparagraph (a) above, the City of Ontario will identify through CEQA review, and in consultation with DFG, lands occupied by Burrowing Owl and suitable as long-term habitat due to proximity to watercourses, flood control channels, proposed or active trails, or other planned or protected open space. In

such cases, Ontario will require avoidance of those lands necessary to maintain a viable territory and will require their maintenance for long-term habitat value through dedication in fee or grant of easement to the Land Trust. In determining the scope of the viable territory, the City may include contiguous lands which are permanently protected and suitably managed to maintain Burrowing Owl habitat. However, if the City determines that the application of the foregoing measures would result in an unconstitutional taking of private property under then-controlling judicial interpretations and the City's determination is substantiated by a written analysis from an independent expert in land use economics or other expert as appropriate under then-controlling judicial interpretations, who shall be selected by the City based upon the City's standard policies and practices for selecting experts with consideration of any input provided by the other parties, alternative measures for mitigating impacts on Burrowing Owl will be adopted in accordance with paragraph (c) below and through consultation with DFG. Any dedication made by a developer or other entity pursuant to the terms of this subsection may be in lieu of paying all or a portion of the Mitigation Fee set forth in subsection "a" above on those acres conserved, in accordance with this Paragraph.

c. Notwithstanding subsection "a" above, if Burrowing Owl individuals are found on a proposed development site and the site is not viable long-term habitat as determined by Ontario, the developer shall pay the Mitigation Fee and make provisions for the relocation of the Burrowing Owl individuals in a manner consistent with DFG guidelines and protocols.

d. The Parties acknowledge that habitat that benefits DSF can be expected to benefit Burrowing Owl, therefore up to 25% of the Mitigation Fee may be used for the recovery of DSF at Ontario's sole discretion. This percentage may change upon agreement of the Parties.

e. All Mitigation Fees collected shall be utilized for the purposes set forth in paragraphs 2 and 4(b), and may be used to: (1) purchase real property, conservation easements or other land use encumbrances with long-term conservation value for environmental impacts referenced in paragraphs 2 and 4; (2) enhance or restore lands with such values; (3) maintain and operate such lands; and (4) pay for related administrative duties. The amount dedicated to the administrative costs of such property shall not exceed ten percent (10%) of the total Mitigation Fees, unless approved by the Advisory Committee.

f. Real property or easements dedicated, conveyed or purchased to benefit wildlife, waterfowl, raptors and/or Burrowing Owls must have long-term conservation value for those species and must be managed by the Land Trust for their benefit. Such parcels must be located within the Habitat Area. Fee title, conservation easements, and/or long-term management agreements are appropriate legal mechanisms for advancing the environmental protections contemplated by this Agreement. Such property and easements shall be managed by the Land Trust. Examples of acceptable property are those adjacent to known habitat along flood

control channels (e.g., Cucamonga Creek), occupied or suitable lands within the Habitat Area, occupied or suitable uplands contributing to the functional value of wetlands and riparian habitat along the Santa Ana River or its tributaries, and habitat which is also beneficial to the DSF. Examples of unacceptable property are those that would otherwise be purchased by another entity or group as open space mitigation for environmental impacts. At the discretion of the Land Trust, the Mitigation Fee may be used to restore or enhance such property to contribute to long-term conservation values.

3. The Mitigation Fees shall be imposed until the Termination Date. Subject to Ontario's right to retain up to 25% of any Mitigation Fees collected to promote the recovery of DSF (see paragraph 2(d) above), any Mitigation Fees paid to Ontario shall be placed in their entirety in a separate, interest-bearing account managed by Ontario until the Land Trust is created, at which time all funds in the account shall be managed by the Land Trust, less fees retained by Ontario. Ontario shall be reimbursed for its actual and reasonable costs associated with any required annual accounting activities of the fund or any other required management costs.

4. In order to enhance the biological impact mitigation imposed as part of the Final EIR, the City may amend the General Plan, subject to appropriate CEQA review and other applicable legal requirements, to modify provisions for the 145-acre onsite Waterfowl and Raptor Conservation Area ("WRCA") in the manner described herein. In lieu of establishing the on-site WRCA, in whole or part, as provided in the Final EIR, the City may make the following alternative provisions for mitigation.

a. The City shall determine the area to be removed from the WRCA and for each such acre shall provide funding at the rate of forty thousand dollars ($40,000) per acre for mitigation of wildlife impacts outside of Annexation Area 163 ("Offsite Mitigation"). For this purpose, the City shall establish an impact fee or other mechanism for generating revenue. The City may include in this mechanism the generation of funding, at the same rate, to cover preservation of the 160 acres of offsite mitigation lands specified in the Final EIR, for a total of up to 305 acres of Offsite Mitigation. Responsibility for payment shall be borne by development within Annexation Area 163 under the 1998 General Plan Amendment. The funding mechanism shall be established before issuance by the City of any grading permit for any such development. Payment of a proportionate share of the Mitigation Fee shall be a prerequisite to any disturbance of an affected development site which requires a grading permit. The city shall collect the mitigation funding and make it available for Offsite Mitigation purposes at a rate equal to the proportionate share of development of Developable Acres. Funds collected by the City shall be managed by the Land Trust, and prior to establishment of the Land Trust, shall be handled by the City as set forth in paragraph 3.

b The Land Trust shall be the entity responsible for acquiring and administering the Offsite Mitigation as well as the other properties addressed in this Agreement. In addition to the provisions of paragraph 5, below, concerning operation of the

Land Trust, the following goals and objectives shall govern implementation of the Offsite Mitigation by the Land Trust.

i. The Land Trust activities should emphasize preservation of wildlife values similar to those which will be directly impacted by development of Annexation Area 163, with particular emphasis on habitat for Burrowing Owl and other raptors, waterfowl, and riparian species.

ii Habitat values can be protected through acquisition of real property in fee, easements, or other appropriate legal mechanisms for long-term protection, as well as through restoration, enhancement, and maintenance of habitat values on land otherwise protected from development. Provision should be made for long-term maintenance of habitat values on sites protected by the Land Trust.

iii. Offsite Mitigation lands should be within the Habitat Area or in nearby areas where biological values bear a functional relationship to wildlife of the Habitat Area.

iv. To the maximum extent practicable, Offsite Mitigation areas should be areas of contiguous acreage and comply with the definition of Ecologically Functional Units set forth above.

c. Petitioners will not oppose amendments to the General Plan and/or Final EIR carried out in accordance with this paragraph 4 and will not initiate or join any litigation challenging the implementation of the Offsite Mitigation in accordance with this paragraph. In any such litigation, EHL agrees to provide an amicus brief in support of Ontario's position electing to move a portion or all of the WRCA off site and in implementing the Offsite Mitigation program. Provisions not to initiate or join in any litigation challenging the Offsite Mitigation program will be included in letters to be provided by Pomona Valley Audubon Society and TriCounty Conservation League. This provision is in addition to the requirements set forth in paragraph 12.

d. Prior to its formal actions to amend the General Plan to provide for Offsite Mitigation and to establish a funding mechanism for that purpose, Ontario shall, in addition to all required public notice and participation requirements of CEQA, notify Petitioners of these proposed actions.

5. The Parties shall form the Advisory Committee within 90 days of the Effective Date. The Advisory Committee shall be composed of two representatives appointed by Ontario, two representatives appointed by Petitioners, and one representative appointed by the already named representatives. The Advisory Committee shall oversee creation or selection of the Land Trust. The Land Trust shall be charged with carrying out the responsibilities described in this Agreement concerning mitigation of environmental impacts. The Land Trust shall be accorded flexibility in carrying out its duties; provided, however, that the Land Trust shall act in a fiscally responsible and professional manner in connection with all of its activities under this Agreement. The Advisory Committee shall attempt to select an existing land trust or conservation entity to

conduct the activities and responsibilities set forth for the Land Trust in this Agreement. Such existing land trust or conservation entity will preferably be local to the area and experienced in acquiring and managing conservation or mitigation property. If an existing land trust or conservation entity cannot be selected within a reasonable period of time, the Parties may oversee the creation of a land trust. Upon final approval of the Land Trust by the Advisory Committee, the Advisory Committee shall cease to exist and any responsibilities given to it by this Agreement shall be immediately assumed by the Board of Directors of the Land Trust. The Land Trust and its functions may be merged with or relinquished to any other program specifically designed to protect the environment at any time so as to most efficiently and comprehensively achieve the goals of this Agreement. If the Land Trust is merged with or relinquished to any other program at a time when the Advisory Committee no longer exists, such merger or relinquishment shall be subject to the Parties' approval.

6. If the Land Trust cannot, does not or can no longer carry out its responsibilities under this Agreement in conformance with the requirements, goals and objectives listed above, the Parties shall, at the request of any Party, reconvene the Advisory Committee to identify causes of the nonperformance and prescribe remedial changes. Such changes may include reformation or termination of the Land Trust, replacement of it with another similar entity, or transfer of its responsibilities to the City of Ontario. Any successor entity, whether it be another land trust or conservation entity, or Ontario itself, shall be responsible for carrying out the requirements, goals and objectives for the Land Trust set forth in this Agreement.

7. For every residential, commercial, industrial or other development project in Annexation Area 163 requiring discretionary approval or permitting, Ontario shall require the real property owner or developer to conduct a biological habitat assessment and when appropriate, biological surveys pursuant to formally adopted protocols, by qualified biologists or pursuant to any subsequently adopted Habitat Conservation Plan or a similar planning mechanism as part of a subsequent CEQA environmental review process. Where appropriate, these assessments shall determine whether species listed as threatened or endangered or of special concern after this Agreement has been fully executed are present on the real property proposed to be developed.

8 If changing pedestrian use, mixed use, or compact community design attributable to a particular project causes average daily vehicle trips in Annexation Area 163 to substantially increase beyond those identified in the General Plan and Final EIR, and significant new environmental impacts would thereby result as determined by Ontario, Ontario shall require supplemental environmental review prior to approving the project.

9. Any specific plans approved by Ontario in Annexation Area 163 shall be consistent with the General Plan and the purposes of "Livable Communities Policies" as defined in this Agreement.

10. As specific plans are submitted to Ontario regarding Annexation Area 163, Ontario agrees to allow Petitioners and others the opportunity to consult with Ontario regarding feeder routes from activity centers to transit stations in Annexation Area 163, including any funding proposals to address regional transportation needs. The actual location of such feeder routes shall be determined by Ontario in its sole discretion as afforded by law.

11. Nothing in this Agreement shall be construed to permit real property owners and developers in Annexation Area 163 to disregard the development conditions set forth in the General Plan as it may be amended from time to time, the Final EIR, and related Ontario City Council findings.

12. a. In exchange for the commitments set forth herein, Petitioner EHL and its officers and directors hereby release and forever discharge Ontario and its predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them ("Released Parties") from any and all of Petitioner EHL's claims, demands, liabilities, obligations, causes of action, damages, judgments, payments, attorneys' fees and costs, both known and unknown, which Petitioner EHL may now have or might hereinafter have against Released Parties involving the Final EIR and/or implementation of the General Plan Amendment, zoning changes, specific plans, tract maps, subdivision maps, site plan approvals and any other development-related approvals made by Ontario, regarding Annexation Area 163 which authorize a use or uses of land which is listed in Table 3-3 of the General Plan Amendment (attached as Exhibit "C") and which is consistent with this Agreement, which arose out of, relate to or are the subject of the Action and the Appellate Action, or which were asserted or which could have been asserted in the Action or the Appellate Action. By carrying out the actions specified in this paragraph 12, Petitioner EHL will make known its support for the terms of this Agreement and the City's development of Annexation Area 163 in accordance with this Agreement.

i. With respect to any future litigation which challenges a project within Annexation Area 163 on grounds of inadequate mitigation of environmental impacts, EHL will, upon request of Ontario, and subject to the funding provisions stated hereinafter, prepare and submit for filing in Superior Court an amicus brief supporting the adequacy of the mitigation measures in the Final EIR as certified in January 1998, and as modified pursuant to this Agreement, in conjunction with the provisions of this Agreement. EHL shall bear the cost of any such amicus brief which is filed in connection with an action brought by an organization whose primary purpose is conservation. For any lawsuit filed by any other person or organization, the obligations of EHL respecting an amicus brief shall apply only if funding adequate for preparing and filing the brief is provided by or through Ontario.

ii. With respect to any proposed development project or specific plan within Annexation Area 163, EHL will, within 30 days of receiving a request from the City, send the letter attached as Exhibit "D" to any person, organization or group challenging a project on environmental grounds.

b. In exchange for the commitments set forth herein, Petitioner Sierra Club, Inc., and its officers and directors hereby release and forever discharge the Released Parties from any and all of this Petitioner's claims, demands, liabilities, obligations, causes of action,

damages, judgments, payments, attorneys' fees and costs, both known and unknown, which were asserted or could have been asserted in the Action or the Appellate Action.

c. With respect to any future litigation which challenges a project within Annexation Area 163 on grounds of inadequate mitigation of environmental impacts, the Land Trust will, at the request of Ontario, prepare and submit for filing in Superior Court an amicus brief supporting the adequacy of the mitigation measures in the Final EIR as certified in January 1999.

d. If, in the future, any one or more of the Petitioners, or any of their predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, insurers, or reinsurers or any person claiming by or through any of them, files in any court of law a claim, demand, liability, obligation, cause of action, claim of damage or any other form of claim: (1) (A) challenging the City's approval of a general plan amendment, zoning change, specific plan, tract map, subdivision map, site plan or any other development project within Annexation Area 163, or (B) challenging the receipt of any such development approval by an individual developer, property owner, or public agency within Annexation Area 163, or such developer's, owner's, or agency's construction or other activities which have been permitted to proceed under such approval; and (2) (A) any such claim, etc., (i) challenges compliance of the City approval with requirements of the California Environmental Quality Act, (ii) contends that the approval authorizes a use or uses of land not listed in Table 3-3 of the General Plan Amendment (attached as Exhibit "C"), or (iii) fails to require mitigation of impacts on habitat and agricultural values in accordance with this agreement, or (B) such claim contends that an individual development project within Annexation Area 163 is not in compliance with the requirements set forth in this Agreement, then the measures set forth in remainder of this paragraph shall be followed. The City shall continue to collect the Mitigation Fees and Offsite Mitigation fees for the challenged action/project. However, any such fees collected shall not be placed in the interest-bearing account discussed in Paragraphs 3 and 4 of this Agreement nor forwarded to the Land Trust. Instead, the City shall place any such Mitigation Fees and Offsite Mitigation fees collected pursuant to the terms of this subsection into a separate interest-bearing escrow account ("Escrow Account") administered by the City. Mitigation Fees and Offsite Mitigation funds so collected shall remain in the Escrow Account pending judicial or other resolution of the challenge. If judicial or other resolution of the challenge determines that mitigation measures other than those set forth in this Agreement must be implemented, funds contained in the Escrow Account may, at the discretion of the City, be redirected for use in implementing such new or different mitigation measures. If the City does not redirect the funds as described, or if any such challenge is unsuccessful, funds in the Escrow Account shall be distributed according to the provisions of Paragraphs 2, 3 and 4 of this Agreement. In any event, Ontario shall be reimbursed from the escrow proceeds for its actual and reasonable costs associated with any required annual accounting activities of the Escrow Account or any other required management costs.

e. The releases from litigation contained in this Paragraph shall not apply, and Petitioners shall retain the right to bring suit against Ontario or any of the afore-named entities, for any proposed project in Annexation Area 163 which an arbitrator determines pursuant to paragraph 17 deviates substantially from the purposes of the "Livable Communities Policies" as defined above, or which an arbitrator determines pursuant to paragraph 17 deviates

substantially from the mitigation provisions of this Agreement as set forth in paragraphs 2 through 5 above.

13. a. Petitioner EHL, on behalf of its predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them agrees and covenants that it will not institute or join in any way, including the filing of amicus briefs, any new lawsuit which is based on any claims, demands, liabilities, obligations, causes of action, damages, judgments, payments, attorneys' fees and costs, both known and unknown, which Petitioner EHL may now have or might hereinafter have against Ontario involving: (i) the Final EIR and/or implementation of the General Plan Amendment, zoning changes, specific plans, tract maps, subdivision maps, site plan approvals and any other development-related approvals made by Ontario, consistent with this Agreement, which claims, demands, etc. arose out of, relate to or are the subject of the Action and the Appellate Action or which were or could have been asserted in the Action or Appellate Action and are released or resolved by this Agreement, or are in derogation of this Agreement, and (ii) for a period of 30 years from Ontario's approval of the General Plan Amendment (January 7, 1998), or until the Termination Date of this Agreement, whichever occurs first, specific plans, tract maps, subdivision maps, site plan approvals or any other land use decision by Ontario regarding Annexation Area 163 which authorize a use or uses of land which is listed in Table 3-3 of the General Plan Amendment (attached as Exhibit "C") and which is consistent with this Agreement, unless an arbitrator determines pursuant to paragraph 17 that such land use decision is not consistent with this Agreement. Ontario, on behalf of itself, its respective past and present City Council members, mayors, predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them do hereby fully, finally, and forever release and discharge Petitioner EHL and its respective predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them from any and all of Ontario's claims arising from the facts, actions, omissions or events which arose out of or relate to the Action.

b. Petitioner Sierra Club, Inc., on behalf of its predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them agrees and covenants that it will not institute or join in any way, including the filing of amicus briefs, any new lawsuit which is based on claims, demands, liabilities, obligations, causes of action, damages, judgments, payments, attorneys' fees and costs, both known and unknown, which were or could have been asserted in the Action or Appellate Action and are released or resolved by this Agreement. Ontario, on behalf of itself, its respective past and present City Council members, mayors, predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them do hereby fully, finally, and forever release and discharge Petitioner Sierra Club, Inc., and its respective predecessors, successors, assigns, officers, directors, shareholders, employees, designated agents, designated representatives, attorneys, insurers, and reinsurers and any person claiming by or through any of them from any and all of Ontario's claims which have been or could have been asserted on the basis of the Action or the Appellate Action.

14. The Parties acknowledge that nothing in this Agreement is intended to or shall operate as a limit upon the Ontario's City Council's legislative discretion and right to amend, adopt, supercede and modify those land use, planning, zoning and development standards to be applied within Annexation Area 163. Without limiting the generality of the foregoing, Petitioners acknowledge that, except as otherwise provided in this Agreement, Ontario has the right, without modifying or releasing Petitioners from any of their covenants or obligations hereunder, to amend the General Plan as the Ontario City Council may deem, in its legislative discretion, appropriate, desirable, and/or necessary; provided, however, that Ontario shall comply with all statutorily and judicially required prerequisites to amendment of the General Plan, and, provided further, any amendment of the General Plan and any ordinances, procedures or agreements for implementing the General Plan shall provide for full and timely implementation of paragraphs 2 through 5 of this Agreement concerning mitigation of environmental impacts as specified therein.

15. The Parties represent and warrant that they have not assigned or transferred, or purported to assign or transfer, and shall not hereafter assign or transfer, any obligations, liabilities, demands, claims, costs, expenses, debts, controversies, damages, actions, and causes of action released pursuant to this Agreement. The Parties also agree to indemnify and hold one another harmless against any obligation, liability, demand, claim, cost, expense (including but not limited to attorneys' fees incurred), debt, controversy, damage, action or cause of action based on, arising out of or in connection with any such transfer or assignment or purported transfer or assignment.

16. This Agreement shall in no way affect or limit Ontario's right and ability to approve real property development or other projects outside of Annexation Area 163 now or in the future.

17. Any dispute or controversy arising out of, under, or in connection with this Agreement and any amendments thereto, or the breach thereof, shall be submitted to binding arbitration in accordance with the following procedures: A Party desiring arbitration shall give written notice to the other Party of the controversy to be submitted to arbitration. The Parties shall agree to an arbitrator within 15 days thereafter or shall cause an arbitrator to be appointed pursuant to the California Arbitration Act, sections 1280 through 1294.2 of the Code of Civil Procedure. The matter shall be submitted to the arbitrator chosen by the Parties within 60 days, and the arbitrator shall decide the matter within 15 days of the conclusion of the arbitration. The Parties to the arbitration shall each pay an equal share of the arbitrator's fees. The Parties agree to bear their own costs of arbitration, including attorneys' fees. Any statute of limitations applicable to any cause of action submitted to the arbitrator shall be tolled from the date the demand for arbitration is made until the date the arbitrator reaches a final decision.

18. With regard to the matters being released herein, Petitioners waive the provisions of Section 1542 of the California Civil Code, and any other similar statute, rule or case law. Section 1542 provides as follows:

> A general release does not extend to claims which the creditor does not know or expect to exist in his favor at the time of executing a

release, which if known by him must have materially affected the settlement with the debtor.

19. Within ten (10) business days of receipt of a final version of the Agreement, Petitioners shall fully execute the Agreement and direct and cause their attorneys of record to fully execute a request for dismissal with prejudice of the Appellate Action in its entirety, and return these fully executed documents to Ontario. Within two (2) business days of receipt of the fully executed Agreement and request for dismissal, Ontario shall fully execute the Agreement and file the request for dismissal.

20. The Parties shall bear their own respective costs and attorneys' fees in the Action and Appellate Action, including the cost bill currently pending before the San Bernardino County Superior Court, Case No. RCV 32616.

21. Nothing in the Agreement shall be construed as an admission of any type by any Party.

22. This Agreement shall be binding upon and for the benefit of the Parties and their respective successors, devisees, affiliates, representatives, assigns, officers, directors, agents and employees wherever the context requires or admits.

23. Each of the Parties affirmatively represents that it has been represented throughout by attorneys at law of its own choosing. Each Party has read the Agreement and has had the terms used herein and the consequences thereof explained by its attorneys of choice. The Agreement is freely and voluntarily executed and given by each Party after having been apprized of all relevant information and data furnished by its attorneys of choice. Each party in executing the Agreement does not rely upon any inducements, promises or representations made by any other Party except as set forth herein.

24. This Agreement constitutes the entire agreement between the Parties for the settlement and release of all Petitioners' claims, demands, liabilities, obligations, causes of action, damages, judgments, payments, attorneys' fees and costs, both known and unknown, which Petitioners may now have or might hereinafter have against Ontario involving the Final EIR and/or implementation of the General Plan Amendment and zoning changes, or future development projects in Annexation Area 163 consistent with this Agreement which arose out of, relate to or are the subject of the Action and the Appellate Action and Ontario's claims arising from the facts, actions, omissions or events which arose out of or relate to the Action and supersedes all prior or contemporaneous agreements and understandings between them or anyone or more of them. It is expressly understood and agreed that this Agreement may not be altered, amended, modified or otherwise changed in any respect whatsoever except by writing duly executed by authorized representatives of the Parties.

25. This Agreement shall in all respects be interpreted and enforced and governed by and under the laws of the State of California.

26. Except as provided in this paragraph, if any term of this Agreement be rendered unlawful by state or federal judicial or state or federal legislative action, by action of a state or

federal wildlife agency or by action of the United States Army Corps of Engineers or the United States Bureau of Reclamation, that provision shall be severed and the remaining terms shall continue to be valid and fully enforceable. The foregoing severance provision shall not apply to the provisions of paragraphs 2 and 3 which establish the Mitigation Measures and require payment of mitigation fees, nor to the provisions of paragraph 4 which establish the Offsite Mitigation and require payment of impact fees. If the cited provisions of paragraphs 2, 3, or 4 are rendered unlawful, or if implementation of any mitigation provision of those paragraphs is rendered unlawful by state or federal judicial or state or federal legislative action, by action of a state or federal wildlife agency or by action of the United States Army Corps of Engineers or the United States Bureau of Reclamation, the Parties shall attempt jointly to identify substitute provisions for achieving the purposes of this Agreement. If the Parties are unable to agree upon a mutually acceptable reformation of the Agreement, it shall be terminated in its entirety.

27. Each Party has cooperated in the drafting and preparation of this Agreement. The Agreement shall not be construed against any Party on the basis that such Party drafted the Agreement or any provision thereof.

28. Each of the undersigned signing on the behalf of a party warrants that he or she is authorized to sign for and by such party.

29. The Parties may execute duplicate originals of this Agreement or any documents they are required to sign or furnish pursuant to this Agreement.

DATED: November 26, 2001

CITY OF ONTARIO

By: _____
Greg Devereaux
City Manager

DATED: November __, 2001

ENDANGERED HABITATS LEAGUE, INC.

By: _____
Dan Silver
Coordinator

federal wildlife agency or by action of the United States Army Corps of Engineers or the United States Bureau of Reclamation, that provision shall be severed and the remaining terms shall continue to be valid and fully enforceable. The foregoing severance provision shall not apply to the provisions of paragraphs 2 and 3 which establish the Mitigation Measures and require payment of mitigation fees, nor to the provisions of paragraph 4 which establish the Offsite Mitigation and require payment of impact fees. If the cited provisions of paragraphs 2, 3, or 4 are rendered unlawful, or if implementation of any mitigation provision of those paragraphs is rendered unlawful by state or federal judicial or state or federal legislative action, by action of a state or federal wildlife agency or by action of the United States Army Corps of Engineers or the United States Bureau of Reclamation, the Parties shall attempt jointly to identify substitute provisions for achieving the purposes of this Agreement. If the Parties are unable to agree upon a mutually acceptable reformation of the Agreement, it shall be terminated in its entirety.

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29. The Parties may execute duplicate originals of this Agreement or any documents they are required to sign or furnish pursuant to this Agreement.

DATED: November __, 2001

CITY OF ONTARIO

By: _____
Greg Devereaux
City Manager

DATED: November 28, 2001

ENDANGERED HABITATS LEAGUE, INC.

By: _____
Dan Silver
Coordinator

DATED: November 28, 2001

SIERRA CLUB, INC.

By: _____
Ralph Salisbury
Chair
San Gorgonio Chapter
Sierra Club

APPROVED AS TO FORM:

DATED: November ____, 2001

CITY OF ONTARIO

_____
John E. Brown
of Best Best & Krieger LLP
City Attorney
City of Ontario

DATED: November ___, 2001

SIERRA CLUB, INC.

By: _____
Ralph Salisbury
Chair
San Gorgonio Chapter
Sierra Club

APPROVED AS TO FORM:

DATED: November 28 2001

CITY OF ONTARIO

John E. Brown
of Best Best & Krieger LLP
City Attorney
City of Ontario

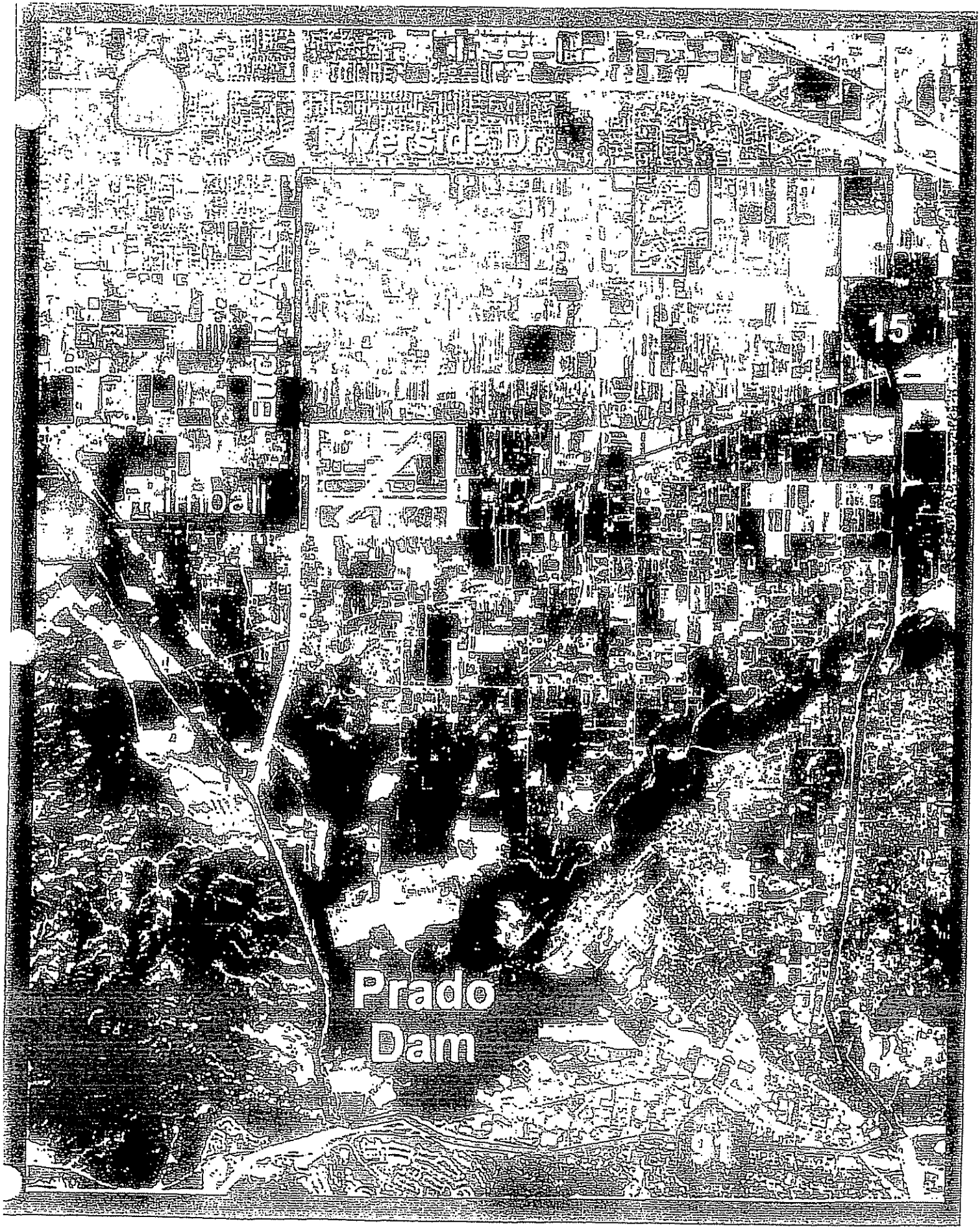

Exhibit "A"

= HABITAT AREA

CITY OF ONTARIO

303 EAST "B" STREET, CIVIC CENTER ONTARIO CALIFORNIA 91764-4196

(909) 986-1151
FAX (909) 391-2567

February 24, 2000

Mr. Dan Silver
Endangered Habitat League
8424-A Santa Monica Boulevard #592
Los Angeles, CA 90069

Subject: Biological Mitigation – SOI General Plan Amendment EIR

Dear Mr. Silver:

This is to clarify the City's commitment to acquire land as mitigation for biological resources in the New Model Colony area (formerly Sphere of Influence). Following outlines our understanding of mitigation measures adopted by the EIR for the Sphere of Influence General Plan Amendment:

1. Intent to acquire a minimum of 160 acres of land in the El Prado Basin for wetlands and foraging habitat for waterfowl to offset the discontinued use of dairy manure water retention basins (Policy 18.1, SOI General Plan, p. 6-23; EIR p. 5.8-16).

2. Intent to acquire land to establish an on-site "Wildlife Habitat" or WRCA in the areas adjacent to the Chino Basin Flood Control Ponds located to the south of Chino Avenue, west of Archibald Avenue, north of Schaefer and east of Whispering Lakes Lane consisting of approximately 145 acres adjacent to the 85 acres of existing county-owned detention basins (Policy 18.1.1 SOI General Plan p. 6-23; EIR p. 5.8-16).

Implementation of the above measures is in addition to conditions outlined in the draft settlement currently in negotiation between the City and the Sierra Club/Endangered Habitat League. Lands to be acquired will be managed by a conservancy similar to language discussed in settlement.

Exhibit "B"

Should you have any questions concerning this matter, please contact me or Jim Ragsdale at (909) 391-2506.

Sincerely,

ONTARIO PLANNING DEPARTMENT

Jerry L. Blum
Planning Director

C: Michelle Ouellette
Otto Kroutil
James Ragsdale

TABLE 3-3

Land Use Buildout Analysis Summary

	Acres	Population/Units/ Square Feet	Percent
POPULATION		101,845	
	Acres	*Units*	*Percent*
RESIDENTIAL			
Single Family	4,434	20,396	65%
Multi-family (includes mixed use housing in Town Center)	5,196	10,792	35%
Total	9,630	31,188	100%
COMMERCIAL			
Neighborhood	120	1,045,440	
Community	40	392,040	
Retail			
Town Center Mixed Use (housing units listed above)	15	326,700	
Town Center Retail	35	304,920	
In Business Parks	30	261,360	
Office (Town Center only)	29	442,134	
Regional (Retail, Medical, Research)	195	2,123,550	
Hotel/Conference	40	609,840	
Total	504	5,505,964	100%
INDUSTRIAL			
Light Manufacturing	66	1,006,236	
Business Park			
Research, offices, etc.	272	4,146,912	
Total	338	5,153,148	100%
SPECIALTY			
Educational Campus	80		
Medical	-		
Research Facilities	-		
Sports Complex	20		
PUBLIC			
SCE Sub Station (does not include transmission corridors)	160		
Drainage/Detention	185		
Community Facility	11		
Park	163		
Schools	420		
AMENITY			
"Village Green"	355		
Lake	50		
Habitat	-		
Golf Course	150		
SOCALF	200		
Trails/SCE Transmission Corridors	291		
Trails/Passive Open Space	79		

Notes:

Approved by the Agricultural Preserve Advisory Committee on January 27, 1997.

Date

Name of group challenging project
Address
City

Re: Proposed _____Project *[or Specific Plan]* in Ontario

Dear _____:

We write concerning the *[_____ project or specific plan]* which is being proposed in the *[area of]* the City of Ontario. We understand that the [*group name*] may oppose this project on grounds that it would create environmental impacts [*optional: designate some specific impacts at issue*] that would not be adequately mitigated. We want to make you aware of the Endangered Habitat League's historic interest and involvement in development issues affecting this area and the reasons which have led us not to oppose this *[project or specific plan]*.

In 1998 the Endangered Habitats League filed a lawsuit which challenged the City of Ontario's approval of a general plan amendment and related environmental impact report for annexation and urbanization of 8,200 acres of primarily farm land south of the City. The area included the site of the proposed *[project or specific plan]*. Issues raised by the litigation included impacts on wildlife, open space, and farmlands and mitigation of those impacts. The San Bernardino County Superior Court upheld the City's approvals, and the plaintiffs appealed.

Before the appeal was decided, the City and Endangered Habitats League jointly worked out a program for substantially augmenting existing City provisions for mitigation of impacts on wildlife and open space values as well as farm lands. The centerpiece of the plan was institution of a land trust program for acquiring, enhancing and protecting, and maintaining in perpetuity lands in the area which provide the wildlife or farming values that existed in the annexation area. The program is funded by mitigation fees imposed by the City as a condition of development approval in the annexation area. Build-out of this 8,200-acre area over the years is expected to generate in excess of $10,000,000. It will be used to secure long-term protection of habitat and farm lands that would otherwise be developed or to enhance habitat values of existing protected open space.

This mitigation plan was incorporated into an agreement to settle the litigation. The settlement agreement binds the City to require payment of the development

mitigation fees and carry out the mitigation program throughout the time the 8,200 acres is under development. The agreement also reflects the belief of the Endangered Habitats League then and now that the development anticipated by the amended general plan, when carried out in combination with the mitigation fee program and other provisions of the settlement agreement, provides mitigation which is both appropriate and sufficient in the context of this urban edge area.

For these reasons, we urge you to make the same determination that the Endangered Habitats League has made in support of the terms of the settlement agreement, and therefore not oppose the *[_____project or specific plan].*

Sincerely,

[name of Endangered Habitats League official]

Chapter 15

New Model Colony
Species, Habitat Conservation and Open Space Mitigation

This chapter is intended to establish the legal and policy basis for the establishment and imposition of impact fees on new development in the City of Ontario's New Model Colony ("NMC"). The purpose of the fees is to finance the purchase of land and conservation easements to mitigate the loss of open space, to protect endangered and threatened species and their habitat, to promote open space conservation and its inherent benefits, and to mitigate some of the more generalized adverse impacts to the environment associated with development of the NMC.

EXISTING ENVIRONMENTAL AND BIOLOGICAL SETTING

Environmental Setting. The NMC is currently used primarily for agricultural, dairy farm and related uses. Of the roughly 8,200 acres in the NMC, approximately 5,259 acres are considered developable acres.[1] While some land in the NMC is presently devoted to residential development, it generally exists to provide living areas for dairy owners and their employees. The agricultural, dairy and related uses in the NMC have provided valuable habitat areas for a variety of wildlife and plant species, some of which are endangered or threatened. At the same time, the open space areas necessarily left vacant by agricultural and related activities provide other benefits to the region in general and to the citizens of the City of Ontario in particular. These benefits include, but are not limited to: (1) groundwater recharge opportunities; (2) species migration corridors; (3) unobstructed view corridors and aesthetics; (4) passive recreational opportunities; and (5) open space preservation.

The decreased viability of dairy and agricultural industries in this area, coupled with the demand for housing in the region, has placed tremendous development pressures on land in the NMC. As a result, the City has planned for the orderly transition of the NMC from an area primarily devoted to agricultural and dairy operations to one that is residential, recreational and open space in nature. To this end, in 1998 the City secured the annexation of the NMC into its corporate limits. In the same year, the City approved a General Plan Amendment (the "GPA") and certified a related environmental impact report (the "EIR") to guide future development in the NMC in a fiscally responsible and environmentally sensitive manner to prevent urban sprawl and the hopscotch method of development that can occur when an area transitions to urban uses without proper planning and development controls.

Biological Setting. The existing agricultural and dairy operations in the NMC support a variety of wildlife. As set forth in the GPA and EIR, the area supports a diversity of wildlife, especially that of birds. The topography of the area and the existing passive open space uses provide for the

accumulation of standing water used by migratory and resident birdlife, including varieties of cormorants, herons, egrets, ibises, kites, harriers, hawks, merlins, plovers, curlews, gulls, burrowing owls, shrikes, and blackbirds, all of which have been observed in field observations of the area. Many of these species are either a species of special concern, a fully protected species or a special animal, under federal or state law. Dozens of other species of birds protected under the Migratory Bird Treaty Act are also present in the NMC. The state-endangered western yellow-billed cuckoo and federally listed California gnatcatcher may also be present, or have historically inhabited the area. Moreover, as set forth in Appendix "C" of the EIR, which is incorporated herein by reference, the State of California requires dairy operations to construct and operate retention basins to receive runoff from dairy facilities. Livestock watering and freshwater irrigation ponds are also found throughout the area.

The current agricultural operations in the area provide a compatible land use for sensitive species since fields under cultivation and fallow areas collect surface runoff and flood waters. In addition, drainage patterns also influence the number and size of such ponds. In fact, there are numerous flood control channels, detention basins and creeks in the area. Wildlife, and particularly birds, rely upon these wetlands-watery areas as habitat and foraging areas. Wildlife also inhabit the windrows, or tall vegetation, areas located in the NMC. Of particular importance are the numerous species of raptors found in these trees, including red-tailed hawks and American kestrels.

Wildlife also inhabit agricultural open fields. These fields are important to bird species. Fields act as an intermediate area between windrows and wet areas. Birds forage for rodents and other prey living in the fields. Indeed, fields are the most suitable habitat for mice and ground squirrels. The ferruginous hawk, a sensitive species, often roosts on the ground in these portions of the NMC. Other birds perch on trees. Dairy operations and buildings also attract and provide nesting areas and other habitat for bird species and wildlife in the NMC. Sparrows, rock doves, finches, egrets and blackbirds are more tolerant of human activity associated with such sites.

According to the United States Fish and Wildlife Service, portions of the NMC could support one of the few remaining populations of the Delhi Sands Flower-Loving Fly ("DSF"), a federally listed endangered species in the Ontario Recovery Unit. The Ontario Recovery Unit is one of only three areas identified in the Federal Endangered Species Act ("FESA") recovery plan for the DSF. That plan states that preservation of occupied habitat and restoration of unoccupied habitat for the DSF in the Ontario Recovery Unit is to be accomplished through fee acquisition, conservation easements, voluntary management plans and habitat conservation plans.[2] Correspondence from the Service to the City of Ontario, other affected local municipalities and the County of San Bernardino states that a core 150-acre area of DSF habitat should be maintained within the Ontario Recovery Unit.[3]

Moreover, at least seven mammal species listed as species of special concern or candidate species also occupy the NMC. These include numerous species of rare bats. There are also San Diego black-tailed hares, pocket mice and kangaroo rats, desert woodrats, racoons, foxes and bobcats. Numerous amphibian and reptile species are also present.

Residential, commercial and industrial development in the NMC will directly, indirectly and cumulatively eliminate the habitat relied upon by the above species. Standing water used by a large percentage of the species, and particularly birds, will be largely eliminated due to the construction of infrastructure projects and the paving over of large areas in the NMC. Development will also eliminate potential habitat for the DSF and for small mammals, which are used as a food sources by raptors and other imperiled species in the area. Traffic, noise, pollution and other effects associated with development and its related infrastructure will also drive away species by eliminating perching areas, nesting sites and other components of habitat. Thus, the existing environmental and biological setting of the NMC provides significant benefits to present and future residents of the NMC and the surrounding area.

DEVELOPMENT FEE APPROACH

The City has exhaustively considered all potentially feasible mitigation that could be provided to offset impacts to species and open space in the NMC. As set forth in more detail below, the EIR provides scientific justification supporting the imposition of development impact fees. Numerous biological and other studies were also undertaken as part of the EIR process. Through that process, consideration has been given to the needs of raptors, waterfowl, DSF and other species. Open space and other attributes of the existing land uses in the NMC have also been studied. The 1998 GPA sets forth detailed objectives, goals and policies related to habitat mitigation and open space preservation.

Extensive discussions with environmental groups and other stakeholders have occurred since the adoption of the GPA and EIR in 1998 and input has been received and utilized from the stakeholders. These discussions have focused on ensuring that concrete steps to protect species, habitat and open space are taken, while allowing for flexibility in the process to allow funding to be used where it can provide maximum benefit. Together, the City and the stakeholders have determined that raising funds sufficient to offset impacts to species and ensuring that these funds be put to the best and highest use are a priority. The City and the stakeholders have also determined that a third party with special expertise in species/habitat acquisition and management issues would be the most suitable entity to spearhead the conservation effort.

Putting funds to the best and highest use requires that flexibility be built into the habitat/open space land acquisition program to the extent feasible so that opportunities to benefit species and habitat can be maximized. To achieve these goals, the stakeholders have determined that focus should be placed on the goals, policies and objectives set forth in the General Plan for the NMC, rather than on rigid amounts of mitigation land, and that a land trust with expertise in habitat lands should be charged with determining the appropriate lands to be purchased, provided the City retains an oversight role to ensure that all legal mandates are satisfied. These goals and objectives should, among other things, allow for the acquisition of mitigation property in the Chino/El Prado

Basin area to offset impacts in the NMC because lands in the greater Chino Basin have been shown to be used by species now resident in the NMC. Moreover, Chino Basin lands are of higher biological value and can be purchased in larger blocks than can be purchased in the NMC. At the same time, the implementation standards, goals and objectives of any new general plan amendment should be concrete enough to ensure species, habitat and open space are sufficiently protected.

For the foregoing reasons, and after specific and exhaustive input from stakeholders, it has been determined that the goals and objectives of the 1998 GPA should be retained, provided that a new general plan amendment is adopted to: (1) specifically allow for the acquisition of all NMC habitat/open space mitigation property "offsite" so that larger, more biologically beneficial blocks of habitat can be purchased; (2) allow for the hiring or establishment of a land trust to spearhead the habitat/open space acquisition process; (3) give the land trust maximum flexibility to determine the type and amounts of land that should be purchased; (4) provide that development impact fees be collected in amounts sufficient to offset the biological impacts to species now existing in the NMC and loss of open space; (5) ensure, given the conclusions in the EIR and the underlying biological studies that raptors, waterfowl and other bird species will bear a substantial burden and be unduly displaced by development of the NMC, that the bulk of collected mitigation fees be used to offset impacts to such species; (6) provide that up to $500 per acre of mitigation fees may be used by the City to benefit DSF; and (7) provide that $22.7 million is the appropriate and justifiable amount that will be raised through development impact fees to offset these impacts.

Justification for the amount and need for development impact fees to be established and imposed in the NMC by the City of Ontario can be divided into three categories. These include (1) compliance with the adopted policies and mitigation measures of the general plan amendments and their associated CEQA documents for the protection of species and their habitat; (2) mitigation for the loss of open space and its attendant benefits; and (3) mitigation for the direct, indirect and cumulative impacts on species from development and development-related infrastructure.

1. Compliance with the General Plan, Its Amendments and CEQA

To offset negative impacts to species, their habitat and open space, the general plan amendments and CEQA documents require that suitable replacement habitat and natural open space lands be acquired in areas in and around the Chino Basin. Birds and other species which currently inhabit the NMC, whether seasonally or full time, range throughout the Chino Basin and into surrounding areas. Lands to the south and southwest of the NMC retain substantial standing water and thus serve as potential, viable habitat for many of these, particularly birds. The City of Chino, the Riverside County Flood Control District, the United States Army Corps of Engineers and other local, state and federal agencies have acquired, or intend to acquire or set aside, lands in the area for the benefit of species. Thus, the collection of development impact fees to fund the purchase of land and conservation easements provides the most direct and beneficial method of mitigating

the impacts to open space resources and habitat land. Moreover, the purchase of properties in areas outside the boundaries of the NMC, but within the Chino Basin, not only promotes the goals of the general plan amendments and related CEQA documents, but also provides a unique and biologically acceptable method for retaining open space for the benefit of species in a cost-effective manner. A graphic description of the areas where these mitigation lands are to be purchased is shown on the attached Exhibit C. These mitigation lands are also required to be restored and maintained for the benefit of species. Two types of mitigation lands are proposed. Each is discussed in more detail below:

A. *Waterfowl and Raptor Conservation*

The current obligations set forth in the GPA and the EIR require that a "Waterfowl and Raptor Conservation Area" ("WRCA") be established within the NMC.[4] The GPA and EIR also mandate that further acreage be acquired within the greater Chino Basin/El Prado Basin area to, among other things, offset the discontinued use of the state-mandated dairy manure water retention basins used by waterfowl and other imperiled species within the NMC.[5] As set forth above, one of the primary purposes of the habitat and open space mitigation fee discussed in this chapter is to fund the acquisition of such mitigation lands, as required by the general plan amendments and the related CEQA documents. The documents also require that restoration and enhancement activities be undertaken, where appropriate, to ensure the permanent viability of acquired mitigation lands for species and habitat.

In light of the substantial cost for developable land within the NMC, which can be conservatively estimated at $130,680 per acre ($3.00 per square foot)[6], acquisition of the WRCA onsite could be cost prohibitive. In fact, it has been determined through consultations with environmental consultants that opportunities to purchase acreage of higher biological value exist in the region, in contiguous blocks near other already reserved areas, and at a more affordable cost. Thus, it is recommended that the WRCA be relocated to an area outside of the NMC, but within the greater Chino/El Prado Basin area. The movement of the habitat mitigation lands offsite would be achieved through a revised general plan amendment, supplemented by additional CEQA documentation.

B. *Delhi Sands Flower Loving Fly Mitigation*

In addition to the habitat and open space mitigation lands to be acquired pursuant to the GPA and the EIR for the benefit of waterfowl, raptors and other vertebrate species presently occupying the area, development of the NMC will also have negative impacts on the federally-endangered Delhi Sands Flower-Loving Fly ("DSF") and on the environment more generally. The GPA requires that the City cooperate with the United States Fish and Wildlife Service ("Service") to mitigate impacts to the DSF, establish

standards for buffers for protecting DSF restoration areas, and work to create DSF habitat, where possible.[7] The Service has prepared a recovery plan for the DSF. The "Ontario Recovery Unit" for the DSF identified in the recovery plan encompasses a large area of the NMC.[8] Direct impacts associated with infrastructure improvements in the NMC that are within or adjacent to DSF habitat – improvements which benefit all future inhabitants of the NMC, as well as cumulative impacts associated with such development, will lead to negative impacts to the DSF and its habitat which will be mitigated for. The habitat and open space development impact fees addressed in this chapter will be used, in part, to meet some of these mitigation requirements and provide DSF corridor areas, as appropriate.

2. Loss of Open Space and Other Benefits

Another goal of this chapter and the proposed fees is to assure that future development proceeds in a manner that is environmentally responsible, balanced, and encourages the maintenance of natural flood protective measures, groundwater recharge efforts and other local benefits from maintaining large areas in an undisturbed state. These benefits include the maintenance of species migration corridors, maintaining natural drainage and flow courses, maintaining unobstructed view corridors and providing passive recreational opportunities for residents and visitors. Such goals provide an independent basis upon which to fund the programs identified in this chapter.

3. Direct, Indirect and Cumulative Impacts on Species and Their Habitat from Development and Development-Related Infrastructure

Development of the NMC also eliminates passive open space and viewsheds, and severely affects species, habitat and the environment in a more generalized way. For example, air and water quality, stormwater runoff and other effects associated with development of infrastructure and other development in the NMC will, directly, indirectly and cumulatively, adversely impact species. A list of the proposed infrastructure improvements and other capital improvement projects that will be constructed as part of the development of the NMC is contained within the Capital Facilities Plan to be adopted by the City Council.

Mitigation Fee Act (California Government Code, Section 66000 et seq.)

A set forth in Chapter 1, development impact fees are imposed on development as a means to mitigate the impacts and infrastructure demands created by development activity. In accordance with the requirements of California Government Code, Section 66000 et seq., this section intends to:

1. Identify the purpose of the habitat and open space development impact fees at issue;

2. Identify the uses to which these development impact fees will be used;

3. Determine how there is a reasonable relationship between these development impact fees and the types of development projects upon which the development impact fees are imposed; and

4. Determine how there is a reasonable relationship between the need for the public facilities, in this case habitat land and open space, and the type of development projects upon which these development impact fees are imposed.

In addition, this section will, in accordance with Government Code, Section 66001(b), generally discuss how there is a reasonable relationship between the amount of the proposed fees and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed. The following analysis provides the justification required by the Mitigation Fee Act:

1. The Purpose of the Fee

The primary purpose of the fee is to acquire and restore mitigation lands to offset impacts to species now living in the NMC and impacts to existing open space. The mitigation fee will be used to advance the goals, objectives and policies set forth in the GPA for the NMC adopted in 1998 and any subsequent general plan amendment. Specifically, Goal 18A of the GPA calls for the protection and preservation of waterfowl and raptor habitat.[9] Objective 18.1 provides for the protection of existing waterfowl and raptor habitat and, where habitat cannot be accommodated, ensures that habitat is compensated for through in-kind replacement on an offsite basis. The current EIR obligation requires the establishment of an onsite Waterfowl and Raptor Conservation Area The WRCA is to be managed with sensitivity toward species. Revegetation, restoration, establishment of roosting areas for raptors, and a sophisticated monitoring plan are to be prepared. According to the general plan amendments, the City shall be reimbursed for mitigation land purchase and habitat creation costs with development impact fees to be paid by each developer within the NMC.[10] Accordingly, one of the components of the habitat and open space mitigation fee, and indeed the largest one, is to be used to purchase the lands required by the EIR. As set forth above, it is recommended that the habitat mitigation lands be moved offsite to benefit species and to allow for the acquisition of larger areas of contiguous, biologically suitable property.

The habitat mitigation and open space fee is also to provide funding to offset direct, indirect and cumulative impacts to DSF in the NMC. Goal 18B of the GPA and its related objective call for the recovery and restoration of habitat for the DSF, a federally listed endangered species. The policies to implement this goal and objective provide for the City to cooperate with the Service to ensure that potential DSF recovery areas to be impacted by development are appropriately mitigated.[11] As set forth in the Final Recovery Plan for the DSF prepared by the Service dated September 1997, the "Ontario Recovery Unit" for the DSF includes a large portion of the NMC.[12]

Thus, a separate component of the habitat and open space development impact fee is to be utilized to acquire and restore lands to partially offset direct and cumulative impacts to DSF. However, it should be noted that the fee is not intended to cover any DSF mitigation required by the Service or under CEQA on a project-by-project basis.

The GPA also calls on the City to provide open space for the benefit of future residents and to retain view corridors.[13] The California Government Code, § 65560 defines "open space land" as open space for the preservation of natural resources or for the managed protection of such resources. This can be achieved through the acquisition of habitat areas and passive open space. Collection of development impact fees to acquire and restore habitat for species and open space also complies with the mitigation monitoring program and the other requirements set forth in the GPA and EIR.

In sum, habitat mitigation and open space fees will be used to protect open space, sensitive habitat areas, wetlands, aesthetics and historic viewsheds; and to provide habitat area for endangered and sensitive species and other wildlife. Collection of fees will allow the City to satisfy its CEQA obligations and to purchase larger parcels of property which are more biologically suitable for species that might not be able to be obtained if habitat impacts to raptors and waterfowl were mitigated for on a project-by-project basis. Portions of the fee will also be used to benefit DSF and to offset generalized impacts to species and the environment.

2. The Use to which the Fee is to Be Put.

Habitat and open space mitigation fees collected will be used to meet the requirements of the EIR to purchase, and where necessary enhance or restore, open space and habitat conservation areas near the NMC to benefit raptors, mammals, burrowing owls, DSF and other species which currently occupy the area. The Waterfowl and Raptor Conservation Area is to be a wetlands zone with open water configured into numerous individual bodies of various size, depth and configuration to maximize shoreline area.[14] Portions of the ponds are to be vegetated with emergent wetland plant species and small native fishes. Tall trees are to be planted in the upland areas of the habitat mitigation lands. Thus, a portion of collected mitigation fees will be used to fund the restoration/enhancement of habitat mitigation lands.

In order to assure that land purchased with development impact fees is appropriate for species, the City will be hiring or establishing a land trust that is familiar with the biological and other needs of the species inhabiting the NMC. With oversight by and subject to conditions imposed by the City, the land trust will purchase mitigation land to maintain natural conditions and assure the continued viability and use of acquired lands for habitat conservation and open space purposes.

Acquired lands will also benefit the public by providing natural open space which will be lost as a result of development of the NMC. Thus, the fees will defray the cost of specific community amenities, including protecting water re-charge basins, protecting historic viewsheds, and providing passive recreational opportunities for present and future residents of the NMC.

In addition to purchasing habitat and open space areas in fee, conservation easements, rights of way, management agreements and other legal entitlements or mechanisms which will ensure the long-term sustenance of habitat and open space may also be acquired. The lands to be purchased will be located in or adjacent to the greater Chino Basin area. This expanded area is necessary due to the foraging and habitat migration patterns of species. Indeed, lands to be acquired in the greater Chino Basin area have a biologically functional relationship to wildlife now present in the NMC. Examples of acceptable property will be those adjacent to known habitat along flood control channels (e.g., Cucamonga Creek), occupied or suitable lands within the Chino Basin, occupied or suitable uplands contributing to the functional value of wetlands and riparian habitat along the Santa Ana River or its tributaries, and habitat which is also beneficial to the DSF. Acquiring mitigation lands in these areas will also be more cost effective than purchasing lands in the more expensive NMC. Acquiring flood inundation areas and other lands which are already protected is to be avoided because the GPA and the EIR require that additional lands be acquired for species.

3. The relationship between the fee's use and the type of development project upon which the fee is imposed. **(Benefit Relationship).**

As the NMC is developed, all types of development (i.e., residential, industrial and commercial) will use up more and more available open space/habitat areas. No single type of development will have a greater impact than another because it is the depletion of land in its natural state that severely impacts retention of species and open space amenities in the NMC. Indeed, such development activity and related public infrastructure improvements necessarily deplete, both directly and cumulatively, open space and habitat area that would otherwise remain available to support the goals of the general plan and specific plan policies (i.e., protection of sensitive species, viewsheds, flood protection, aesthetics, wetlands, development of property with sensitivity toward the environment). Of particular importance are the cumulative impacts associated with the development, all of which are to be taken into account when determining the benefit relationship.[15]

As set forth above, mitigation fees will be expended to purchase and restore the open space and habitat lands for which they are collected. The fees will be used to acquire the mitigation lands required by the CEQA documents, to purchase mitigation lands for DSF, and to offset impacts to wetlands and other environmentally sensitive areas. Numerous biological studies document the species and habitat now existing in the NMC. Some of these studies are addressed in the Biological Resources section of the EIR[16] and were previously referenced in this Chapter under

Biological Setting of NMC. Purchasing these properties not only benefits threatened and other species which utilize NMC lands, it also provides for the retention of open space and historic viewsheds to the south of the City to promote environmentally-sensitive flood protection and water re-charge measures. For the foregoing reasons, there is a reasonable relationship between the purchase of open space/habitat and all developments in the NMC. Moreover, this impact is equalized among all types of development because it is the conversion of land from its natural state that creates the impact upon species and open space opportunities.

4. The relationship between the need for the public facility (open space) and the type of development project upon which the fee is imposed. **(Impact Relationship).**

As set forth above, it would be infeasible and impractical for each development in the NMC to provide sufficient open space and quality habitat areas to meet the mitigation goals for waterfowl, raptors and other species set forth in the general plan amendments and the related CEQA documents (i.e., to ensure long-term viability of sensitive species). Each development in the NMC equally impacts (on an acre-by-acre basis) the supply of available land for open space and habitat areas. Thus, the imposition of fees is the most practical way of permitting development to proceed in an environmentally responsible manner. The EIR requires the acquisition of lands as the first of several pieces of mitigation to offset impacts to species, habitat and open space. Without such mitigation fees, development would proceed more haphazardly and potentially create even greater impacts upon species in this area. Thus, there is direct relationship between the need for open space and habitat areas and the different development types upon which fees will be imposed.

In addition, the City's general plan, EIR and related biological studies indicate that species currently range across all portions of the NMC. All development, whether residential, commercial, industrial or otherwise, will lead to the urbanization of the area and the elimination of precious natural open space and habitat area. Moreover, all new development leads to the need for, or the size of, the construction of additional roadways and other public improvements which, in turn, have negative effects on species and the environment.

For the same reasons, increased intensity or density of development on already developed properties will also negatively impact species. The identified species in the NMC are quite resilient. In fact, many of them can adapt for shorter periods of time in areas that are not optimal for their survival. As a result, some species will tend to survive on property that is already partially developed. Moreover, such partially developed properties in the NMC provide, albeit restricted and limited, opportunities for groundwater recharge and viewshed amenities. Thus, even development of these properties to greater intensities and uses and/or development to occupy more area (leaving less area in a natural state) also negatively impacts open space and species conservation in the NMC.

5. The relationship between the amount of the fee and the cost of the public facility (open space/habitat) attributable to the development upon which the fee is imposed. ("Rough Proportionality" Relationship).

As set forth above, each development in the NMC equally impacts the supply of available land for open space and habitat areas. Moreover, each individual development project and its related necessary infrastructure improvements, when examined along with the cumulative impacts of all development in the NMC, will have an adverse affect on the availability of open space and species, as well as any remaining open space in the vicinity of development in the NMC . Thus, imposition of development impact fees to purchase replacement open space and habitat areas (and to protect them from infrastructure encroachments) is the most efficient, practical and equitable method of permitting development to proceed in an environmentally responsible manner and in a manner that complies with the adopted plans and mitigation measures for the NMC.

CEQA Mitigation.. The general plan amendments and their associated CEQA documents and biological studies require that lands be acquired, restored and/or retained in its natural state to provide substantive beneficial opportunities for species protection and open space conservation. The acquisition, restoration and retention of land also meets the identified goals and purposes of the GPA (i.e. habitat for species, groundwater recharge, aesthetics and viewshed protection). As set forth above, substantial funding will also be needed to enhance, restore and protect some of the properties to be acquired, particularly the WRCA.

Surveys undertaken by City of Ontario staff analyzing the price of acquiring suitable mitigation land outside the NMC, but within the Chino Basin and surrounding areas, show that such lands are currently valued between $75,000 per acre and $100,000 per acre. (By comparison, surveys indicate that property with entitlements in the Chino Basin is more than twice the cost of such suitable mitigation lands.)[17] The cost to purchase conservation easements in the Chino Basin ranges from approximately $30,000 per acre to $60,000 per acre. Of course, the cost of land varies according its desirability and marketability for residential and commercial development purposes. Nevertheless, the survey costs obtained provide a suitable range for purposes of developing the financing mechanisms needed to acquire mitigation lands. As a result, the median of the value ranges for purchasing mitigation property in fee ($85,000) and for purchasing conservation easements ($45,000) have been used. (Transaction and real estate costs have been included in these figures.) Cost to purchase land in the Ontario DSF Recovery Unit ranges between $75,000 and $125,000. For purposes of the analysis, the median price is assumed to be $100,000 per acre. Cost to restore DSF habitat is $2,000 to $5,000 per acre. For purposes of the analysis, the median price is assumed to be $3,500 per acre. It should also be noted that all of these costs have risen rapidly over the last few months of 2001 and the first few months of 2002, and are expected to continue to climb over the coming years .

It is expected that the bulk of the habitat/open space mitigation land acquisition will be in the form

of purchases of lands in fee. Fee ownership ensures that land will permanently devoted to habitat and open space preservation. In the case of the purchase of conservation easements, such conservation goals could become secondary to the underlying owners' proposed uses of the land. For these reasons, it is anticipated that the purchase of land in fee will make up the bulk of the land acquired for the City's open space and habitat conservation efforts.

Restoration and enhancement costs can also be substantial, especially where, as here, wetlands/riparian areas are required. Discussions with environmental professionals concerning restoration and enhancement costs reveal that the cost per acre to create wetlands ranges from approximately $15,000 to $30,000 per acre. For purposes of the analysis set forth below, the median price is assumed to be $20,000 per acre.

As set forth above, the City and the stakeholders believe that providing maximum flexibility in the land acquisition and restoration process will be of the greatest benefit to species. Such flexibility will allow for the acquisition of larger parcels of land, corridors and other areas of high biological and open space value as such lands become available. At the same time, the City and the stakeholders wish to ensure that sufficient funds are raised through the development impact fee process to satisfy the requirements of the general plan amendments and CEQA processes. Keeping in mind these principles, in determining the total amount needed to be collected to meet these needs, the City examined seven separate scenarios. These scenarios are set forth below. Under each scenario, the land trust acquires a combination of lands in fee and conservation easements in the Chino Basin for the benefit of waterfowl and raptors. In some cases, DSF mitigation lands are acquired, where feasible. The restoration/enhancement of some of these lands is also assumed.

Scenario 1:

Purchase Price for Lands in Chino Basin in Fee:	200 acres x $85,000/acre	=	$17,000,000
Purchase Price for Conservation Easements in Chino Basin:	105 acres x $45,000/acre	=	$ 4,725,000
Restoration/Enhancement:	50 acres x $20,000/acre	=	$ 1,000,000
		Total =	$22,725,000

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Scenario 2:

Purchase Price for Lands in Chino Basin in Fee:	175 acres x $85,000/acre	=	$14,875,000
Purchase Price for Conservation Easements in Chino Basin:	100 acres x $45,000/acre	=	$ 4,500,000
Restoration/Enhancement:	40 acres x $20,000/acre	=	$ 800,000
Purchase Price for DSF habitat in Recovery Area:	25 acres x $100,000/acre	=	$ 2,500,000
DSF Land Restoration Costs:	15 acres x $3,500/acre	=	$ 52,500
	Total	=	$22,727,500

Scenario 3:

Purchase Price for Lands in Chino Basin in Fee:	220 acres x $85,000/acre	=	$18,700,000
Purchase Price for Conservation Easements in Chino Basin:	10 acres x $45,000/acre	=	$ 450,000
Restoration/Enhancement:	100 acres x $20,000/acre	=	$ 2,000,000
Purchase Price for DSF habitat in Recovery Area:	15 acres x $100,000/acre	=	$ 1,500,000
DSF Land Restoration Costs:	15 acres x $3,500/acre	=	$ 52,500
	Total	=	$ 22,702,500

Scenario 4:

Purchase Price for Lands in Chino Basin in Fee:	240 acres x $85,000/acre	=	$20,400,000
Purchase Price for Conservation Easements in Chino Basin:	25 acres x $45,000/acre	=	$ 1,125,000
Restoration/Enhancement:	10 acres x $20,000/acre	=	$ 200,000
Purchase Price for DSF habitat in Recovery Area:	10 acres x $100,000/acre	=	$ 1,000,000
DSF Land Restoration Costs:	5 acres x $3,500/acre	=	$ 17,500
	Total	=	$ 22,742,500

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Scenario 5:

Purchase Price for Lands in Chino Basin in Fee:	125 acres x $85,000/acre	=	$10,625,000
Purchase Price for Conservation Easements in Chino Basin:	200 acres x $45,000/acre	=	$ 9,000,000
Restoration/Enhancement:	50 acres x $20,000/acre	=	$ 1,000,000
Purchase Price for DSF habitat in Recovery Area:	20 acres x $100,000/acre	=	$ 2,000,000
DSF Land Restoration Costs:	20 acres x $3,500/acre	=	$ 70,000
	Total	=	$ 22,695,000

Scenario 6:

Purchase Price for Lands in Chino Basin in Fee:	100 acres x $85,000/acre	=	$ 8,500,000
Purchase Price for Conservation Easements in Chino Basin:	250 acres x $45,000/acre	=	$11,250,000
Restoration/Enhancement:	100 acres x $20,000/acre	=	$ 2,000,000
Purchase Price for DSF habitat in Recovery Area:	10 acres x $100,000/acre	=	$ 1,000,000
DSF Land Restoration Costs:	10 acres x $3,500/acre	=	$ 35,000
	Total	=	$ 22,785,000

Scenario 7:

Purchase Price for Lands in Chino Basin in Fee:	150 acres x $85,000/acre	=	$12,750,000
Purchase Price for Conservation Easements in Chino Basin:	125 acres x $45,000/acre	=	$ 5,625,000
Restoration/Enhancement:	90 acres x $20,000/acre	=	$ 1,800,000
Purchase Price for DSF habitat in Recovery Area:	25 acres x $100,000/acre	=	$ 2,500,000
DSF Land Restoration Costs:	15 acres x $3,500/acre	=	$ 52,500
	Total	=	$ 22,727,500

Per Acre Fee. Based upon the above scenarios and calculations, it has been conservatively estimated that the City must raise $22,718,000 to fund the acquisition of the WRCA and the other habitat and open space acreage required by the GPA and EIR. As there are 5,259 developable acres in the NMC, the recommended development impact fee for the acquisition of open space and habitat land is $4,320 per acre (rounded).

Of the $4,320 amount, the City may utilize up to $500 per acre to carry out the provisions of the GPA and EIR related to DSF. As set forth above, the GPA requires the City to cooperate with the Service to mitigate impacts to the DSF, establish standards for buffers for protecting DSF restoration areas, and work to create DSF habitat, where possible.[15] The DSF Recovery Plan calls for the establishment of 150 acres of DSF preserve areas in or adjacent to the NMC. To the extent feasible, there will be an attempt to acquire properties which benefit both DSF and raptors/waterfowl. The City may thus use the $500 per acre retained portion of the $4,321 fee to carry out requirements set by the Service, the general plan amendments, the CEQA documents, and any other regulating agencies. However, it should be noted that CEQA specific plan documents, or the Service or other regulatory agencies, may require mitigation for impacts to DSF on a project by project basis, if applicable. The $500 per acre retained portion of the habitat and open space development impact fee is not intended to cover or be used to purchase mitigation land associated with any such individual development project.

Other Costs. In addition, to the above costs, the City of Ontario could also elect to impose development impact fees to offset the more general adverse impacts to species and the environment associated with development of area. However, in light of the per acre costs associated with the GPA and EIR mitigation, it is recommended that the City absorb these more generalized costs.

Conclusion

The existing agricultural and related land uses in the NMC, as well as the substantial riparian/watery acreage, have provided ample habitat conducive to a variety of imperiled and other species. These species, including the federally-endangered DSF, song birds, waterfowl, raptors (i.e., birds of prey), amphibians, reptiles and mammals, have been able to survive, and even thrive, in the area due to the existing conditions. The predominant agricultural land uses have also provided great expanses of open space and viewsheds beneficial to the entire region.

With the commercial, residential and industrial development anticipated for the NMC, many of the existing species habitat and open space attributes will be compromised or eliminated as construction proceeds. To offset these negative impacts to species, open space, and the environment more generally, the City is proposing to adopt habitat conservation and open space mitigation fees to provide for the acquisition and restoration of lands within or adjacent to the Chino Basin area suitable for habitat and open space. These fees will implement the goals and objectives of the GPA and the EIR, enhance the long-term viability of imperiled species, provide a mechanism to facilitate more efficient and species-sensitive development, provide a mechanism to partially offset impacts associates with City infrastructure improvements, and provide a substantial benefit to the City, its residents and its businesses.

Moreover, the habitat and open space mitigation fees adopted by the City will provide an effective

way to establish a comprehensive program that can benefit multiple species due to the potential for acquiring larger expanses of open space areas and regional connection to other open space areas. In addition, the program raises public awareness of biological resource issues through the passive interface of active park areas with natural open space areas. Implementation of such a program allows appropriate economic and infrastructure projects in the NMC to move forward compatibly with the protection/enhancement of biological resources.

Table 15-1, following, identifies the Mitigation Impact fees on a per net developable acre and per unit. Please note that the per unit figures are merely for presentation purposes only, but they will be imposed on a per acre ($4,320 per acre specifically) basis only.

Table 15-1
Species, Habitat Conservation and Open Space Mitigation
Impact Fee, per Acre (for adoption) and per Unit (for presentation)

Land Use	Mitigation Impact Fee per Acre	Average Units per Acre	Impact Fee per Unit
Single Family Detached Dwellings	$4,320	5	$864.00
Single Family Attached Dwellings	$4,320	9	$480.00
Multiple Family Dwellings	$4,320	15	$288.00
Mobile Home Dwellings	$4,320	13	$332.00
Commercial Lodging Units	$4,320	28.5	$152.00
Commercial Uses (in Square Feet)	$4,320	12,950	$0.334
Office Uses (in Square Feet)	$4,320	16,706	$0.259
Industrial Uses (in Square Feet)	$4,320	23,724	$0.182

RECAP OF RECOMMENDED SPECIES, HABITAT CONSERVATION AND OPEN SPACE LAND MITIGATION IMPACT FEE

- **Old Model Colony** - These fees do not be apply to Old Model Colony.
- **New Model Colony** - Adopt the *Mitigation Impact Fee per Acre* column on Table 15-1 as the Mitigation Fees to be applied to all private development within New Model Colony.

CHAPTER ENDNOTES

1. "Developable Acres" are defined generally as the actual net area to be developed, excluding publicly dedicated property.

2. United States Fish and Wildlife Service Final Recovery Plan for the Delhi Sands Flower-loving Fly, page 18, December 1997.

3. See Letter from Jim Bartel, Assistant Field Supervisor of the Service to Michelle Ouellette, Ontario City Attorney's office, dated August 31, 1999, re: Response to the Delhi Sands Flower-loving Fly: A Collective Response on Locating Suitable Habitats.

4. New Model Colony General Plan Amendment, Envicom Corporation, Agoura Hills, CA, Adopted by resolution on January 7, 1998, page 6-27.

5. Environmental Impact Report, pages 5.8-12 through 5.8-15.

6. Per Chapter 14, parkland acquisition costs.

7. Environmental Impact Report, page 5.8-18: New Model Colony General Plan Amendment, page 6-29.

8. See United States Fish and Wildlife Service Final Recovery Plan for the DSF (December 1997), Figure 6.

9. New Model Colony General Plan Amendment, pages 6-25 through 6-28.

10. New Model Colony General Plan Amendment, page 6-27.

11. New Model Colony General Plan Amendment, page 6-29.

12. United States Fish and Wildlife Service Final Recovery Plan for D.S.F., December 1997, Figure 6.

13. New Model Colony General Plan Amendment, pages 5-13 and 5-20.

14. New Model Colony General Plan Amendment, pages 6-27 through 6-28.

15. Nollan v. California Coastal Commission (1987) 483 U.S. 825.

16. Environmental Impact Report, pages 5.8-1 to 5.8-18, Appendices "C" and "D".

17. See Memorandum Dated February 28, 2002 from S. Murphy, Principal Planner, to O. Kroutil, Development Director regarding "Updated Land Costs for the new Model Colony and Chino Basin."

18. New Model Colony general Plan Amendment, page 5.8-18.

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