



2003 Sensitive Plant Survey Report
Salt Creek



J U N E 2 0 0 4

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2003 Sensitive Plant Survey Results

for

Salt Creek Los Angeles County, California

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1.0 INTRODUCTION

The purpose of this report is to document the results of surveys for sensitive plant species within the approximately 5,818-acre Salt Creek site for the 2003 field season. Surveys placed an emphasis on the identification of populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS) and to document all other sensitive plant species observed while conducting the SFVS surveys.

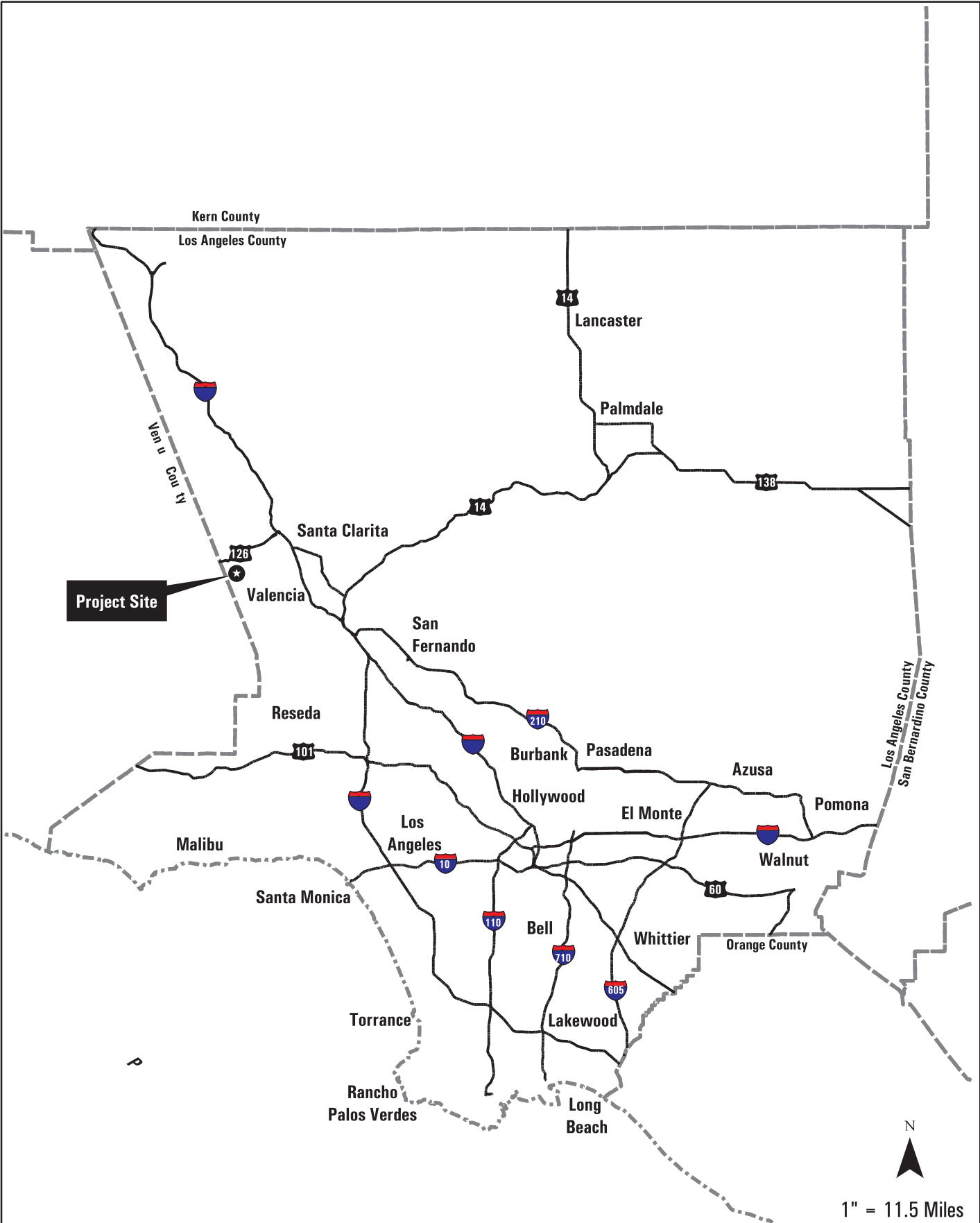
2.0 SITE DESCRIPTION

The Salt Creek study area is located in an unincorporated portion of the Santa Clara River Valley on the north slopes of the Santa Susana Mountains between Potrero and Tapo canyons and straddles the Los Angeles/Ventura County Line (*Figure 1*). It lies roughly six miles west of Interstate 5 and west-southwest of the junction of I-5 and State Route 126 (SR-126). The City of Santa Clarita is located to the east of the study area. Site elevations range from 800 feet above mean sea level (AMSL) in the Santa Clara River bottom in Ventura County to approximately 3,500 feet AMSL on the ridgeline of the Santa Susana Mountains along the southern boundary (*Figure 2*).

Dudek surveyed for sensitive plant species with varying levels of specificity within the 5,818-acre Salt Creek survey area (*Figure 3*), which consists of areas proposed for conservation (most notably the “High Country” area). This site lies between Potrero Canyon on the east, Tapo Canyon on the west, the Santa Clara River on the north (excluding the agriculture fields in the flood plain), and the crest of the Santa Susana Mountains on the south. The Los Angeles/Ventura County Line bisects this site with approximately 1,500 acres in Ventura County and the remaining acres in Los Angeles County. This study area is dominated by rugged terrain with the main feature being a south-to-north drainage area for Salt Creek and its associated tributaries. Slope gradients range from moderate to very steep in most of the site to gentle within the Santa Clara River floodplain and along the lower portions of the creek.

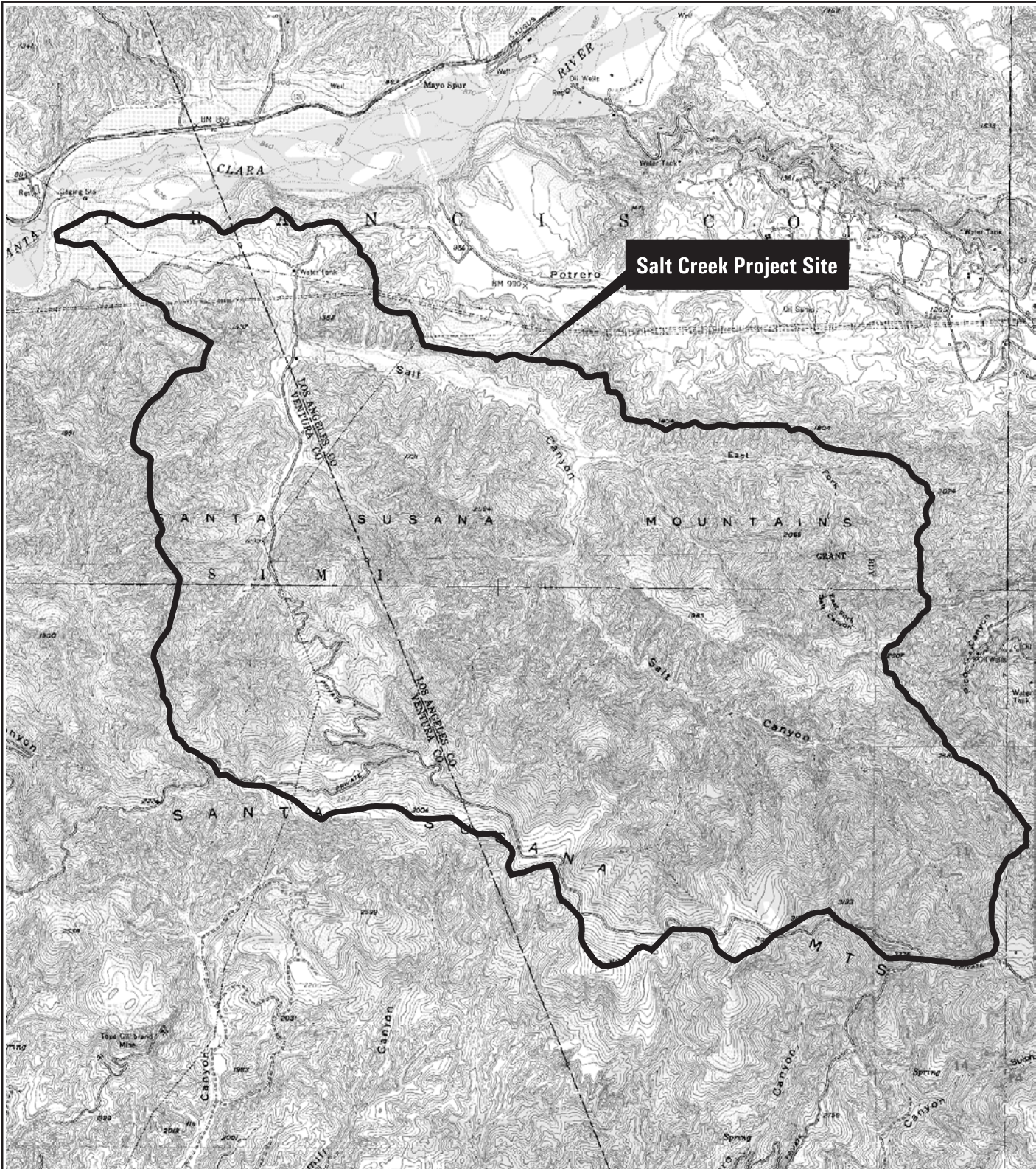
2.1 Plant Communities and Land Covers

Native and naturalized habitats within the study area are representative of those found in this region and provide high-quality examples of those plant communities found in the



Salt Creek
Regional Map

FIGURE
1

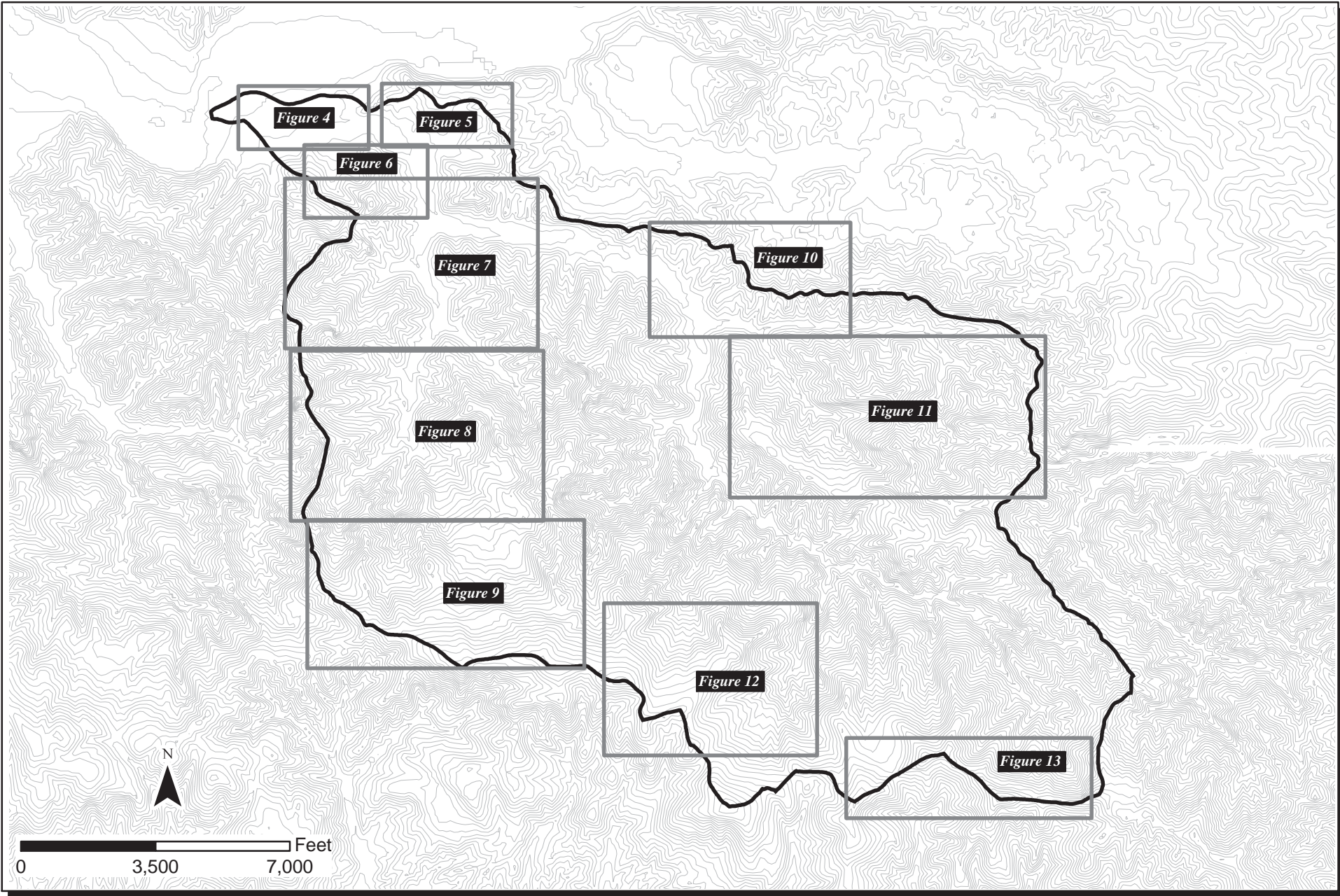


BASE MAP SOURCE: USGS 7.5 Minute Series, VAL VERDE & SIMI VALLEY EAST Quadrangle

1" = 3500'

Salt Creek
Vicinity Map

FIGURE
2



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Santa Susana Mountains and the Santa Clara River ecosystems in this area. Upland habitats dominate the landscape within the study area. The major upland plant communities include California sagebrush, chamise and mixed chaparral, live and valley oak woodlands, walnut forest/woodland, and non-native grassland. The Santa Clara River and portions of Salt Creek support a variety of riparian plant communities. These include southern cottonwood-willow riparian forest, southern willow scrub, mulefat scrub, arrowweed scrub, cismontane alkali marsh, and freshwater marsh and seeps. Intermittent and ephemeral drainages onsite contain alluvial and scalebroom scrubs.

The Newhall Land and Farming Company leases out portions of the study area for oil and natural gas production, as well as for cattle grazing and agricultural operations (e.g., food crop production, dryland farming, honey farming). All such operations are currently ongoing. Grazing activities and oil and natural gas production have had a noticeable effect on much of the natural habitat onsite. Scrub habitats have been displaced by non-native grasslands as a result of grazing. Southern California Edison and Southern California Gas Company have distribution lines within easements onsite as well.

2.2 Geology and Soils

Geologically, the study area is located within the Transverse Ranges geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin was produced by tectonic downwarping in the geologic past to produce a large-scale synclinal structure in which a thick sequence of Cenozoic sediments has accumulated. These sediments have been lithified into a sequence of sedimentary rock that has subsequently been uplifted, tilted, and tectonically deformed. They are cut by segments of the Del Valle and Salt Creek faults (Allan E. Seward 2002).

3.0 METHODS AND SURVEY LIMITATIONS

Data regarding botanical resources present on the project site were obtained through a review of the pertinent literature; field reconnaissance; and focused surveys for sensitive species, with varying levels of specificity; all of which are described below.

3.1 Literature Review

General floristic and sensitive botanical resources present or potentially present at Newhall Ranch were identified through a literature search using the following sources:

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the California Natural Diversity Database (CNDDDB) for the Newhall, Simi Valley West, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi Valley East, Van Nuys, Canoga Park, Calabasas, Thousand Oaks, and Val Verde quadrangle maps (CNDDDB, January 2003); *2002 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area Los Angeles County, California* (Dudek 2002); *Biological Resource Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area* (PCR, November 2000); CalFlora (University of California, Berkeley, May 2002); U.S. Fish and Wildlife Service (USFWS 1999); California Department of Fish and Game (CDFG 2002); *Inventory of Rare and Endangered Plants of California* (CNPS 2001); *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999); *Checklist of Rare Ventura County Plant Species* (Magney 2002); *A Flora of the Santa Barbara Region, California* (Smith 1976); *A Flora of the Santa Monica Mountains* (Raven et al. 1986); *Biology of the San Fernando Valley Spineflower, Ahmanson Ranch, Ventura County, California* (Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. 2000); *Report to the Fish and Game Commission on the Status of San Fernando Valley Spineflower* (CDFG 2001); *Biota Report, Newhall Ranch Specific Plan* (RECON and Impact Sciences, Inc. 1996); and herbarium specimens from Rancho Santa Ana Botanic Garden (RSA) and the University of California, Riverside Herbarium (UCR). General information regarding vegetation communities was obtained from Holland (1986) and Sawyer and Keeler-Wolf (1995). Plant species nomenclature follows Hickman (1993).

3.2 Field Reconnaissance Methods

Botanical surveys were conducted by Dudek & Associates, Inc. (Dudek) staff biologists Megan Enright, Mark Elvin, Cathleen Weigand, Scott Boczkiewicz, Tricia Wotipka, Michelle Balk, Kim Marsden, and Darren Smith, with assistance provided by Anuja Parikh and Nathan Gale of FLx, Kathy Rindlaub (Katherine Rindlaub Biological Consulting) and Andrew C. Sanders (University of California, Riverside). All surveys were conducted on-foot and remote areas were accessed using four-wheel drive vehicles. Surveys were conducted in teams of two or more biologists, with at least one senior-level biologist included with each team. Resumes for survey personnel are provided in *Appendix A*.

Botanical surveys of the Salt Creek site were conducted between April and July 2003 in accordance with the schedule provided in *Table 1*. A minimum of 920 person-hours (92 person-days) was spent conducting botanical surveys within the study area. Biologists were able to observe reference populations of SFVS and other sensitive species in order to develop a search-image prior to conducting surveys of the project site. Surveys focused the

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identification and location of populations of SFVS; incidental observations of other state- and federally-listed and California Native Plant Society (CNPS) Lists 1A, 1B, and 2 species would be noted (see the list of target species in *Table 2*).

TABLE 1
Survey Schedule & Personnel
Salt Creek Site

| DATE | BIOLOGISTS | PURPOSE | GENERAL GEOGRAPHIC AREA |
|---------|---|--|--|
| 4-30-03 | Anuja Parikh and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Salt Canyon |
| 5-6-03 | Anuja Parikh and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Eastern Salt Creek |
| 5-7-03 | Megan Enright, Cathleen Weigand, Anuja Parikh, and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Western Fork Salt Creek and Lower Salt Creek |
| 5-8-03 | Mark Elvin, Anuja Parikh, and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Salt Creek |
| 5-9-03 | Kim Marsden, Mark Elvin, Megan Enright, Cathleen Weigand, Kathy Rindlaub, Anuja Parikh, and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Western Fork Salt Creek, Lower Salt Creek, Upper Western Fork Salt Creek, and Middle Western Fork Salt Creek |
| 5-10-03 | Kim Marsden and Kathy Rindlaub | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Western Fork Salt Creek |
| 5-11-03 | Kim Marsden | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Western Fork Salt Creek |
| 5-12-03 | Anuja Parikh, Nathan Gale, Mark Elvin, Megan Enright, Scott Boczkiewicz, Tricia Wotipka, and Andrew Sanders | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Western Fork Salt Creek, Middle Western Fork Salt Creek, and Lower Western Fork Salt Creek |
| 5-13-03 | Anuja Parikh, Nathan Gale, Mark Elvin, Megan Enright, Scott Boczkiewicz, Tricia Wotipka, and Andrew Sanders | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Western Fork Salt Creek and Middle Western Fork Salt Creek |
| 5-14-03 | Anuja Parikh, Nathan Gale, Megan Enright, Scott Boczkiewicz, Tricia Wotipka, Andrew Sanders, and Mark Elvin | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Western Fork Salt Creek, Middle Western Fork Salt Creek and Lower Western Fork Salt Creek |
| 5-15-03 | Anuja Parikh, Nathan Gale, Mark Elvin, Megan Enright, Scott Boczkiewicz, Tricia Wotipka, and Andrew Sanders | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Western Fork Salt Creek and Middle Western Fork Salt Creek |
| 5-19-03 | Anuja Parikh and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Western Fork Salt Creek |
| 5-20-03 | Anuja Parikh, Nathan Gale, Mark Elvin, and Kathy Rindlaub | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Western Fork Salt Creek |

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TABLE 1
Survey Schedule & Personnel
Salt Creek Site

| DATE | BIOLOGISTS | PURPOSE | GENERAL GEOGRAPHIC AREA |
|---------|--|--|--|
| 5-21-03 | Anuja Parikh, Nathan Gale, Mark Elvin, Kim Marsden, and Kathy Rindlaub | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Western Fork Salt Creek |
| 5-22-03 | Anuja Parikh, Nathan Gale, Mark Elvin, and Kathy Rindlaub | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Eastern Fork Salt Creek, Lower Salt Creek, Upper Central Salt Canyon and Upper Western Fork Salt Creek |
| 5-23-03 | Kim Marsden, Kathy Rindlaub, Mark Elvin, Cathleen Weigand, and Darren Smith. | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Central Salt Canyon, Upper Western Fork Salt Creek and Middle Eastern Fork Salt Creek |
| 5-24-03 | Kim Marsden and Darren Smith | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Mesa Salt Canyon |
| 5-26-03 | Mark Elvin, Anuja Parikh, and Nathan Gale | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Salt Creek and Lower Eastern Fork Salt Creek |
| 5-27-03 | Mark Elvin, Megan Enright, and Tricia Wotipka | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Eastern Salt Canyon |
| 5-28-03 | Mark Elvin, Megan Enright, and Tricia Wotipka | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Mesa Salt Canyon |
| 5-29-03 | Michelle Balk, Mark Elvin, Megan Enright, and Tricia Wotipka | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Eastern Fork Salt Creek |
| 5-30-03 | Michelle Balk, Megan Enright, and Tricia Wotipka | Focused survey for SFVS and noting other sensitive plant species when observed | Middle Eastern Fork Salt Creek |
| 6-12-03 | Mark Elvin, Megan Enright, Andrew Sanders, and Cathleen Weigand | Focused survey for SFVS and noting other sensitive plant species when observed | Lower Western Fork Salt Creek |
| 7-1-03 | Mark Elvin | Focused survey for SFVS and noting other sensitive plant species when observed | Upper Central Salt Canyon and Upper Eastern Salt Canyon |

TABLE 2
Sensitive Plant Species Subject of Field Surveys

| Scientific Name | Common Name |
|---|------------------------|
| <i>Arenaria paludicola</i> | marsh sandwort |
| <i>Astragalus brauntonii</i> | Braunton's milk-vetch |
| <i>Atriplex coulteri</i> | Coulter's saltbush |
| <i>Atriplex serenana</i> var. <i>davidsonii</i> | Davidson's saltscale |
| <i>Baccharis malibuensis</i> | Malibu baccharis |
| <i>Berberis nevinii</i> | Nevin's barberry |
| <i>Brodiaea filifolia</i> | thread-leaved brodiaea |

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TABLE 2
Sensitive Plant Species Subject of Field Surveys

| Scientific Name | Common Name |
|--|----------------------------------|
| <i>Calochortus clavatus</i> var. <i>clavatus</i> | club-haired mariposa lily |
| <i>Calochortus clavatus</i> var. <i>gracilis</i> | slender mariposa lily |
| <i>Calochortus plummerae</i> | Plummer's mariposa lily |
| <i>Calystegia peirsonii</i> | Peirson's morning-glory |
| <i>Calystegia sepium</i> ssp. <i>binghamiae</i> | Santa Barbara morning-glory |
| <i>Centromadia</i> [= <i>Hemizonia</i>] <i>parryi</i> ssp. <i>australis</i> | southern tarplant |
| <i>Cercocarpus betuloides</i> var. <i>blancheae</i> | island mountain-mahogany |
| <i>Chorizanthe parryi</i> var. <i>fernandina</i> | San Fernando Valley spineflower |
| <i>Deinandra</i> [= <i>Hemizonia</i>] <i>minthornii</i> | Santa Susana tarplant |
| <i>Delphinium parryi</i> ssp. <i>blochmaniae</i> | dune larkspur |
| <i>Dodecahema leptoceras</i> | slender-horned spineflower |
| <i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> | Blochman's dudleya |
| <i>Dudleya cymosa</i> ssp. <i>marcescens</i> | marcescent dudleya |
| <i>Dudleya cymosa</i> ssp. <i>ovatifolia</i> | Santa Monica Mountains dudleya |
| <i>Dudleya multicaulis</i> | many-stemmed dudleya |
| <i>Dudleya parva</i> | Conejo dudleya |
| <i>Eriogonum crocatum</i> | Conejo buckwheat |
| <i>Erodium macrophyllum</i> | round-leaved filaree |
| <i>Galium grande</i> | San Gabriel bedstraw |
| <i>Helianthus nuttallii</i> ssp. <i>parishii</i> | Los Angeles sunflower |
| <i>Horkelia cuneata</i> var. <i>puberula</i> | mesa horkelia |
| <i>Juglans californica</i> | southern California black walnut |
| <i>Juncus acutus</i> var. <i>leopoldii</i> | Southwestern spiny rush |
| <i>Malacothamnus davidsonii</i> | Davidson's bush mallow |
| <i>Nama stenocarpum</i> | mud nama |
| <i>Navarreti fossalis</i> | spreading navarretia |
| <i>Nolina cismontana</i> | chaparral nolina |
| <i>Opuntia basilaris</i> var. <i>brachyclada</i> | short-joint beavertail |
| <i>Orcuttia californica</i> | California Orcutt grass |
| <i>Pentachaeta lyonii</i> | Lyon's pentachaeta |
| <i>Rorippa gambellii</i> | Gambel's water cress |
| <i>Senecio aphanactis</i> | rayless ragwort |
| <i>Sidalcea neomexicana</i> | salt spring checkerbloom |
| <i>Thelypteris puberula</i> var. <i>sonorensis</i> | Sonoran maiden fern |

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All plant species encountered during the field surveys were identified and recorded for inclusion in *Appendix B*. The majority of these were vouchered and will be repositied at the herbarium at the University of California, Riverside. Latin and common names of plants follow *The Jepson Manual* (Hickman 1993) or other recent published taxonomic treatments. Where not listed in Hickman (1993), common names were taken from Abrams (1923). Where not found in this reference, a variety of sources were used (*e.g.*, Abrams 1923, Dale 1986, or Roberts 1998).

Surveys on the Salt Creek site during the 2003 field season focused on the observation of current year SFVS plants with incidental observations of any other sensitive plants being recorded. Surveys for SFVS were focused in open areas of California sagebrush and non-native grassland (California annual grassland series (Sawyer and Keeler-Wolf 1995) on ridgelines, slopes, and escarpments with a southern, southwestern, or southeastern exposure based on information gathered during surveys by Dudek for SFVS populations on the Newhall Ranch project site during 2002; information contained in the report prepared by Glenn Lukos Associates, Inc. (2000); the status report prepared for the Fish and Game Commission (CDFG 2000); and conversations with Rick Reifner, the botanist who re-discovered SFVS at Ahmanson Ranch in 1999. Chaparral and dense riparian communities, including most of the habitat along the Santa Clara River floodplain, were not surveyed. Information regarding co-occurring plant species, general soils observations, and population estimates (based on counts of small areas and extrapolating an estimate for the polygon as a whole) were noted at those locations where sensitive species were found.

Polygons for sensitive species other than SFVS were either mapped with a GPS unit, by drawing polygons on 7.5-minute USGS quadrangle maps, or by a combination of the two. Professional judgment and experience were used to delineate these polygons based on the detectability of the species, topography, and vegetation. Perennial sensitive plants were mapped at a 10 to 20 m scale due to their population dynamics (including seed dispersal and pollination range), observability, habit, habitat limitations, and mapping accuracy. Information regarding the mapping for each sensitive species is included in the sections below (*Sections 4.2.1 through 4.2.7*).

3.2.1 Sensitive Plant Species

Sensitive plant species are those species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or

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threatened population sizes. This includes those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001; *Inventory*), and those plant species which are found on the list of “Threatened and Endangered Species and Species of Concern, Los Angeles County” (<http://www.losangelesalmanac.com/topics/Environment/ev14b.htm>). CNPS List 3 or List 4 species were included in discussions only when encountered during the field surveys.

3.2.2 Survey Limitations

Surveys were conducted in the spring and summer of 2003. Surveys were conducted during a year with a “normal” amount of rainfall providing ideal conditions to determine the diversity of species (including sensitive plants) onsite and to map their presence, abundance, and distributions more accurately (when necessary). The timing of the surveys was coincident with the blooming period for SFVS and other spring blooming annual species. Surveys continued passed the peak bloom period for the SFVS into the summer when SFVS became a highly visible brick red while all of the other plants dried and faded to pale straw colors. Surveying during these two time periods maximized the potential for detection of SFVS during the survey effort.

Riparian areas along Salt Creek, thick chaparral, and steep north facing slopes were not surveyed. Surveys for SFVS were concentrated in areas of suitable habitat, which was generally on south-facing slopes. Other sensitive species (particularly those identified in *Table 2*) were recorded when incidentally observed.

The focused surveys for SFVS were conducted during daylight hours under weather conditions that did not preclude observation of sensitive plant species (*e.g.*, surveys were not conducted during heavy fog or rain).

4.0 RESULTS OF SURVEYS

4.1 Botany - Floral Diversity

The study area is situated at the nexus of the Transverse Ranges, Coast Ranges, Sierra Nevada, Mojave Desert, and coastal plains (Hickman 1993). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core

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of a physiographic region (Boyd 1999). As such, a high diversity of plant species is expected during a year of average rainfall for the area.

At least 449 plant species were identified within the Salt Creek study area. Of these, 351 species (or 78 percent) are native to the region and 98 species (or 22 percent) are non-native. It should be noted that agricultural or clearly disturbed areas were not thoroughly searched. The list of plant species identified within the study area in 2003 is provided as *Appendix B*.

4.2 Sensitive Plant Species

Seven sensitive plant species were identified within the study area. These and other sensitive species that have the potential to occur within the Newhall Ranch project area, based on the presence of suitable habitat and soils, are listed in *Table 3*. This list is confined primarily to those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B, or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001). Those sensitive species that were observed during the 2003 field surveys are discussed in greater detail below. A number of species found on CNPS Lists 3 or 4 also have the potential to occur onsite (e.g., *Calochortus catalinae*, *Acanthomintha obovata* ssp. *cordata*, *Mucronea californica*); however, due to their relatively low sensitivity level, they are only discussed in the following sections if observed onsite.

Figures 4 through 13 depict the locations of sensitive species, including SFVS, on the Salt Creek site. Labels for each of the polygons in the figures correlate with those in *Tables 4 through 6*, which contain estimates for the numbers of individuals within each polygon. Any additional information regarding the mapping for each sensitive species is included in the sections below (*Sections 4.2.1 through 4.2.7*).

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TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | Common Name | Status Federal/State | CNPS List | Primary Habitat Associations/ Life Form/Blooming Period | Presence or Likelihood of Occurrence Onsite |
|---|-----------------------|-------------------------|-----------|--|---|
| <i>Arenaria paludicola</i> | marsh sandwort | FE/SE | 1B | dense freshwater marsh/perennial herb/May-August | Not observed during 2003 field season. ¹ No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East [= Santa Susana] quads; nearest occurrence is in the Santa Ana River. Limited suitable habitat onsite; very low likelihood of occurrence within the study area. |
| <i>Astragalus brauntonii</i> | Braunton's milk-vetch | FE/None | 1B | chaparral, coastal sage scrub, grasslands; often on carbonate substrates/perennial herb/March-July | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; nearest occurrence is in the Simi Hills. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area. |
| <i>Atriplex coulteri</i> | Coulter's saltbush | None/None | 1B | coastal sage scrub and grasslands on alkaline or clay substrate/perennial herb/March-October | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; however, suitable habitat present onsite. Moderate likelihood of occurrence within study area. |
| <i>Atriplex serenana</i> var. <i>davidsonii</i> | Davidson's saltscale | None/None | 1B | coastal bluff scrub and coastal sage scrub on alkaline substrate/annual herb/May-October | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. <i>Atriplex serenana</i> var. <i>serenana</i> observed onsite. Low likelihood of occurrence within the study area. |
| <i>Baccharis malibuensis</i> | Malibu baccharis | None/None | 1B | chaparral, coastal sage scrub, cismontane woodland/ deciduous shrub/August | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; closest known populations in the western Santa Monica Mountains near Malibu. Not expected to occur within the study area. |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | Common Name | Status Federal/State | CNPS List | Primary Habitat Associations/ Life Form/Blooming Period | Presence or Likelihood of Occurrence Onsite |
|--|---------------------------|-------------------------|-----------|---|---|
| <i>Berberis nevinii</i> | Nevin's barberry | FE/SE | 1B | chaparral, coastal sage scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate/evergreen shrub/March-April | Not observed during 2003 field season. CNDDDB records exist for San Francisquito Canyon at confluence with Santa Clara River; suitable habitat present onsite. Moderate likelihood of occurrence within study area. |
| <i>Brodiaea filifolia</i> | Thread-leaved Brodiaea | FT/SE | 1B | clay substrate openings in chaparral, sage scrub, and grasslands/perennial herb (geophyte)/March-June. | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; nearest occurrence is in San Dimas. Suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Calochortus clavatus</i> var. <i>clavatus</i> | club-haired mariposa lily | None/None | 4 | chaparral and coastal sage scrub/ perennial herb (geophyte)/March-May | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Very low likelihood of occurrence in study area. |
| <i>Calochortus clavatus</i> var. <i>gracilis</i> | slender mariposa lily | None/None | 1B | chaparral and coastal sage scrub/perennial herb (geophyte)/March-May | Observed during the 2003 field season on north trending slopes throughout the study area. A total of 85 polygons were mapped with an estimation of approximately 31,000 individuals (flowering and/or fruiting) during the 2003 growing season. CNDDDB records also exist for mouth of Pico Canyon. |
| <i>Calochortus plummerae</i> | Plummer's mariposa lily | None/None | 1B | chaparral, coastal sage scrub, cismontane woodland, grasslands on rocky granitic substrate/perennial herb (geophyte)/May-July | Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for the south side of the Santa Susana Mountains and Simi Hills. Suitable habitat exists onsite. Low to moderate likelihood of occurrence within study area. |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | <i>Common Name</i> | <i>Status Federal/State</i> | <i>CNPS List</i> | <i>Primary Habitat Associations/ Life Form/Blooming Period</i> | <i>Presence or Likelihood of Occurrence Onsite</i> |
|--|------------------------------------|---------------------------------|------------------|---|--|
| <i>Calochortus weedii</i> var. <i>vestus</i> | late-flowered mariposa lily | None/None | 1B | chaparral, cismontane & riparian woodland/perennial herb (geophyte)/ June-August | Observed during the 2003 field season in chaparral and walnut woodlands. This species was observed at the head of the Salt Creek drainage on the crest of the Santa Susana Mountains in the study area. Approximately 250 individuals were recorded in the three (3) polygons. |
| <i>Calystegia peirsonii</i> | Peirson's morning- glory | None/None | 4 | chaparral, coastal sage scrub, cismontane woodland, grassland/ perennial herb/May-June | Observed in chaparral and California sagebrush throughout the survey area. |
| <i>Calystegia sepium</i> ssp. <i>Binghamiae</i> | Santa Barbara morning-glory | None/None | 1A | marshes and swamps/perennial herb/ April-May | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; however, limited suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Centromadia</i> [= <i>Hemizonia</i>] <i>parryi</i> ssp. <i>Australis</i> | southern tarplant | None/None | 1B | mesic edges of marshes in grasslands/annual herb/May-November | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; however, suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Cercocarpus betuloides</i> var. <i>blancheae</i> | island mountain- mahogany | None/None | 4 | chaparral, closed-cone coniferous forest/evergreen shrub/February-May | Observed in mixed chaparral at lower elevations in the study area. |
| <i>Chorizanthe parryi</i> var. <i>fernandina</i> | San Fernando Valley spineflower | FC/SE | 1B | coastal sage scrub, sandy soils/annual herb/April- June | Not observed during 2003 field season. Documented just offsite to the east in Potrero Canyon. Limited suitable habitat onsite. Low likelihood of occurrence. |
| <i>Deinandra</i> [= <i>Hemizonia</i>] <i>minthornii</i> | Santa Susana tarplant | None/SR | 1B | chaparral and coastal sage scrub on rocky substrate/deciduous shrub/July-November | Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for Simi Hills, Oat Mountain, and Simi Valley East. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area. |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | Common Name | Status Federal/State | CNPS List | Primary Habitat Associations/ Life Form/Blooming Period | Presence or Likelihood of Occurrence Onsite |
|---|-----------------------------------|-------------------------|-----------|---|--|
| <i>Delphinium parryi</i> ssp. <i>Blochmaniae</i> | dune larkspur | None/None | 1B | maritime chaparral, coastal dunes/ perennial herb/ April-may | Not observed during 2003 field season although <i>Delphinium parryi</i> spp. <i>parryi</i> was observed within the study area. No likelihood of occurrence. |
| <i>Dodecahema leptoceras</i> | slender-horned spineflower | FE/SE | 1B | alluvial scrub on sandy substrate/annual herb/April- June | Not observed during 2003 field season; however, Santa Clara River bottom excluded from survey area. Historic CNDDDB records exist for the Newhall or Val Verde quads in alluvial habitat similar to those present onsite. Moderate likelihood of occurrence within study area. |
| <i>Dudleya blochmaniae</i> ssp. <i>Blochmaniae</i> | Blochman's dudleya | None/None | 1B | clay openings in chaparral and coastal sage scrub, grasslands/perennial herb/April-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Dudleya cymosa</i> ssp. <i>Marcescens</i> | marcescent dudleya | FT/CR | 1B | chaparral, often on volcanic substrate/perennial herb (geophyte)/ April-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Unidentified <i>Dudleya cymosa</i> observed on vertical sandstone cliffs and slopewash in 2002 are actually <i>D. lanceolata</i> , a common species. Low likelihood of occurrence within study area. |
| <i>Dudleya cymosa</i> ssp. <i>Ovatifolia</i> | Santa Monica Mountains dudleya | FT/None | 1B | chaparral and coastal sage scrub, often on volcanic substrate/perennial herb (geophyte)/April-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Unidentified <i>Dudleya cymosa</i> observed on vertical sandstone cliffs and slopewash in 2002 are actually <i>D. lanceolata</i> , a common species. Low likelihood of occurrence within study area. |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | <i>Common Name</i> | <i>Status Federal/State</i> | <i>CNPS List</i> | <i>Primary Habitat Associations/ Life Form/Blooming Period</i> | <i>Presence or Likelihood of Occurrence Onsite</i> |
|-----------------------------|-------------------------|---------------------------------|------------------|--|--|
| <i>Dudleya multicaulis</i> | many-stemmed Dudleya | None/None | 1B | coastal bluff scrub, coastal sage scrub, valley and foothill grassland, rocky, often clay substrate/perennial herb/ April-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known occurrences are in Calabasas and San Dimas. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area. |
| <i>Dudleya parva</i> | Conejo Dudleya | FT/None | 1B | coastal sage scrub and grassland on rocky, gravelly clays/perennial herb/May-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Suitable habitat exists onsite. Low likelihood of occurrence within study area. |
| <i>Eriogonum crocatum</i> | Conejo buckwheat | None/CR | 1B | chaparral, coastal scrub, valley and foothill grassland; on rocky or volcanic outcrops/perennial herb/April-July | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; however records exist for Simi Valley. Limited suitable habitat is present onsite; low to moderate likelihood of occurrence in study area. |
| <i>Erodium macrophyllum</i> | round-leaved filaree | None/None | 2 | cismontane woodland and grasslands on clay substrate/annual herb/March-May | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; however records exist for Simi Valley and this plant was observed in the hills east of Castaic Lake in 2003. Suitable habitat present onsite; moderate likelihood of occurrence in study area. |
| <i>Galium grande</i> | San Gabriel bedstraw | None/None | 1B | broadleaved upland forest, chaparral, cismontane woodland, and lower montane coniferous forest/deciduous shrub/January-July | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; however, suitable habitat present onsite. Low to moderate likelihood of occurrence within study area. |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | <i>Common Name</i> | <i>Status Federal/State</i> | <i>CNPS List</i> | <i>Primary Habitat Associations/ Life Form/Blooming Period</i> | <i>Presence or Likelihood of Occurrence Onsite</i> |
|--|----------------------------------|---------------------------------|------------------|--|---|
| <i>Helianthus nuttallii</i> ssp. <i>Parishii</i> | Los Angeles sunflower | None/None | 1A | marshes and swamps/perennial herb/ August-October | Not observed during 2003 field season. A <i>Helianthus</i> population, discovered in 2002 by Elvin and Sanders at Castaic Spring, on the south side of the Santa Clara River between Middle Canyon and San Jose Flats, was preliminarily determined to be this species; final determination is pending. Suitable habitat exists onsite in small freshwater marsh areas. Low to moderate likelihood of occurrence. |
| <i>Horkelia cuneata</i> var. <i>puberula</i> | mesa horkelia | None/None | 1B | chaparral, cismontane woodland, coastal sage scrub on sandy or gravelly substrate/perennial herb/February-December | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Juglans californica</i> | southern California black walnut | None/None | 4 | chaparral, cismontane woodland, coastal sage scrub, alluvial scrub/ deciduous tree/March-May | Observed in walnut woodlands and forests, California sagebrush, and chaparral onsite. |
| <i>Juncus acutus</i> var. <i>leopoldii</i> | southwestern spiny rush | None/None | 4 | coastal dunes, meadows, seeps, marshes, and swamps/ perennial herb/May-June | Not observed during 2003 field season. Very little suitable habitat is present onsite. Low likelihood of occurrence within study area. |
| <i>Malacothamnus davidsonii</i> | Davidson's bush mallow | None/None | 1B | chaparral, coastal sage scrub, riparian woodland/ deciduous scrub/June-January | Not observed during 2003 field season. Nearest occurrences are in San Fernando and Sunland. Suitable habitat is present onsite. Low to moderate likelihood of occurrence within study area. Several <i>Malacothamnus</i> specimens were sent off for authoritative determination to ensure that this species does not occur onsite. None of these specimens were determined to be <i>M. davidsonii</i> . |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | Common Name | Status Federal/State | CNPS List | Primary Habitat Associations/ Life Form/Blooming Period | Presence or Likelihood of Occurrence Onsite |
|---|------------------------|-------------------------|-----------|--|---|
| <i>Nama stenocarpum</i> | mud nama | None/None | 2 | edges of lakes, rivers, ponds, vernal pools/annual/January-July | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Moderate likelihood of occurrence on banks of Santa Clara River and other mesic areas onsite. |
| <i>Navarretia fossalis</i> | spreading navarretia | FT/None | 1B | chenopod scrub, marshes and swamps, playas, and vernal pools/annual herb/April-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. No suitable habitat (vernal pools) observed onsite. Low likelihood of occurrence within study area. |
| <i>Navarretia sp. nova</i> | Navarretia | None/None | None | grasslands and openings in coastal sage scrub/clay/annual herb/May-July | Observed in grasslands during the 2003 field season onsite. Approximately 60,000 individuals were estimated to occur in two (2) polygons in the West Fork area of Salt Creek in Ventura County. |
| <i>Nemophila parviflora</i> var. <i>quercifolia</i> | oak-leaved nemophila | None/None | 4 | cismontane woodland, lower montane coniferous forest/annual herb/may-June | Not observed during 2003 field season. This plant was observed nearby in oak woodland east of Grapevine Mesa. Suitable habitat exists onsite. High likelihood of occurrence within study area. |
| <i>Nolina cismontana</i> | chaparral nolina | None/None | 1B | chaparral, coastal sage scrub on sandstone or gabbro substrate/ perennial shrub/May-July | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Opuntia basilaris</i> var. <i>brachyclada</i> | Short-joint beavertail | None/None | 1B | chaparral, Joshua tree woodland, Mojavean desert scrub/succulent shrub/ April-June | Not observed during 2003 field season. This plant was identified as occurring in the Newhall area by Dudek in 2002; however, recent investigations indicate that the <i>Opuntia basilaris</i> plants on Newhall Ranch area are not <i>O. basilaris</i> var. <i>brachyclada</i> , but are <i>O. basilaris</i> var. <i>ramosa</i> . |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | Common Name | Status Federal/State | CNPS List | Primary Habitat Associations/ Life Form/Blooming Period | Presence or Likelihood of Occurrence Onsite |
|-----------------------------|--------------------------|-------------------------|-----------|--|---|
| <i>Orcuttia californica</i> | California Orcutt grass | FE/SE | 1B | vernal pools/annual herb/May-September | Not observed during 2003 field season. This plant is documented from the Simi Hills, Mint Canyon, and Thousand Oaks areas and a report exists for the Newhall quad. No suitable habitat (vernal pools) observed onsite. Low likelihood of occurrence within study area. |
| <i>Pentachaeta lyonii</i> | Lyon's pentachaeta | FE/SE | 1B | openings in chaparral and coastal sage scrub, grasslands/annual herb/March-August | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; nearest occurrences are in the Simi Valley. Suitable habitat present onsite. Moderate likelihood of occurrence within study area. |
| <i>Rorippa gambellii</i> | Gambel's watercress | FE/ST | 1B | marsh and swamps (freshwater and brackish)/perennial herb/April-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area. |
| <i>Senecio aphanactis</i> | rayless ragwort | None/None | 2 | chaparral, coastal sage scrub, cismontane woodland on alkaline substrate/annual herb/January-April | Not observed during 2003 field season. Historic CNDDDB record for Saugus, south of Santa Clara River. Suitable habitat onsite. Moderate likelihood of occurrence within study area. |
| <i>Sidalcea neomexicana</i> | salt spring checkerbloom | None/None | 2 | chaparral, coastal sage scrub, and playas on alkaline substrate/perennial herb/March-June | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; suitable habitat present onsite. Moderate likelihood of occurrence within study area. |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Salt Creek

| <i>Scientific Name</i> | <i>Common Name</i> | <i>Status Federal/State</i> | <i>CNPS List</i> | <i>Primary Habitat Associations/ Life Form/Blooming Period</i> | <i>Presence or Likelihood of Occurrence Onsite</i> |
|---|---------------------|---------------------------------|------------------|--|--|
| <i>Thelypteris puberula</i> var. <i>sonorensis</i> | Sonoran maiden fern | None/None | 2 | meadows and seeps/perennial herb/fertile January-September | Not observed during 2003 field season. No CNDDDB records exist for the Newhall, Val Verde, or Simi Valley East quads; nearest occurrence at Point Dume. Limited suitable habitat present onsite. Low likelihood of occurrence within study area. |

Legend

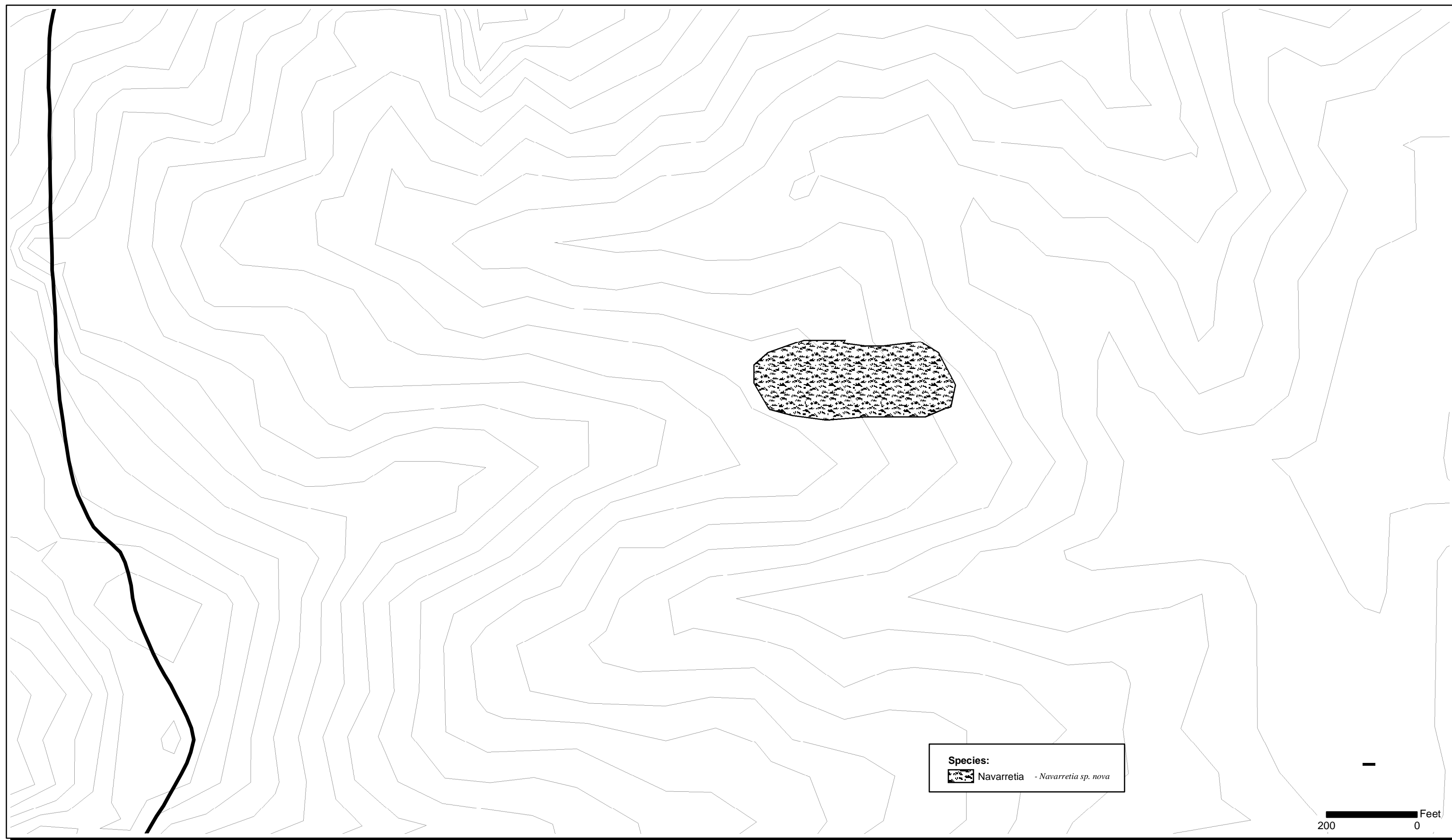
| | | | |
|-----|--------------------------------|---------------|--|
| FE: | Federally-listed as endangered | CNPS List 1A: | Plants presumed extinct in California |
| FT: | Federally-listed as threatened | CNPS List 1B: | Plants rare, threatened, or endangered in California and elsewhere |
| FC: | Federal candidate for listing | CNPS List 2: | Plants rare, threatened, or endangered in California but more common elsewhere |
| SC: | State candidate for listing | CNPS List 3: | Plants about which we need more information – a review list |
| SE: | State-listed as endangered | CNPS List 4: | Plants of limited distribution – a watch list |
| ST: | State-listed as threatened | | |
| SR: | State-listed as rare | | |

¹A comment of “Not observed during 2003 field season” (in Table 3 below) indicates that we did not see this plant in the course of our surveys for SFVS, not that we conducted a focused survey for it and it was not observed.



Salt Creek
2003 Rare Plant Survey Results

FIGURE
4



Salt Creek
2003 Rare Plant Survey Results

FIGURE
5

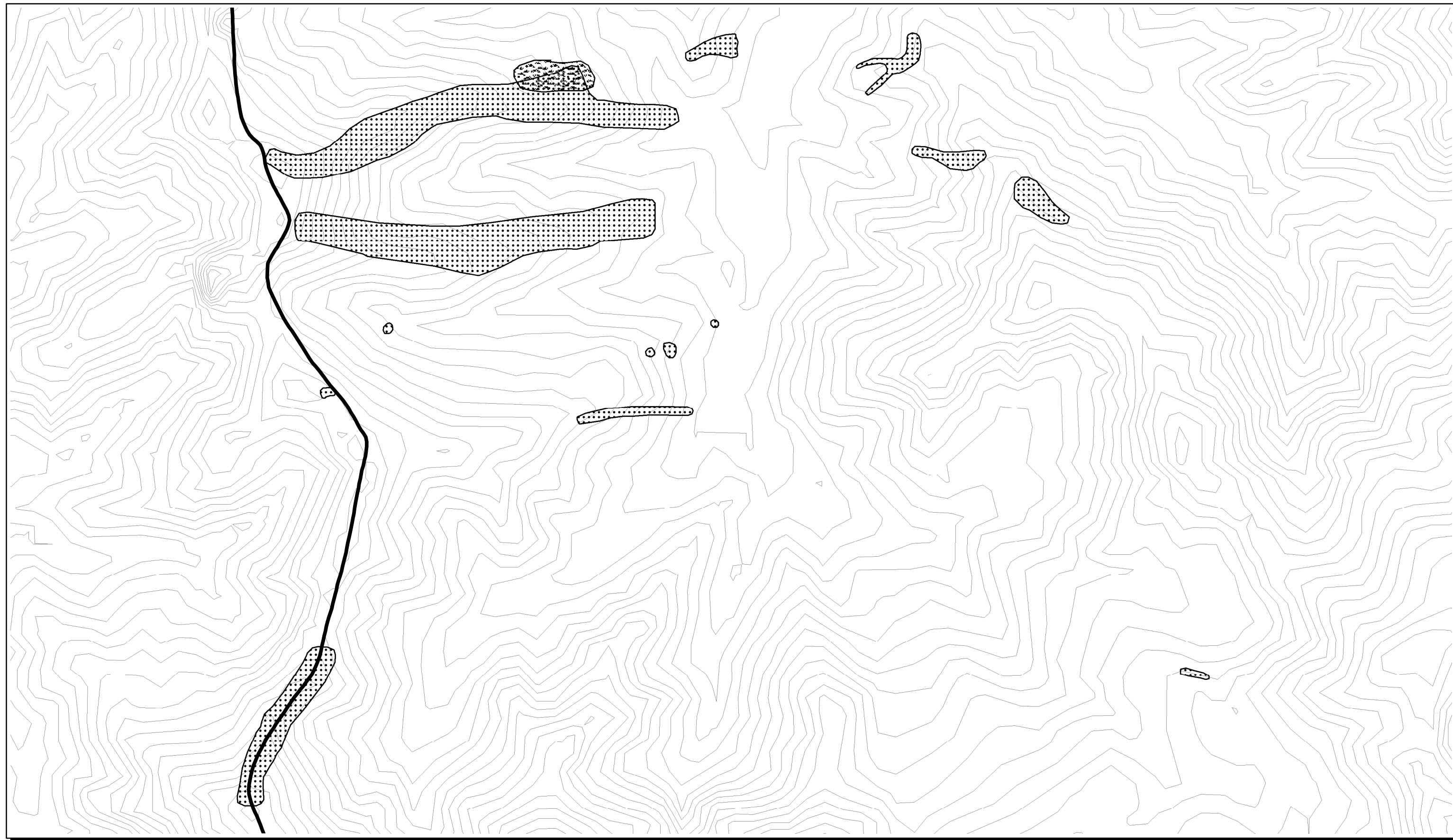


Salt Creek
2003 Rare Plant Survey Results

FIGURE
6



Salt Creek
2003 Rare Plant Survey Results

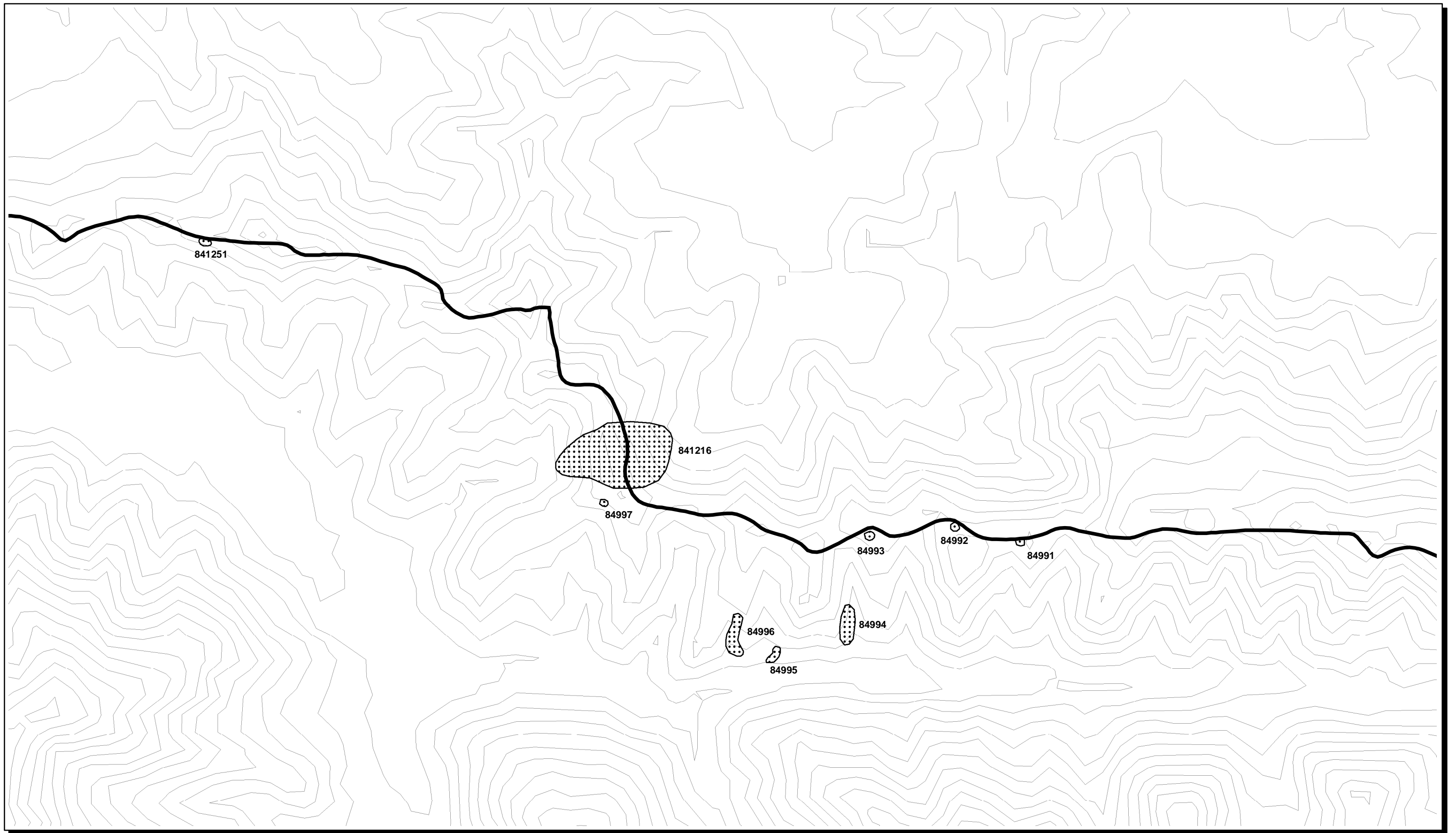


Salt Creek
2003 Rare Plant Survey Results

FIGURE
8

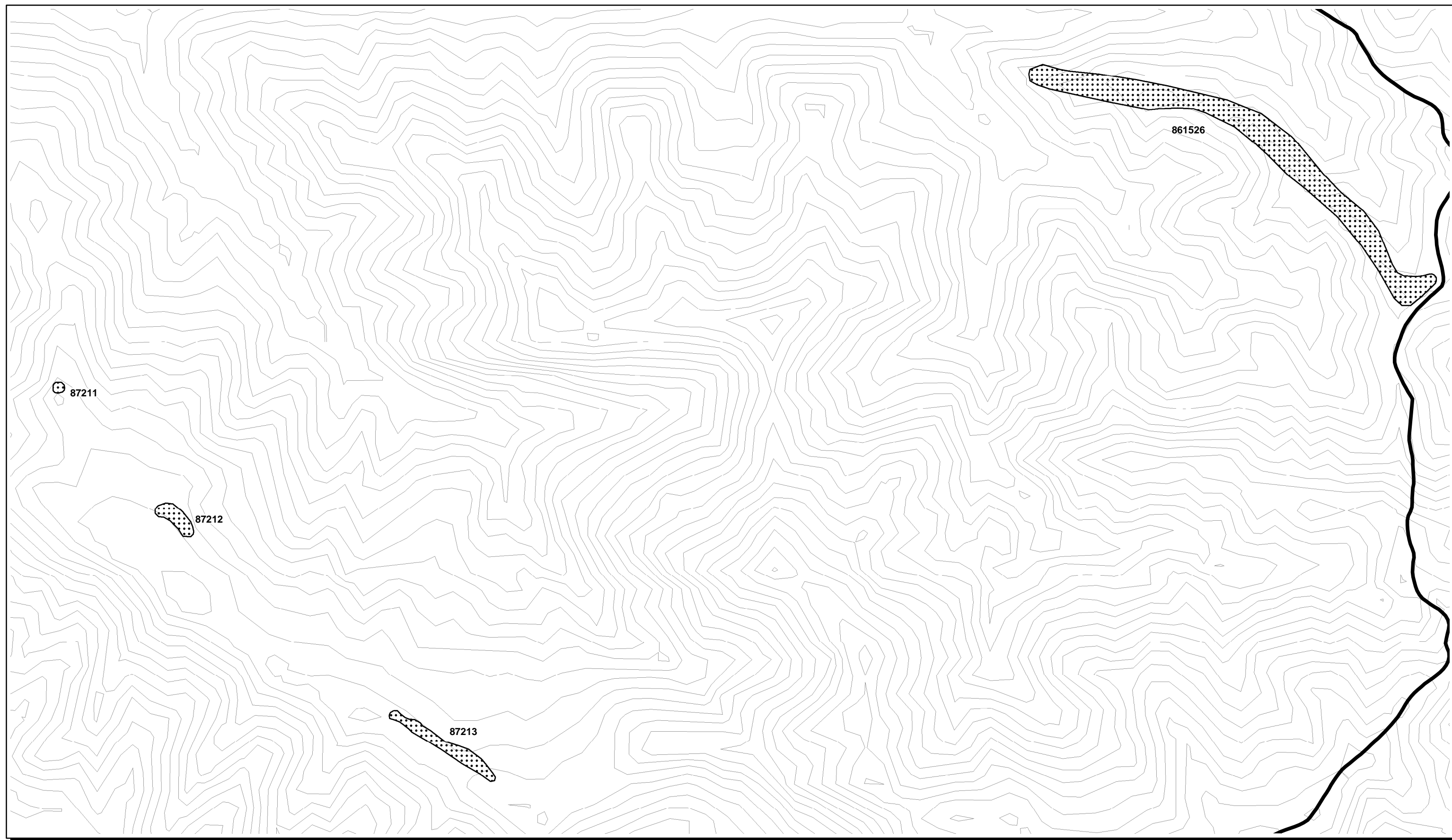


Salt Creek
2003 Rare Plant Survey Results



Salt Creek
2003 Rare Plant Survey Results

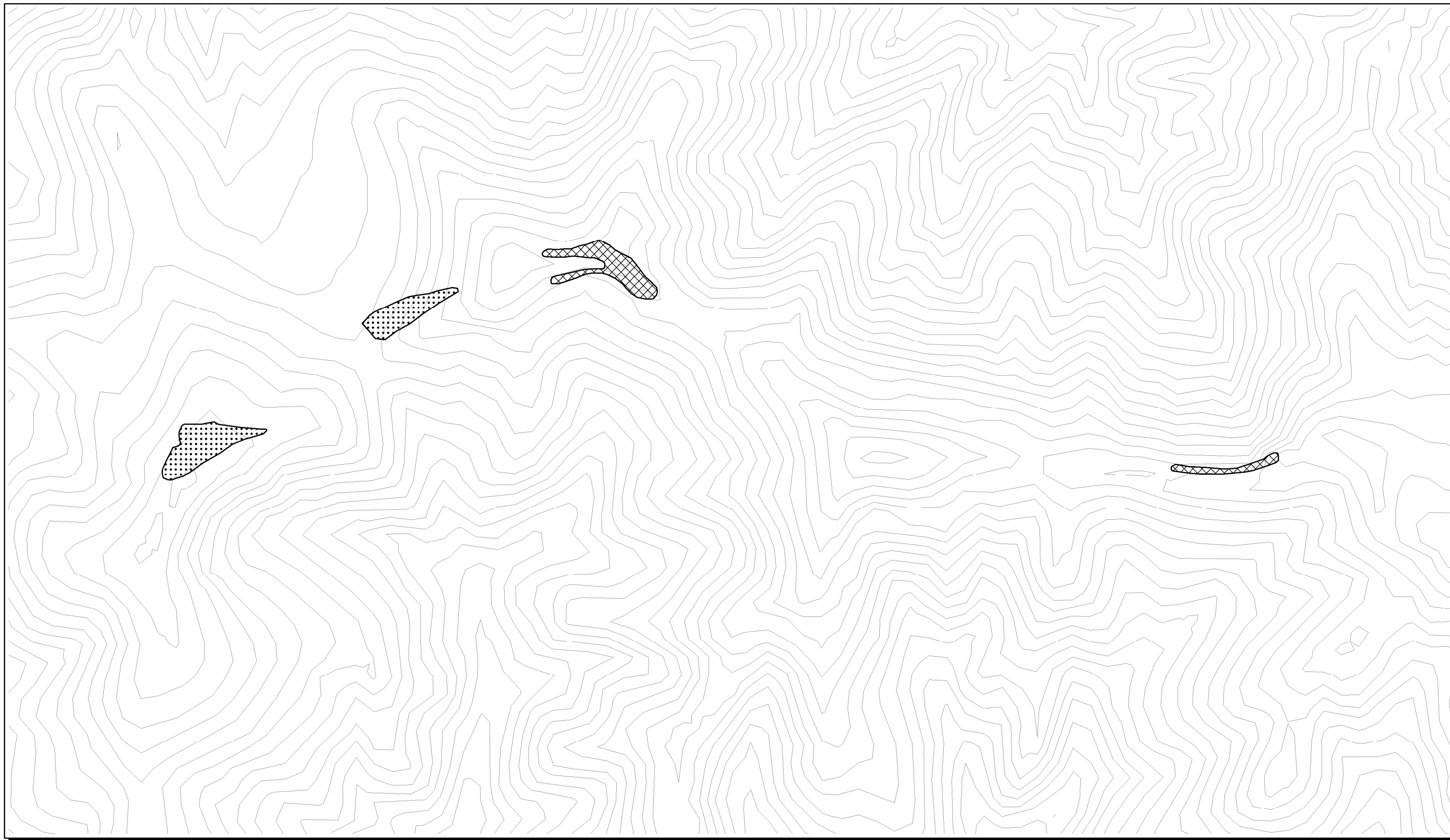
FIGURE
10





Salt Creek
2003 Rare Plant Survey Results

| |
|--------------|
| FIGURE 12 |
|--------------|



Salt Creek
2003 Rare Plant Survey Results

| |
|--------------|
| FIGURE 13 |
|--------------|

2003 Sensitive Plant Survey Results

Salt Creek Site

4.2.1 *Calochortus clavatus* var. *gracilis* (slender mariposa lily)

Slender mariposa lily has no state or federal status but is a CNPS List 1B plant. It is typically found in chaparral, coastal sage scrub, and grasslands, often on clay, and/or rocky soils. It has been documented to occur at the mouth of Pico Canyon and other canyons in the vicinity (Newhall Quad; CNDDDB 2002). Other varieties of this species documented from southern California include Plummer's mariposa lily (*Calochortus plummerae*), club-haired mariposa lily (*C. clavatus* var. *clavatus*) and pale mariposa lily (*C. clavatus* var. *pallidus*). The club-haired mariposa lily differs in that it is virtually a serpentine endemic (restricted to serpentine soils) and a very robust species, generally attaining a height of one meter. Pale mariposa lily differs in that the petals are a paler yellow, the anthers are paler (yellow to pale purple), and the hairs on the petals are not as knobby or club shaped. Neither the club-haired mariposa lily nor pale mariposa have a prominent red line above the nectary on the petal, as is the case with the slender mariposa lily.

Multiple polygons of mariposa lily were mapped within the study area by drawing boundaries on aerial photograph field maps around the areas that contained the mariposa lily. Surveys within the study area were conducted during and after the blooming season for the slender mariposa lily. The majority of the surveys were conducted during the blooming period for this species, but the plants were beginning to senesce during the surveys making observations less likely. The fruiting individuals were much more cryptic than the flowering plants, therefore it is expected that only a portion of the plants that were in flower earlier were observed. Moreover, geophytes like *Calochortus* generally only have a percentage of the plants flower in any given year and the non-flowering individuals are generally not as visible.

Within the Salt Creek study area, the slender mariposa lily was found primarily on east-, northeast-, and southwest-facing ridges and slopes in California sagebrush and grasslands (Figures 4 through 13). The plants were generally mapped in areas of high vegetative cover and a variety of soil types (e.g., gravelly loam, sandy loam, rocky clay). A total of 85 polygons were mapped with a polygon size ranging from 21 to 897,524 square feet. The estimated number of individuals within each polygon ranges from 1 to approximately 20,000, with a total of approximately 31,000 individuals observed within the project site during the 2003 field season (see Table 4). CNDDDB forms for each occurrence on this site are included in Appendix C.

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 4
Slender Mariposal Lily
Summary of Occurrence Data for Salt Creek

| Polygon Name | Polygon area (square feet) | Estimated Number of Individuals |
|-----------------------------------|-------------------------------|---------------------------------|
| 71311 | 170 | 2 |
| 71312 | 452 | 12 |
| 71313 | 21 | 1 |
| 71315 | 305 | 3 |
| 71318 | 75 | 1 |
| 71319 | 124 | 1 |
| 713110 | 46 | 2 |
| 713111 | 119 | 5 |
| 713112 | 94 | 1 |
| 713113 | 68 | 1 |
| 713114 | 46 | 2 |
| 713115 | 40 | 6 |
| 713116 | 58 | 3 |
| 713117 | 26 | 1 |
| 713118 | 228 | 10 |
| 713119 | 37 | 4 |
| 713120 | 416 | 20 |
| 713121 | 74 | 1 |
| 713122 | 61 | 1 |
| 721410 (includes 721213) | 235,025 | 50 |
| 721210 | 18,644 | 3 |
| 721211 (includes 721215) | 897,524 | 20,000 |
| 721212 | 4,049 | 3,000 |
| 721214 | 123,106 | 300 |
| 73142 (includes 73211 and 732111) | 409,552 | 100 |
| 73143 | 29,189 | 50 |
| 73144 | 38,917 | 30 |
| 73219 | 425,224 | 500 |
| 73999 | 30,479 | 100 |
| 739910 | 25,278 | 25 |
| 739911 | 30,030 | 100 |
| 739912 | 22,345 | 50 |
| 739913 | 2,527 | 10 |
| 74212 | 32,357 | 200 |
| 74214 | 3,553 | 15 |
| 74215 | 2,334 | 1 |
| 74217 | 1,788 | 1 |
| 74361 | 1,338 | 5 |
| 74363 | 4,494 | 20 |
| 75145 | 141,979 | 100 |
| 75312 | 5,373 | 6 |
| 76311 | 107,669 | 500 |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 4
Slender Mariposal Lily
Summary of Occurrence Data for Salt Creek

| Polygon Name | Polygon area (square feet) | Estimated Number of Individuals |
|---|-------------------------------|---------------------------------|
| 76312 | 1,022 | 10 |
| 76313 | 1,813 | 3 |
| 76315 | 122 | 3 |
| 76316 | 7,665 | 16 |
| 76317 | 38,525 | 100 |
| 76319 | 279,155 | 300 |
| 77146 | 68,353 | 100 |
| 77147 | 179,606 | 100 |
| 773519 | 203,936 | 100 |
| 77591 | 281 | 3 |
| 77597 | 1,689 | 2 |
| 78311 | 357 | 2 |
| 78312 | 9,102 | 25 |
| 78313 | 3,596 | 20 |
| 78317 (includes 78318) | 7,623 | 45 |
| 78319 (includes 78314, 78315, 78316, 783111, 783112, 783114, and 783115) | 153,313 | 133 |
| 82367 | 183,791 | 2,000 |
| 82369 | 6,256 | 3 |
| 823610 | 5,085 | 10 |
| 823611 | 7,903 | 50 |
| 823612 | 8,994 | 50 |
| 823613 | 32,310 | 50 |
| 823614 | 35,083 | 100 |
| 82998 | 702 | 25 |
| 841216 | 179,952 | 300 |
| 841251 | 2,216 | 25 |
| 84991 | 1,671 | 5 |
| 84992 | 1,851 | 1 |
| 84993 | 2,070 | 10 |
| 84994 | 14,993 | 50 |
| 84995 | 3,955 | 25 |
| 84996 | 14,768 | 100 |
| 84997 | 1,534 | 1 |
| 861526 | 337,149 | 38 |
| 861599 | 1,440 | 2 |
| 87111 | 11,400 | 5 |
| 87211 | 3,141 | 5 |
| 87212 | 19,329 | 25 |
| 87213 (includes 89141 and 89141) | 40,182 | 20 |
| 913615 | 49,192 | 1,000 |
| 921215 | 133,760 | 500 |

2003 Sensitive Plant Survey Results Salt Creek Site

TABLE 4
Slender Mariposal Lily
Summary of Occurrence Data for Salt Creek

| Polygon Name | Polygon area (square feet) | Estimated Number of Individuals |
|--------------|-------------------------------|---------------------------------|
| 94142 | 82,206 | 150 |
| 94143 | 58,432 | 75 |
| Total | 4,790,757 | 30,830 |

4.2.2 *Calochortus weedii* var. *vestus* (late-flowered mariposa lily)

Late-flowered mariposa lily has no state or federal status, but is found on List 1B of the CNPS *Inventory*. This geophytic perennial has been documented from the Santa Susana Mountains in Ventura County to the west and also occurs in Ventura, Santa Barbara, San Luis Obispo, and Monterey counties. It typically grows in chaparral and cismontane woodland habitats between 900 and 3,000 feet AMSL. A total of three (3) polygons were mapped with a polygon size ranging from 12,801 to 72,903 square feet (*Figures 12 and 13*). The estimated number of individuals within each polygon ranges from 50 to 100, with a total of approximately 250 individuals observed within the project site during the 2003 field season (see *Table 5*). CNDDDB forms for each occurrence on this site are included in *Appendix C*.

TABLE 5
Calochortus weedii* var. *vestus
Estimates For Salt Creek

| Polygon Name | Polygon Size (Square Feet) | Estimated Number of Individuals |
|--------------|-------------------------------|------------------------------------|
| 921450 | 12,801 | 50 |
| 95141 | 21,710 | 100 |
| 95142 | 72,903 | 100 |
| TOTAL | 170,413 | 250 |

4.2.3 *Calystegia peirsonii* (Peirson's morning glory)

Peirson's morning-glory has no state or federal status, but is found on List 4 of the CNPS *Inventory*. This morning-glory is a rhizomatous perennial that is typically found in more desert-like areas (e.g., creosote bush scrub, Joshua tree woodland) at elevations which exceed 3,000 feet AMSL, although there are records in the CNDDDB for lower elevations in the local area.

2003 Sensitive Plant Survey Results

Salt Creek Site

While never abundant, Peirson's morning-glory is widespread onsite and was observed on virtually all ridges and slopes, weakly climbing over mixed chaparral, California sagebrush, and in grasslands throughout the 5,818-acre study area. It was not the subject of focused surveys. CNDDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.4 *Cercocarpus betuloides* var. *blanchae* (island mountain-mahogany)

Island mountain-mahogany has no state or federal status, but is found on List 4 of the CNPS *Inventory*. It is an evergreen shrub that occurs as part of the chaparral in Los Angeles and Ventura counties, as well as on several of the Channel Islands (CNPS 2001).

Onsite, island mountain-mahogany occurs as an occasional component of chaparral at the base of north-facing slopes in the 5,818-acre survey area. CNDDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.5 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)

San Fernando Valley spineflower is state-listed as endangered, a candidate for federal listing, and a CNPS List 1B species. Until its rediscovery in 1999 at Laskey Mesa on Ahmanson Ranch in Ventura County, it was thought to be extinct. A review of information of historic occurrence of SFVS in the CNDDDB indicate that it was previously thought to occur in sandy to gravelly soils of washes, riverbeds, and upland areas primarily on the margins of the San Fernando Valley at the base of the Santa Susana Mountains, San Gabriel Mountains, and the Simi Hills. Munz (1974) provides distribution information to include Orange and San Diego counties.

No SFVS was identified within the survey area. This survey was conducted during the flowering season of the SFVS, which was observed in flower at other nearby locations during the same time period. The SFVS was a focal species for this survey. Survey efforts for this species were directed specifically to potential habitat areas. Areas with the greatest potential for SFVS were generally at the southern edges of the ridges and small mesas onsite. Other species that co-occur with SFVS were observed onsite, but no areas with the appropriate soils, aspect, slopes, and associated species were observed onsite.

2003 Sensitive Plant Survey Results

Salt Creek Site

4.2.6 *Juglans californica* (southern California black walnut)

Southern California black walnut has no state or federal status, but is found on List 4 of the CNPS *Inventory*. Within its distributional range in southern California, this species is found as scattered occurrences throughout chaparral, cismontane woodlands, and coastal and alluvial scrub habitats (CNPS 2001).

This large shrub to tree was incidentally observed throughout the site. It was a dominant component in walnut woodlands and forests at the upper elevations and as an occasional component of mixed chaparral, California sagebrush, and alluvial scrub at the lower elevations. CNDDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.7 *Navarretia* sp. nova (navarretia)

An undescribed species of *Navarretia* was documented within the study area during the 2003 field season. This plant is undoubtedly closely related to *Navarretia jaredii*, *N. pubescens*, and *N. setiloba*; but is also distinct from each of these taxa. Several previous collections of this unnamed navarretia have been made in the Santa Clara River Valley between the Los Angeles County line and Ojai. Plants of the unnamed *Navarretia* differ from *N. jaredii* in that it has a purple spot on the edge of the corolla tube, there are papillae in the tube, and the stems are not white hairy. It differs from *N. pubescens* in the presence of the purple spot and papillae in the tube, the bracts are slightly wider, and the flowers are smaller and whitish as opposed to larger and purple. It differs from *N. setiloba* by the presence of the purple spot, having narrower bracts, and a smaller flower.

The two polygons on the Salt Creek study area (*Figures 7 and 8*) consist of approximately 60,000 individuals in the 2003 season and are growing on clay lenses with a gentle to moderate north-facing slope. The vegetation around these plants consists of valley needlegrass grasslands that are sparsely vegetated. A CNDDDB form was completed for this species and is included in Appendix C.

TABLE 6. *Navarretia* sp. nova - Estimates For Salt Creek

| Polygon Name | Polygon Size (Square Feet) | Estimated Number of Individuals |
|--------------|-------------------------------|------------------------------------|
| 72141 | 131,261 | 50,000 |
| 733599 | 65,294 | 10,000 |
| TOTAL | 196,555 | 60,000 |

2003 Sensitive Plant Survey Results

Salt Creek Site

5.0 ACKNOWLEDGMENTS

This report was prepared by Mark A. Elvin and Paul Lemons and reviewed by Sherri L. Miller and staff at The Newhall Land and Farming Company. Mark McGinnis provided graphics and GIS mapping analyses. Tonette S. Foster provided word processing.

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APPENDIX A
RESUMES OF SURVEY PERSONNEL –
SALT CREEK (2003)

MICHELLE L. BALK
Environmental Specialist

EDUCATION / REGISTRATION

- University of Akron
M.S., Biology with emphasis Ecology and Evolution, 1999
- Iowa State University
B.S., Zoology, 1997

PROFESSIONAL CERTIFICATIONS

- Quino Checkerspot Butterfly 10a Survey Permit
(USFWS Federal Permit)

EXPERIENCE SUMMARY

Ms. Balk has over two years of experience in environmental document preparation and resource conservation planning. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetland delineations, permitting, mitigation design and monitoring, and endangered species surveys. Ms. Balk has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Ms. Balk has also participated in the development of habitat conservation plans pursuant to Section 10 of the Federal Endangered Species Act.

PROFESSIONAL ASSIGNMENTS

Residential Development. Irvine, California. Assisted in USFWS protocol surveys for the Coastal California Gnatcatcher.

Conservation Planning. Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included reserve design, document preparation, interagency coordination and public outreach.

Residential Development. Riverside County, California. Conducted wetland delineation and prepared permit applications for 51-unit housing development.

Public University Student Housing Project. San Marcos, California. Conducted vegetation mapping and wetland delineation, prepared permit applications, and coordinated with resource agencies for student housing project.

Residential Development. Rancho Santa Fe, California. Performed environmental assessments and prepared encroachment permit applications for open space encroachments.

Creek Maintenance Project. Poway, California. Performed wetlands delineation and vegetation mapping for creek maintenance project.

Sewer Realignment. Carlsbad, California. Assisted in the wetland delineation and vegetation mapping for sewer realignment project.

Residential Developments. Laguna Beach and Oxnard, California. Mapped vegetation, surveyed for sensitive plants, and wrote biological resources reports for residential developments.

Utility Pole Maintenance Project. San Bernardino Mountains, California. Conducted botanical surveys and surveyed for sensitive plants at pole replacement locations.

Salt Marsh Restoration Project. San Diego, California. Performed vegetation mapping and prepared biological resources report for marsh restoration project.

Focused Botanical Survey. Newhall Ranch, Los Angeles County, California. As team botanist, performed focused survey for San Fernando Valley spineflower on a 6,000-acre project site.

PUBLICATIONS

“Phenotypic effects of leptin in an ectotherm: a new tool to study the evolution of life histories and endothermy?”, with P.H. Niewiarowski and R.L. Londraville. *The Journal of Experimental Biology* 203:295-300, 2000.

“Sprint speed variation in hatchling fence lizards as a function of ontogenetic stage and population,” with P.H. Niewiarowski and J.M. Engelhardt. In preparation.

“Phylogenetic Analysis of Reaction Norm Evolution in North American Softshell Turtles,” with F.J. Janzen. In preparation.

RELEVANT EXPERIENCE

Volunteer, Project Wildlife, San Diego, CA. Cared for injured wildlife and reared baby birds at wildlife rescue organization.

“Sunday Birds” field ornithology course with San Dieguito Adult School, Encinitas, CA.

SCOTT BOCZKIEWICZ

Biologist/Habitat Restoration Specialist

EDUCATION

- University of Wisconsin, Madison
B.S. Biological Conservation, 1994

PROFESSIONAL AFFILIATIONS

- The Society for Wetland Scientists (SWS)
- The Society for Conservation Biology (SCB)
- The Society for Ecological Restoration -California Chapter (SERCAL)

EXPERIENCE SUMMARY

Mr. Boczkiewicz has a diverse range of work experience in the biological sciences, with emphasis in conservation biology, wetland science, and restoration ecology. He has progressive experience evaluating impacts to sensitive, rare, threatened and endangered plant and wildlife species in Southern California, and has conducted sensitive species assessments, biological resource inventories, vegetation mapping, wetland delineations, and focused surveys for botanical and wildlife species. Scott has also conducted biological monitoring of construction and infrastructure maintenance projects occurring in environmentally sensitive and/or protected areas throughout San Diego and Orange County. Scott has produced assessments of wetlands and uplands to support management plans and planning studies, designed mitigation plans and habitat restoration and monitoring plans for riparian, wetland, and upland habitats, identified regulatory issues for development and infrastructure projects to guide project designs, and completed permit applications supporting project compliance with federal, state, and local environmental regulations.

PROFESSIONAL ASSIGNMENTS

- **El Cuervo Norte Wetland Mitigation - City of San Diego, CA.** Provided mitigation site analysis including an HGM-based wetland assessment and designed a conceptual wetland creation and enhancement plan to mitigate impacts to jurisdictional wetlands resulting from construction of State Route 56 (SR-56). The 25-acre El Cuervo Norte riparian creation and enhancement project will occur in the west end of the Los Peñasquitos Canyon Preserve beginning in March of 2004.
- **Biological Resource Surveys - Escondido Creek Conservancy, Escondido, CA.** Conducted biological resources surveys and a wetland delineation in 2002 to provide baseline biological site information supporting development of a long-term management plan for a 75-acre preserve property along Escondido Creek in unincorporated San Diego County.

- **As-Needed Biological Consultant - City of San Diego, CA.** Provided pre-construction biological resource surveys, vegetation mapping, biological monitoring, revegetation designs, and Environmentally Sensitive Lands (ESL) compliance documents for multiple projects requiring service of existing sewer mains within urban-canyons throughout the city of San Diego during 2001 through 2003.
- **Adobe Falls Supplemental Environmental Project - City of San Diego, CA.** Provided a biological resources assessment and designed a restoration plan and site specific erosion control for a 4-acre riparian wetland site along Alvarado Creek in San Diego, and providing monitoring during implementation of the project in 2003.
- **Newhall Ranch Biological Resource Surveys - Newhall, California.** Assisted with focused surveys for the San Fernando Valley spineflower and other sensitive plant surveys on Newhall Ranch and adjacent land-holdings during 2002 and 2003.
- **NCTD Oceanside to Escondido Railway - Oceanside, CA.** Assisted with daily monitoring of brown-headed cowbird traps on the project alignment during 2003.
- **Rim of The World Herptological Surveys - San Bernardino, CA.** Conducted surveys during 2003 for three threatened and endangered frog species within US Forest Service lands with planned trail improvements.
- **Laborde Canyon Herptological Surveys - CA.** Designed, installed, and monitored a herptological pit-fall trap array during 2002 to support development of a land management plan and establishment of an Off-Highway Motorized Vehicle Recreation Area.
- **Camelot Sensitive Plant Surveys - Escondido, CA.** Conducted sensitive biological resource surveys on a 50-acre site to support development plans and a reserve design for the property.

MARK A. ELVIN

EDUCATION

- University of California, Irvine.
M.S. Ecology and Evolutionary Biology. 1992.
- University of North Carolina, Chapel Hill.
B.A. Biology and Philosophy. 1986.

PROFESSIONAL EXPERIENCE

Senior Botanist/Biologist

Dudek & Associates, Inc. February 2001-Present.

- **Responsibilities:** head botanist for Dudek; task leader/lead botanist (direct, coordinate, and supervise field work and schedules) for numerous projects; manage, supervise, direct, plan and coordinate activities of junior biologists; track work progress and assign schedules; monitor budgets for projects; ensure completion of projects on schedule; communicate effectively with staff in office, project proponents, and regulatory agencies; provide guidance and direction to junior/subordinate staff; knowledge of plants (especially rare plants) throughout southern California; knowledge of fish and wildlife laws and regulations; plan, direct, and perform ecological and biological investigations of complex development proposals to determine their effects on flora and fauna; analyze data and evaluate impacts of proposed projects; write objective reports of investigations; plan, direct, and perform field investigations of wildlife and ecosystem resources; design, conduct, and analyze monitoring studies; conduct literature reviews; write reports; participate in complex negotiation sessions with project proponents and regulatory agency staff; provide technical assistance and guidance to other staff in the office; write project proposals.
- **Field work:** Conduct ecological and biological investigations and surveys of flora and fauna throughout southern California including San Diego, San Bernardino, Los Angeles, Orange, and Riverside counties; conducted focused surveys for *Chorizanthe parryi* var *fernandina* on 15,000 acres in Los Angeles County; conduct focused surveys for *Phacelia stellaris* for the MSHCP.
- **Accomplishments:** Discovered new occurrences of *Chorizanthe parryi* var. *fernandina* (a State listed species and Federal candidate), *Phacelia stellaris* (a plant that was thought to be extinct); discovered a plant that may be *Helianthus nuttallii* ssp. *parishii* (a plant that was

thought to be extinct); discovered new populations of an undescribed species of *Gnaphalium*.

Museum Scientist

University of California, Irvine. February 1999-Present.

- **Responsibilities:** Manage UCI Arboretum scientific plant collections; manage UCI Herbarium (IRVC) with approximately 27,000 specimens; provide guidance and direction to subordinate staff; plan and conduct field work for germplasm collections; maintain and updated all plant bases; document collections/accessions with voucher specimens to be stored in the UCI Herbarium (IRVC); coordinate pest management of collections; coordinate research projects; write grants; coordinate and conduct public education at the Arboretum pertaining to ecology, conservation, evolution, and adaptations to arid environments.
- **Field work:** Conduct ecological and biological investigations, surveys, and collections for plant species throughout Orange, San Diego, Riverside, San Bernardino, and Los Angeles counties and Baja California, Mexico.
- **Accomplishments:** Participated in floristic surveys of the San Joaquin Fresh water Marsh, UCI Open Space Preserve, Burn's Reserve with objective of publishing a species lists for each site; lead multi-organization floristic survey of the San Ysidro Mountains; designed, coordinated, and began implementation of a southern California sensitive habitats garden; coordinated the design and implementation of a southern African Bulb Bed; initiated propagation program for California natives to be placed in garden sections.

Fish and Wildlife Biologist

United States Department of the Interior, Fish and Wildlife Service.

August 1998-February 2001.

- **Responsibilities:** Conducted scientific reviews and analyses of species statuses for proposing and designating critical habitat within court ordered deadlines for listed fauna and flora; conducted scientific reviews and analyses of species statuses and develop recovery plans for listed species; planned, directed, and performed ecological and biological investigations of complex development proposals to determine their effects on flora and fauna; analyzed data and evaluated impacts of proposed projects; wrote objective reports of investigations; planned, directed, and performed field investigations of wildlife and ecosystem resources; designed, conducted, and analyzed monitoring studies; conducted literature reviews; wrote reports; participated in complex negotiation sessions with project proponents; provided technical assistance and guidance to other staff in the office;

implemented City of San Diego Multiple Species Conservation Plan (MSCP) for the USFWS; operated as the main contact for the Quino checkerspot butterfly; operated as the staff biologist for Miramar Marine Corps Air Station, City of El Cajon, Bureau of Land management-San Diego District, Immigration and Naturalization Service, Border Patrol-San Diego Sector.

- **Field work:** Conducted onsite ecological and biological investigations and surveys of complex development proposals to determine their effects on flora and fauna throughout San Diego County; conducted surveys for *Deinandra conjugens* and *Ambrosia pumila*, rare plants on the Sweetwater Marsh National Wildlife Refuge, Quino checkerspot butterfly in numerous locations in San Diego County.
- **Accomplishments:** Developed, negotiated, and completed the complex and contentious Habitat Conservation Plan for Evergreen Nursery in Oceanside, CA; persuaded the Border Patrol to initiate consultation for their ongoing program of activities throughout southern California; as a staff biologist for the San Diego branch, I was recognized for maintaining a high level of performance throughout my tenure, while managing a large workload that involved many controversial and contentious issues, and for being the primary contact for San Diego County for the Quino checkerspot butterfly and its flora; recognized for developing a slide show of the sensitive flora and habitats within the Carlsbad Field Office; received three awards: one for completing the Proposed Designation of Critical Habitat for *Deinandra conjugens* and working to complete surveys for it on the San Diego National Wildlife Refuge, one for my contributions to the Quino checkerspot butterfly survey areas and recovery map, and one for assisting in a complex consultation with a short deadline with San Diego Gas and Electric; was personally requested to conduct a rare plant survey of the Sweetwater Marsh National Wildlife Refuge.

Owner/Biologist

Elvin Environmental. March 1997-December 1999.

- **Responsibilities:** Conducted general and specific biological/botanical surveys of project sites (with emphasis on sensitive species); analyzed and assessed biological and ecological data; prepared reports on environmental analysis of development proposals; conducted biological and ecological consultations; conducted ecological and conservation research and data collection; prepared research reports and publications; produced biological/botanical documentation and voucher specimens.
- **Field work:** Conducted onsite ecological and biological investigations and surveys of complex development proposals to determine their effects on flora throughout Los Angeles, Orange, San Diego, San Bernardino, and Riverside counties.

- ***Accomplishments:*** Conducted a multiyear botanical survey of the 600,000-acre Marine Corps Air Ground Combat Center Twentynine Palms (MCAGCC), California in the Mojave Desert; conducted a multiyear study at MCAGCC of approximately 100 disturbance plots/transects which included developing protocols, collecting and assessing data for the monitoring program to analyze the effects of disturbance on fragile desert ecosystems for the development of an Integrated Natural Resource Management Plan.

Seed and Conservation Program Coordinator

Rancho Santa Ana Botanic Garden. April 1996-May 1997.

- ***Responsibilities:*** Managed, supervised, planned, directed, and coordinated the operational activities of the Seed and Conservation Program; supervised and provided guidance to subordinate staff; managed, coordinated, and conducted all California native flora conservation activities: planned, coordinated, and conducted field work for general and specific surveys, status reports, ecological investigations, germplasm collections, research projects, and Garden contract work; determined germplasm collection priorities; planned, coordinated, and conducted surveys for threatened or endangered species and prepared reports for Federal, State, and private agencies; developed species management protocols; acquired and administered all Garden collecting permits with Federal, State, and private agencies including permits for State and Federally listed species; interfaced with Federal, State, and private agencies regarding endangered species as the Garden representative; coordinated Garden activities with Federal, State, and private agencies; directed the Center for Plant Conservation program at Rancho Santa Ana Botanic Garden as the Garden representative; managed the Seed Program at Rancho Santa Ana Botanic Garden: developed and tracked program goals, objectives, and budget; supervised staff and volunteers; managed all garden seed collections and associated databases.
- ***Field work:*** Conducted onsite ecological and biological investigations and surveys for threatened and endangered plant species throughout Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Baja California (Mexico), Ventura, Monterey, San Benito, and San Luis Obispo counties.
- ***Accomplishments:*** Established the Seed Program unifying all Garden seed collections; developed and wrote the Seed Management Guidelines for the Seed Program at Rancho Santa Ana Botanic Garden which included policies and procedures for seed collecting and cleaning, germplasm collection strategies, and the storage of that material in cooperation/consultation with the U.S. Fish and Wildlife Service, U.S. Department of Agriculture, and the California Department of Fish and Game; tripled number of sensitive species in Long Term Storage through ambitious field schedule; updated seed storage

guidelines and protocols for seed storage; established page on the Garden's web site for the Seed Program's electronic inventory.

Seed Technologist

Rancho Santa Ana Botanic Garden. January 1994-April 1996.

- **Responsibilities:** Managed and coordinated all aspects related to Garden seed collections (especially pertinent to sensitive species); planned, directed, and conducted field work (general and specific surveys and collections); determined target species for field work and germplasm collections; developed databases, curated, and documented seed collections with voucher specimens and germination/viability test results; conducted seed related research; produced publications/reports for the Garden as well as various Federal, State, and private agencies; administered Garden collecting permits and completed associated reports; interfaced with public and private entities/agencies on behalf of the Garden; managed volunteers; managed seed storage and growth chamber facilities.
- **Field work:** Conducted onsite ecological and biological investigations and surveys for threatened and endangered plant species throughout Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Baja California (Mexico), Ventura, Monterey, San Benito, and San Luis Obispo counties.
- **Accomplishments:** Expanded Long Term Storage Collection by 50% first year and 25% second year, established new protocols for storage of Long Term Collection, initiated documentation of all seed accessions (viability/germination testing and specimen vouchers), initiated volunteer program, developed long term goals on unification of seed collections under a Seed Program/Department.

Conservation Collections Manager

University of California, Irvine. September 1992-May 1996.

- **Responsibilities:** Managed UCI Arboretum living plant and cryogenic seed collections; planned and conducted field work for germplasm collections; maintained and updated all plant and seed data bases; coordinated pest management of collections; coordinated research projects; wrote grants; coordinated and conducted public education at the Arboretum pertaining to ecology, conservation, evolution, and adaptations to arid environments.
- **Field work:** Conducted ecological and biological investigations and surveys for threatened and endangered plant species throughout Orange, San Diego, and Riverside counties.

- ***Accomplishments:*** Modified the Arboretum's collections' policies; expanded the Arboretum's mission to include the conservation of native California monocots through the initiation of a California Native Monocot Gene Bank; revised Petaloid Monocot collection catalogue; built two shade houses for bulb collections at Arboretum; initiated field collections of California Natives; managed and trained team of nine undergraduate researchers.

Teaching Assistant

University of California, Irvine. September 1990-May 1993.

- ***Responsibilities:*** Taught introductory and upper division biology classes and laboratories for undergraduate students and assisted professors with courses.

FIELD EXPERIENCE

September 1988-Present.

MEXICO: Baja California (Mexico).

CALIFORNIA:

- ***Counties:*** Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Ventura, Monterey, San Benito, San Luis Obispo.
- ***Areas:*** Central Coastal Ranges (Diablo Range, Gabilan Range, Temblor Range, Santa Lucia Mountains); Transverse Range (San Bernardino Mountains, San Gabriel Mountains, Liebre Mountains, Santa Susana Mountains); Mojave Desert (western, eastern, and southern); Sonoran Desert (northern, eastern, western, and southern); Peninsular Range (Gavilan Plateau, Laguna Mountains, Cuyamaca Mountains, San Jacinto Valley, San Jacinto Mountains, Santa Rosa Mountains, Santa Ana Mountains, Santa Rosa Plateau, Sierra Juarez, Palomar Mountains, San Ysidro Mountains); Coastal southern and central California and associated foothills (including Otay Mesa, Mira Mesa, Del Mar Mesa, Palos Verdes Peninsula, San Clemente Island, Santa Catalina Island).
- ***Habitats:*** coastal strand, dune, coastal marsh, estuarine, coastal bluff scrub, coastal sage scrub, maritime succulent scrub, southern maritime chaparral, chaparral, valley grass lands, vernal pools, riparian scrub, riparian woodland, southern oak woodlands, alluvial fan sage scrub, montane coniferous forest, pebble plains, montane meadows, pinyon-juniper woodland, Joshua tree woodland, sagebrush scrub, creosote bush scrub, alkali flats, desert mountains, creosote bush scrub, Mojavean desert scrub, Sonoran desert scrub.

- Sensitive species:

Plants: *Abies bracteata*, *Abronia maritima*, *A. villosa* var. *aurita*, *Acanthomintha ilicifolia*, *A. obovata* ssp. *cordata*, *A. obovata* ssp. *obovata*, *Achnatherum diegoensis*, *Adolphia californica*, *Agave shawii*, *A. utahensis*, *Allium munzii*, *A. parishii*, *Ambrosia chenopodifolia*, *A. pumila*, *Arabis johnstonii*, *A. parishii*, *Arctomecon merriamii*, *Arctostaphylos gabrielensis*, *A. glandulosa* ssp. *crassifolia*, *A. montereyensis*, *A. otayensis*, *A. rainbowensis*, *Arenaria macradenia* var. *kuschei*, *A. ursina*, *Artemisia nesiotica*, *A. palmeri*, *Asclepias asperula* ssp. *asperula*, *Astragalus albens*, *A. ertterae*, *A. jaegerianus*, *A. lentiginosus* var. *sierrae*, *A. leucolobus*, *A. miguelensis*, *A. nevinii*, *A. tener* var. *titi*, *Atriplex coronata* var. *notatior*, *A. coulteri*, *A. pacifica*, *Azolla mexicana*, *Baccharis vanessae*, *Berberis fremontii*, *B. nevinii*, *Bergerocactus emoryi*, *Boykinia rotundifolia*, *Brodiaea filifolia*, *B. kinkiensis*, *B. orcuttii*, *Calandrinia breweri*, *Calochortus catalinae*, *C. clavatus* var. *gracilis*, *C. clavatus* var. *recurvifolius*, *C. concolor*, *C. dunnii*, *C. palmeri* var. *munzii*, *C. palmeri* var. *palmeri*, *C. plummerae*, *C. striatus*, *C. weedii* var. *intermedius*, *C. weedii* var. *vestus*, *Calystegia macrostegia* ssp. *amplissima*, *C. peirsonii*, *Camissonia boothii* ssp. *boothii*, *C. boothii* ssp. *intermedia*, *C. guadalupensis* ssp. *clementina*, *C. lewisii*, *Canbya candida*, *Carnegiea gigantea*, *Castela emoryi*, *Castilleja cinerea*, *C. gleasonii*, *C. grisea*, *C. lasiorhyncha*, *C. plagiotoma*, *Caulanthus simulans*, *Ceanothus cyaneus*, *C. megacarpus* var. *insularis*, *C. ophiochilus*, *C. otayensis*, *C. verrucosus*, *Centromadia parryi* ssp. *australis*, *C. pungens* ssp. *laevis*, *Cercidium microphyllum*, *Cercocarpus minutiflorus*, *Chaenactis glabriuscula* var. *orcuttiana*, *Chamaebatia australis*, *Chlorogalum purpureum* var. *purpureum*, *C. purpureum* var. *reductum*, *Chorizanthe leptotheca*, *C. orcuttiana*, *C. parryi* var. *fernandina*, *C. parryi* var. *parryi*, *C. polygonoides* var. *longispina*, *C. procumbens*, *Cirsium occidentale* var. *compactum*, *Clarkia delicata*, *Comarostaphylis diversifolia* ssp. *diversifolia*, *Convolvulus simulans*, *Cordylanthus maritimus* ssp. *maritimus*, *C. orcuttianus*, *Coreopsis gigantea*, *C. maritima*, *Corethrogyne filaginifolia* var. *linifolia*, *Crossosoma californicum*, *Cryptantha holoptera*, *C. traskiae*, *Cupressus forbesii*, *C. macrocarpus*, *C. stephensonii*, *Cynanchum utahense*, *Deinandra clementina*, *D. conjugens*, *D. floribunda*, *D. paniculata*, *Delphinium hesperium* ssp. *cuyamaca*, *D. variegatum* ssp. *kinkiense*, *D. variegatum* ssp. *thornei*, *Dicentra chrysantha*, *Dichondra occidentalis*, *Downingia concolor* var. *brevior*, *Draba douglasii* var. *crockeri*, *Dudleya attenuata* ssp. *orcuttii*, *D. abramsii* ssp. *affinis*, *D. blochmaniae* ssp. *blochmaniae*, *D. brevifolia*, *D. cymosa* ssp. *ovatifolia*, *D. densiflora*, *D. multicaulis*, *D. saxosa* ssp. *saxosa*, *D. variegata*, *D. virens* ssp. *hassei*, *D. virens* ssp. *virens*, *D. viscida*, *Echinocactus polycephalus* var. *polycephalus*, *Echinocereus engelmannii* var. *munzii*, *Eriastrum densifolium* ssp. *sanctorum*, *Ericameria palmeri* ssp. *palmeri*, *Eriodictyon traskiae* ssp. *traskiae*, *Eriogonum davidsonii*, *E. foliosum*, *E. giganteum* var. *formosum*, *E. grande* var. *grande*, *E. kennedyi* var. *austromontanum*, *E. microthecum* var. *johnstonii*, *E. ovalifolium* var. *vineum*, *E. umbellatum* var. *minus*, *Eriophyllum lanatum* var. *obovatum*, *E. nevinii*, *Erodium macrophyllum*, *Eryngium aristulatum* var. *parishii*, *Erysimum capitatum* ssp. *angustatum*, *Eschscholzia ramosa*, *Escobaria vivipara* var. *alversonii*, *Euphorbia misera*, *Ferocactus cylindraceus*, *F. viridescens*, *Frankenia plameri*, *Fremontodendron mexicanum*, *Fritillaria biflora*, *Galium*

angustifolium ssp. *gabrielense*, *G. angustifolium* ssp. *gracillimum*, *G. angustifolium* ssp. *jacinticum*, *G. californicum* ssp. *primum*, *G. catalinense* ssp. *acrispum*, *G. grande*, *G. johnstonii*, *G. nuttallii* ssp. *insulare*, *Galvesia speciosa*, *Gilia caruifolia*, *G. nevinii*, *Gnaphalium* sp. *nova*, *Grindelia hirsutula* var. *hallii*, *Harpagonella palmeri*, *Hazardia cana*, *H. orcuttii*, *Helianthus nuttallii* ssp. *parishii*, *Heuchera abramsii*, *H. elegans*, *Holocarpa virgata* ssp. *elongata*, *Hordeum intercedens*, *Horkelia cuneata* ssp. *puberula*, *H. truncata*, *Hulsea californica*, *H. mexicana*, *H. vestita* ssp. *callicarpa*, *H. vestita* ssp. *gabrielensis*, *Ipomopsis polycladon*, *Isocoma menziesii* var. *decumbens*, *Iva hayesiana*, *Ivesia argyrocoma*, *Jepsonia malvifolia*, *J. parryi*, *Juglans californica*, *Juncus acutus* ssp. *leopoldii*, *J. duranii*, *Lasthenia burkei*, *L. glabrata* ssp. *coulteri*, *Lathyrus splendens*, *Lavatera assurgentiflora* ssp. *glabra*, *Layia carnosa*, *Lepechinia fragrans*, *L. ganderi*, *Lepidium virginicum* var. *robinsonii*, *Lesquerella kingii* ssp. *bernardina*, *Lilium humboldtii* ssp. *ocellatum*, *L. parryi*, *Limnanthes gracilis* ssp. *parishii*, *L. vinculans*, *Linanthus arenicola*, *L. bellus*, *L. killipii*, *L. pygmaeus* ssp. *pygmaeus*, *Lithophragma maximum*, *Lomatium insulare*, *Lotus argophyllus* var. *adsurgens*, *L. argophyllus* var. *argenteus*, *L. dendroideus* var. *traskiae*, *L. nuttallianus*, *L. otayensis*, *Lupinus excubitus* var. *johnstonii*, *L. guadalupensis*, *Lycium brevipes* var. *hassei*, *Lycium californicum*, *Lyonothamnus floribundus* ssp. *asplenifolius*, *L. floribundus* ssp. *floribundus*, *Madia radiata*, *Malacothamnus abbottii*, *M. aboriginum*, *M. clementinus*, *M. davidsonii*, *M. jonesii*, *M. palmeri* var. *involucratus*, *Microseris douglasii* var. *platycarpa*, *Mimulus clevelandii*, *M. exiguus*, *M. flemengii*, *M. purpureus*, *M. shevockii*, *Monardella beneolens*, *M. cinerea*, *M. douglasii* ssp. *venosa*, *M. hypoleuca* ssp. *lanata*, *M. linoides* ssp. *viminea*, *M. macrantha* ssp. *hallii*, *M. nana* ssp. *leptosiphon*, *M. robinsonii*, *M. stoneana*, *Mucronea californica*, *Muhlenbergia californica*, *Muilla clevelandii*, *M. coronata*, *M. transmontana*, *Myosurus minimus* ssp. *apus*, *Navarettia fossalis*, *N. sp. nova*, *Nemacaulis denudata* var. *denudata*, *Oenothera deltoides* ssp. *howellii*, *Opuntia basilaris* var. *brachyclada*, *O. californica* var. *californica*, *O. wigginsii*, *Orcuttia californica*, *Ornithostaphylos oppositifolia*, *Parnassia cirrata*, *Penstemon albomarginatus*, *P. californicus*, *Pentachaeta aurea*, *Perideridia parishii* ssp. *parishii*, *P. pringlei*, *Phacelia stellaris*, *P. suaveolens* ssp. *kecki*, *Phlox dolichantha*, *Pholisma arenarium*, *Pinus edulis*, *P. radiata*, *P. torreyana* ssp. *torreyana*, *Poa atropurpurea*, *Pogogyne abramsii*, *P. nudiuscula*, *Potentilla hickmanii*, *Psorothamnus arborescens* var. *arborescens*, *P. arborescens* var. *simplicifolius*, *Quercus cedrosensis*, *Q. dumosa*, *Q. engelmannii*, *Q. lobata*, *Q. pacifica*, *Q. tomentella*, *Q. turbinella*, *Ribes viburnifolium*, *Romneya coulteri*, *R. trichocalyx*, *Rosa minutifolia*, *Salvia clevelandii*, *S. munzii*, *Satureja chandleri*, *Sclerocactus polyancistrus*, *Scrophularia villosa*, *Selaginella asprella*, *S. cinerascens*, *S. eremophila*, *S. leucobryoides*, *Senecio aphanactis*, *S. bernardinus*, *S. blochmanneae*, *S. lyonii*, *Sibara filifolia*, *Sibaropsis hammittii*, *Sidalcea neomexicana*, *S. pedata*, *Solanum tenuilobatum*, *S. wallacei*, *Spaeralcea rusbyi* var. *eremicola*, *Stemodia durantifolia*, *Stephanomaria blairii*, *Streptanthus bernardinus*, *Stylomecon heterophylla*, *Suaeda esteroa*, *S. taxifolia*, *Syntrichopappus lemmonii*, *Taraxacum californicum*, *Tetracoccus dioicus*, *Thelypodium stenopetalum*, *Trifolium gracilentum* var. *palmeri*, *T. polyodon*, *Triteleia clementina*, *Verbesina dissita*, *Viguiera laciniata*, *Washingtonia filifera*, *Wislizenia refracta* var. *refracta*.

Animals: vernal pool fairy shrimp (*Branchinecta lynchi*), San Diego fairy shrimp (*Branchinecta sandiegoensis*), Riverside fairy shrimp (*Streptocephalus woottoni*), Quino checkerspot butterfly (*Euphydryas editha quino*), Augusta's checkerspot butterfly (*Euphydryas editha augustina*), Harbison's dun skipper (*Euphyes vestris harbisoni*), Hermes copper butterfly (*Lycaena hermes*), desert pupfish (*Cyprinodon macularius*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), southwestern arroyo toad (*Bufo californicus*), western spadefoot toad (*Scaphiopus hammondi*), southwestern pond turtle (*Clemmys marmorata pallida*), orange-throated whiptail (*Cnemidophorus hyperythrus*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), northern red diamond rattlesnake (*Crotalus ruber ruber*), desert tortoise (*Gopherus agassizii*), rosy boa (*Lichanura trivirgata*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), chuckwalla (*Sauromalus obesus*), two-striped garter snake (*Thamnophis hammondi*), Mojave fringe-toed lizard (*Uma scoparia*), island night lizard (*Xantusia riversiana*), burrowing owl (*Athene cunicularia*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegoense*), western snowy plover (*Charadrius alexandrinus nivosus*), southwestern willow flycatcher (*Epidonax traillii extimus*), peregrine falcon (*Falco peregrinus*), California condor (*Gymnogyps californicus*), bald eagle (*Haliaeetus leucocephalus*), San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), California brown pelican (*Pelecanus occidentalis californicus*), coastal California gnatcatcher (*Polioptila californica californica*), light footed clapper rail (*Rallus longirostris levipes*), California least tern (*Sterna antillarum brownii*), least Bell's vireo (*Vireo bellii pusillus*), southern sea otter (*Enhydra lutris nereis*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), California bighorn sheep (*Ovis canadensis californiana*), peninsular bighorn sheep (*Ovis canadensis cremnobates*), island fox (*Urocyon littoralis*).

NORTH CAROLINA, VIRGINIA, and WEST VIRGINIA: January 1980-October 1986.

INVITED TALKS

- California Native Plant Society, Orange County and San Diego Chapters. 03-04 May 2003. A botanical exploration and collecting expedition in the International Border region of southern California, USA, and Baja California, Mexico (with Andrew C. Sanders, Jon Rebman, Fred Roberts, Thomas Oberbauer, and Michael Simpson).
- California Native Plant Society, Orange County Chapter. 16 January 2003. Botanical exploration in southern California (with Andrew C. Sanders).
- Southern California Botanists Society. 19 October 2002. Botanical exploration in southern California continues to yield new (and usually rare) species (with Andrew C. Sanders).

- California Native Plant Society, Orange County and San Diego Chapters. April 2001. Ecology and flora of the San Ysidro Mountains.
- California Native Plant Society, Orange County and San Diego Chapters. 21 April 2000. Ecology and flora of the San Ysidro Mountains.
- California Native Plant Society, Orange County Chapter. April 2000. Ecology and flora of the Elsinore Peak, Santa Ana Mountains.
- California Native Plant Society, San Diego County Chapter. 15 June 1999. Threatened and endangered plants of southern California. (with Scott Eliason).
- U.S. Fish and Wildlife Service, Carlsbad Field Office. 06 June 1999. Threatened and endangered plants of southern California. (with Scott Eliason).
- North Carolina Botanical Garden. 20 October 1997. Conservation efforts in southern California.
- Conejo Valley Garden Club. 22 January 1997. Rare Plants of the Santa Monica Mountains.
- Center for Plant Conservation, annual meeting, Denver, CO. 02 October 1996. Conservation efforts at Rancho Santa Ana Botanic Garden-*Hemizonia mohavensis* and *Sibara filifolia*.
- Rancho Santa Ana Botanic Garden. 14 May 1996. Rare Plants in the Peninsular Ranges.
- California Native Plant Society, Orange County Chapter. 20 April 1995. Effects of population size on fitness in *Calochortus weedii* Alph. Wood var. *weedii* (Liliaceae).
- Center for Plant Conservation, California Task Force Meeting, University of California, Berkeley. 15 August 1995. The germination of California orcutt grass, *Orcuttia californica* (Poaceae).

CONTRACTS AND GRANTS AWARDED

- US Department of Fish and Wildlife. May 2000. \$10,000. Recovery efforts for Orcutt's spineflower (*Chorizanthe orcuttii*).
- US Department of Fish and Wildlife. July 1999. \$9,000. Recovery efforts for willow monardella (*Monardella linoides* ssp. *viminea*).

- California Department of Fish and Game. May 1997. \$1,000. Process and store seed of *Holocarpha macradenia* from the last population.
- US Department of Agriculture, National Forest Service, Angeles National Forest. March 1997. \$1,865. Collect and store seeds of *Arenaria macradenia* var. *kuschei* (Kusch's sandwort).
- Bureau of Reclamation. January 1997. \$25,000. The use of reclaimed water for restoring threatened and endangered wetland plants.
- US Department of Fish and Wildlife. August 1996. \$5,000. Survey for *Malacothamnus abbottii*.
- California Native Plant Society, Orange County Chapter. January 1995. \$500. Effects of population size on reproductive characters as they relate to fitness in *Calochortus weedii* Alph. Wood var. *weedii* (Calochortaceae).
- National Science Foundation Young Scholars Program. November 1994. \$500. Francis Gonzalez (invited to present in the national symposium)--Effects of population size in the germination and growth of *Calochortus*.
- Institute of Museum Services-Conservation Project. October 1993. \$25,000. Assessment of the petaloid monocot collection at the UCI Arboretum.

PUBLICATIONS

ARTICLES:

- Elvin, M. A. and A. C. Sanders. (2003). A New Species of *Monardella* (Lamiaceae) from Baja California, Mexico, and Southern California, United States. *Novon* 13(4).
- Elvin, M. (2001). *Astragalus ertterae*. In: Species accounts for special status plants and animals in the western Mojave Desert. Bureau of Land Management.
- Elvin, M. (2001). *Mimulus shevockii*. In: Species accounts for special status plants and animals in the western Mojave Desert. Bureau of Land Management.
- Elvin, M. (2001). *Monardella beneolens*. In: Species accounts for special status plants and animals in the western Mojave Desert. Bureau of Land Management.

- Koopowitz, H., M. Elvin, and L. Keenan. (1996). *In vivo* visualization of living flatworm neurons using Lucifer Yellow intracellular injections. *J. Neurosci. Meth.* 69: 83-89.
- Koopowitz, H., M. Elvin, and T. Bae. (1995). Comparison of the nervous system of the rhabdocoel, *Mesostoma ehrenbergii*, with that of the polyclad, *Notoplana acticola*. *Hydrobiologia*. 305: 127-133.
- Elvin, M. (1994). *Gethyllis*. UCI Arboretum Quarterly. 3(2): 10-11.
- Elvin, M. (1994). The UCI Arboretum and Gene Bank Petaloid Monocot Conservation Collection.
- Elvin, M., H. Koopowitz (1994). Neuroanatomy of the rhabdocoel flatworm *Mesostoma ehrenbergii* (Focke, 1836) I: Neuronal diversity in the brain. *J. Comp. Neurol.* 343: 319-331.

OTHER DOCUMENTS

- Elvin, M. and J. Vanderwier. 2002. Rare plant surveys and focused surveys for *Chorizanthe parryi* var. *fernandina* on Newhall Ranch. Report prepared for Newhall Land and Farming Company.
- Elvin, M. 2001. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for *Deinandra conjugens* (Otay tarplant). 66 FR 32052.
- Elvin, M. and Tierra Data Systems. 2000. Rare Plant Survey and Floristic Inventory: 1999 Year-end Report: Year three of three. Report prepared for Southwest Division naval Facilities Engineering command. Delivery Order: N68711-95-D-7605/0015.
- Elvin, M. 1999. Rare Plant Survey and Floristic Inventory: 1998 Year-end Report. Report prepared for Southwest Division naval Facilities Engineering command. Delivery Order: N68711-95-D-7605/0015.
- Elvin, M. 1997. Seed Management Guidelines for the Seed Program at Rancho Santa Ana Botanic Garden.
- Elvin, M. and V. Yadon. 1996. Current Knowledge and Conservation Status of *Malacothamnus abbottii* (Eastwood) Kearney (Malvaceae), Abbott's bushmallow. Status report prepared for: Connie Rutherford; US Fish and Wildlife Service; 2493 Portola Road, Suite B; Ventura CA 93003; (805) 644-1766 X306 Order #: 11440-6-5118.

PHOTOGRAPHS

- Endangered Species Bulletin. 2001. *Downingia concolor* var. *brevior*. 26:7.
- Bulletin of the California Lichen Society. 1996. V.3 #2. Cover. San Clemente Island habitat and *Calystegia macrostegia* ssp. *amplissima*.
- A field guide to the rare plants of the Angeles National Forest. 1995. USDA. *Arctostaphylos gabrielensis*, *Calochortus catalinae*, *C. clavatus* var. *gracilis*, *C. palmeri* var. *palmeri*, *C. plummerae*, *C. striatus*, *Canbya candida*.
- International Bulb Society. <http://www.bulbsociety.com>
Allium fimbriatum var. *fimbriatum*, *A. haematochiton*, *A. munzii*, *A. praecox*, *Bloomeria crocea*, *Brodiaea filifolia*, *B. kinkiensis*, *Calochortus amabilis*, *C. catalinae*, *C. clavatus* var. *gracilis*, *C. concolor*, *C. dunnii*, *C. invenustus*, *C. kennedyi* var. *kennedyi*, *C. luteus*, *C. palmeri* var. *munzii*, *C. palmeri* var. *palmeri*, *C. plummerae*, *C. splendens*, *C. striatus*, *C. superbus*, *C. tolmiei*, *C. umbellatus*, *C. uniflorus*, *C. venustus*, *C. vestae*, *C. weedii* var. *intermedius*, *C. weedii* var. *weedii*, *Chlorogalum purpureum* ssp. *purpureum*, *C. purpureum* ssp. *reductum*, *Dichelostemma capitatum*, *D. ida-maia*, *Dodecatheon clevelandii* ssp. *clevelandii*, *Dudleya brevifolia*, *D. multicaulis*, *D. nesotica*, *D. variegata*, *Fritillaria affinis*, *F. biflora*, *Lilium humboldtii* ssp. *ocellatum*, *Muilla maritima*, *Scutellaria tuberosa*, *Sisyrinchium bellum*, *Triteleia clementina*, *T. hyacinthina*, *Zigadenus venenosus*, *Z. freemontii* var. *fremontii*.
- Catalina Island Conservancy Intranet. <http://www.catalinas.net/seer/>
Sibara filifolia.
- Center for Plant Conservation. <http://www.mobot.org/CPC/>
Allium munzii.
- Rancho Santa Ana Botanic Garden Seed Program. <http://www.cgu.edu/inst/rsa/seedbank.htm>
Brodiaea filifolia (titled "Conservation") and reproductive biology experiment (titled "Research").

TRAINING COURSES

- Recovery training course (3 units), U.S. Fish and Wildlife Service; Charleston, SC. December 2000.

- Grants and Agreements training course (1 units), U.S. Fish and Wildlife Service; Carlsbad, CA. November 2000.
- Habitat Conservation Plan training course (5 units), U.S. Fish and Wildlife Service; Carlsbad, CA. March 2000.
- Interagency consultation training course (5 units), U.S. Fish and Wildlife Service; Carlsbad, CA. February 2000.
- Aviation safety (1 unit), U.S. Fish and Wildlife Service; Carlsbad, CA. October 1999.
- Wetland delineation (2 units), U.S. Fish and Wildlife Service; Carlsbad, CA. July 1999.
- Recovery permits and recovery plans (0.5 units), U.S. Fish and Wildlife Service; Carlsbad, CA. June 1999.
- Quino checkerspot butterfly life history and identification (1 unit), UC Riverside; Chula Vista, CA. January 1999.
- Freedom of information act (FOIA) course (1 unit), U.S. Fish and Wildlife Service; Carlsbad, CA. December 1999.
- Ecological Services Basic training course (5 units), U.S. Fish and Wildlife Service Training Center; Shepardstown, WV. 1998.
- Habitat Conservation Plan training course (2 units), U.S. Fish and Wildlife Service; Carlsbad, CA. 1998.
- International Symposium on Permits and Collecting, San Diego Museum of Natural History. 1997.
- Conservation Genetics (1 unit), Rancho Santa Ana Botanic Garden. 1996.
- Plant Families Dicots (1 unit), Rancho Santa Ana Botanic Garden. 1996.
- Southwestern Botanical Systematics Symposium: The Linnaean Hierarchy: Past, Present and Future, Rancho Santa Ana Botanic Garden. 1996.
- Plant Families, Monocots (1 unit), Rancho Santa Ana Botanic Garden. 1995.

- California Regional Task Force Meeting, Center for Plant Conservation. University of California, Berkeley. 1995.
- Southwestern Botanical Systematics Symposium: The New Morphology: Integrative Approaches, Rancho Santa Ana Botanic Garden. 1995.

OTHER ACHIEVEMENTS

Awards

- STAR Award: Special Thanks for Achieving Results, August 2001, for completing the Proposed Designation of Critical Habitat for *Deinandra conjugens* and working to complete surveys for it on the San Diego National Wildlife Refuge.
- On the Spot Award, April 2000, for contributions to the Quino checkerspot butterfly survey and recovery map.
- On the Spot Award, March 2000, for assisting in a complex consultation with a short deadline.

Fencing

1991 US Olympic Sports Festival – Los Angeles, California.

1989 World University Games – Duisberg, Germany.

1989 US Olympic Sports Festival, Silver Medalist – Oklahoma City, Oklahoma.

1989 World Cup- Budapest, Hungary.

1989 US National Championships, Finalist, Bronze Medalist – Orlando, Florida.

1986 NCAA Championships – South Bend, Indiana.

1985 NCAA Championships – Princeton, New Jersey.

MEGAN ENRIGHT

Biologist

EDUCATION

- University of California, San Diego
B.S., Biology-Ecology, Behavior and Evolution (1997)
- Member, California Native Plant Society
- Member, Women's Environmental Council

EXPERIENCE SUMMARY

Ms. Enright is a biologist with six years experience in habitat restoration and biological assessments. She participated in coastal sage scrub restoration at the City of San Diego Miramar Landfill. The project included restoration design, native plant nursery management, and revegetation monitoring. Her current role at Dudek & Associates includes biological resources assessments and impact analyses, wetland delineations and permitting, vegetation mapping and rare plant surveys.

PROFESSIONAL ASSIGNMENTS

Wetlands Delineation, Wetlands Permitting, Biological Resources Reports, and Focused Rare Plant Surveys

- **Focused Rare Plant Surveys.** Newhall Ranch, Los Angeles County, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina*) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003.
- **Pipeline Corridor.** Metropolitan Water District of Southern California, County of Riverside, California. Conducted wetlands delineation and assisted in permit coordination for the Section 401 and Section 404 permits and 1601 Streambed Alteration Agreement. Conducted initial site reconnaissance, rare plant survey, and fairy shrimp survey for the proposed alignment. In addition, assisted in siting geotechnical activities.
- **Transportation Corridor.** North County Transportation District - Oceanside to Escondido Rail Project, City of Oceanside, California. Delineated wetlands and prepared vegetation map within the Loma Alta Creek, Buena Vista Creek, Buena Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek Watersheds. Prepared Section 401 and Section 404 permit applications and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the rail system. Prepared alternatives analysis, functional values assessment, and Conceptual Wetlands Mitigation Plan. Assisted in the preparation of the biological resources report and CEQA documentation.

- **Roadway Corridor.** Camino Ruiz Road Alignment, San Diego-Future Urbanizing Area Subarea IV, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared Section 401 and Section 404 permit applications and 1603 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the roadway corridor. Prepared functional values assessment.
- **Roadway Improvements and Flood Protection Project.** City of San Marcos, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys along San Marcos Creek from State Route 78 to Lake San Marcos.
- **Residential Subdivision.** The Irvine Company Planning Area 1, County of Orange, California. Prepared vegetation map and conducted rare plant surveys within the 4,000-acre project site. Prepared biological resources report for CEQA purposes.
- **Residential Subdivision and Commercial Development.** The Irvine Company Planning Areas 18 and 39, City of Irvine, California. Delineated wetlands and prepared vegetation map within the 1,200-acre project site. Developed wetlands permitting strategies with client.
- **Landfill Closure and Embankment and Scour Protection.** Kern Valley Sanitary Landfill Closure Project, Kern County, California. Delineated wetlands and prepared Section 401 and Section 404 Letter of Permission permit applications and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the embankment and scour protection. Prepared functional values assessment.
- **Dredging Impact Analysis.** Old Mission Dam, San Diego, California. Prepared wetland delineation and vegetation map upstream of the historic Old Mission Dam. Prepared biological resources report for CEQA purposes. Coordinated with regulatory agencies regarding proposed dredging.

Habitat Restoration and Enhancement

- Monitored salt marsh and riparian creation and enhancement efforts at Rancho Santa Fe Road Bridge, Sorrento Valley Utilities Improvement (City of San Diego, Tijuana River Emergency Channel Mitigation, Green Valley Mobile Home Park Slope Stabilization and North Metro Interceptor Sewer Projects in San Diego, California. Conducted data analysis to determine success of restoration and enhancement efforts in terms of predetermined performance standards. Prepared subsequent monitoring reports which included the assessment of revegetation efforts and recommendations for further remedial actions.
- Monitored upland vegetative communities including coastal sage scrub revegetation efforts at Top of the World Reservoir and Pump Station, Laguna Beach, California. Prepared subsequent monitoring reports.
- Prepared Conceptual Wetland Mitigation Plan for the Emergency Sewer Repairs at various sites along Escondido Creek and for the Hale Avenue Resource Recovery Facility (HARRF) for the City of Escondido, California. Prepared Conceptual Wetland Mitigation and

Revegetation Plan for the Torrey Del Mar Project within the City of San Diego Future Urbanizing Area Subarea I, California.

- Assisted in the research and documentation for mitigation alternatives for SR-125-Caltrans. Focused on mitigation through the restoration of habitat for the federally-endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*).

Construction and Erosion Control Monitoring

- Performed construction monitoring for the Sorrento Valley Utilities Improvement Project which included precise grading for the restoration of salt marsh and other riparian habitats.
- Inspected the North Reservoir Project which includes erosion/sediment methods to verify the project was in accordance with the Storm Water Pollution Prevention Program for the Laguna Beach County Water District in the City of Laguna Beach, California. Project included weekly monitoring visits to assess the function of the installed Best Management Practices for erosion control and subsequent observation reports, water quality sampling, and storm event monitoring.

Conservation Planning

- Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included research on potentially covered plant species followed by syntheses of ecological information.

NATHAN GALE

Principal Scientist, FLx

EDUCATION AND CERTIFICATIONS

- University of California, Santa Barbara,
Ph.D., Geography, 1985.
- University of California, Santa Barbara,
M.A., Geography, 1980.
- Society of Wetland Scientists,
PWS, Certified Professional Wetland Scientist #1216, 1999.

SUMMARY OF QUALIFICATIONS

Dr. Gale has 23 years of experience managing and conducting multidisciplinary projects ranging from methodology development to applied environmental impact assessments, planning studies, and restoration programs. His management experience includes proposal preparation; contract negotiation and client relations; cost control and schedule monitoring; document production supervision; and quality assurance review. His specific technical work has involved experimental and sampling design; photographic documentation; and mapping of natural vegetation, sensitive species, environmental constraints, and land use. He also has field experience in quantitative vegetation sampling, environmental data collection, and wetland delineation. Dr. Gale is skilled in qualitative and quantitative data analysis for numerous applications including ecological and environmental impact assessment as well as mitigation and monitoring planning. He has been responsible for the preparation of NEPA/CEQA environmental documents, planning studies, and technical reports for the Department of Defense (DOD), the Department of Energy (DOE), the Department of Interior (DOI), and for state and local agencies. In addition, he has published extensively in the fields of geography, ecology, planning, and environmental studies.

EXPERIENCE

Rare Plant and Vegetation Surveys and Mapping, Newhall Ranch/Valencia Company Project Sites, Los Angeles and Ventura Counties, CA. Newhall Land and Farming Company, URS Corporation, Impact Sciences, Inc., and Dudek and Associates, Inc. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower) and *Helianthus* sp. (sunflower), vegetation surveys and mapping of plant communities, and report preparation for various sites. Surveys were carried out during four

field seasons in the years 2000, 2001, 2002, and 2003. Participation in the development of a spineflower management plan, preserve design, and associated research activities.

Rare Plant and Vegetation Surveys and Mapping, Los Angeles County, CA. Natural Resource Consultants. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), *Orcuttia californica* (California Orcutt grass), and *Navarretia fossalis* (spreading navarretia), vegetation surveys, and report preparation for three sites in the year 2003.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation and Jordan Environmental Services. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation. Development of general mitigation and restoration success criteria, including sampling design, data collection, statistical data analysis, and reporting for selected reference wetlands for future comparison with wetland mitigation and restoration sites. Participation in activities related to uplands and wetlands habitat restoration with the Restoration Working Group, comprising regulatory agency representatives and Unocal consultants, for the long-term Guadalupe Restoration Project.

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Ventura River Estuary Enhancement Project, Ventura County, CA. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach. The project involved monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities included botanical surveys, survival and growth surveys, photo documentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB. U.S. Air Force and The Earth Technology Corporation. Technical advisor and senior data analyst for wetland creation, upland dune scrub habitat restoration, coast live oak revegetation, and vegetation monitoring for a five-year biological mitigation and monitoring program. Activities included initial planning, budgeting, methodology development, sampling design, vegetation sampling, data analysis, preparation and review of annual monitoring reports.

Guadalupe Oil Field Restoration. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Initial restoration planning, including background research, historical air photo assessment, and analysis of restoration alternatives at the Guadalupe Oil Field. Results from these tasks were used in the evaluation of potential restoration options, and to anticipate biological, hydrological, ecological, logistical, economic, and other issues associated with each restoration option.

Restoration of Coastal Dunes and Associated Wetlands in California. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Principal scientist responsible for compiling and annotating a comprehensive bibliography of restoration and revegetation projects in coastal California, with an emphasis on coastal dune habitats and coastal wetlands.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Technical advisor responsible for developing strategy and task recommendations for the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Key aspects of the plan included an outline of steps for habitat protection, species and habitat monitoring, biological and ecological research, and the establishment of new populations.

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design and implementation of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The project included plant species identification, vegetation sampling, data analysis, photo documentation, and report preparation.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County.

Restoration Plan, Naval Base Ventura County, Port Hueneme Site, CA. Naval Base Ventura County and The Environmental Company. Field visits and preparation of a habitat protection and restoration plan for four special interest natural areas.

Biological Surveys and Wetlands Delineation for the National Reconnaissance Office (NRO) Campus, Vandenberg AFB. U.S. Air Force and Titan Corporation. Field biological surveys, jurisdictional wetlands delineation, and preparation of an addendum to the environmental assessment for The General Plan for the Cantonment Area of the base.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal scientist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

EIS and Environmental Assessments. U.S. Air Force. Program manager and contract administrator, under a contract with the Strategic Air Command (SAC), for eight environmental assessments and one EIS for proposed USAF real estate, facility construction, and training actions. Impact analyses were conducted for the full range of environmental and socioeconomic issues; major areas of focus involved endangered species' habitats, cultural and historical resources, and hazardous waste sites.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

Oil and Gas Exploration and Facilities Development EIRs/EISs. Santa Barbara County and California State Lands Commission. Environmental analyst for EIRs/EISs of oil and gas development projects located offshore California.

Supplemental Environmental Impact Report for the 1990 Long Range Development Plan. University of California, Santa Barbara. Program manager for a supplemental EIR focused on growth-related impacts to local school districts, and potential secondary environmental impacts to sensitive wetland habitats that could be caused by needed school facility expansion.

Biological Monitoring for Installation of CITS, VTS, South Base, and Tranquillon Mountain Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Foster Wheeler Environmental Corporation. Onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Surveys and Monitoring for Installation of Building 3000 Fiber-Optic Cable System, Vandenberg AFB. U.S. Air Force and System Technology Associates. Field surveys and onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring for Honda Ridge Road Repair and Point Sal Road Repair, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Ace Engineering, Inc. Onsite biological monitoring for road repair activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, the stabilization of oil wells for the Venoco State Lease 421 piers, and the AERA/Molino flowlines abandonment project.

MEMBERSHIPS

California Botanical Society; California Exotic Pest Plant Council; Society of Wetland Scientists; Society of Ecological Restoration; The International Mountain Society.

SELECTED PUBLICATIONS

Dr. Gale has been an author and collaborator on numerous academic publications, government research grant reports, and presentations at national and international professional conferences. In addition, he has contributed to environmental and planning documents. A summarized count of his work includes: Refereed Journal Articles - 28; Book Chapters - 5; Papers in Conference Proceedings - 3; Government Research Reports - 13; Contributions to Planning Studies - 44; Contributions to Environmental Documents - 55.

Journal Articles

"Coast Live Oak Revegetation on the Central Coast of California," (with A. Parikh), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with A. Parikh), *Restoration Ecology*, 6(1), 1998, 83-93.

"The Analysis of Class Dispersion Patterns Using Matrix Comparisons," (with L.E. Harvey and F.W. Davis), *Ecology*, 69(2), 1988, 537-542.

"Tests of Randomness: Unidimensional and Multidimensional," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Environment and Planning A*, 17, 1985, 373-385.

"Measuring Association Between Spatially Defined Variables: An Alternative Procedure," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Geographical Analysis*, 17, 1985, 36-46.

"Unclassed Matrix Shading and Optimal Ordering in Hierarchical Cluster Analysis," (with W.C. Halperin and C.M. Costanzo), *Journal of Classification*, 1, 1984, 775-92.

Conference Proceedings

- "Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and A. Parikh), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) *Ecology, Conservation, and Management of Vernal Pool Ecosystems*, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.
- "Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh), in M.C. Landin (Ed.) *Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science*, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.
- "Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in M.C. Landin (Ed.) *Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS)*, New Orleans, LA, 1993, 368-76.
- "First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) *Proceedings of the Pacific Division of the AAAS*, University of California, Santa Barbara, June 1992, p. 46.

KIM L. MARSDEN

Botanist/Biologist

As a biologist with more than ten years of experience, Ms. Marsden has successfully conducted a diverse range of botanical and zoological surveys, including focused searches for rare and endangered species in coastal, mountain and desert plant communities. She has developed excellent botanical skills from not only a broad range of field identification experiences throughout the southwestern United States and northwestern Mexico, but training in botanical laboratory techniques used for plant identification, as well. Ms. Marsden has extensive experience in the analyses of potential impacts to species and habitats from proposed development projects. She prepares and reviews technical reports, which provide alternatives recommendations to mitigate these impacts. She has a thorough working knowledge of regulatory issues and applicable laws including the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and the Clean Water Act as part of her resource agency experience working as a Botanist/Biologist for the California Department of Fish and Game, U.S. Fish and Wildlife Service, and through her project manager experience in the regulatory branch of the U. S. Army Corps of Engineers. Ms. Marsden has reviewed and commented on numerous proposed mitigation and monitoring plans for sensitive species. She is knowledgeable of, and skilled in, vegetation mapping, mitigation monitoring, and the design of habitat restoration plans. She also has extensive experience in conducting rare, threatened, and endangered animal surveys.

EDUCATION

Completed all required coursework for the Master's Program in Systematic Botany, San Diego State University, 1992-1994. Master's Research Topic: Systematics, ecology and natural history of Northwest American *Eryngium* species (Apiaceae).

Bachelor of Science, Biology, San Diego State University, 1992.

Associate of Science, Medical Laboratory Technology, San Diego Mesa College, 1988.

PUBLICATIONS

Marsden, Kim L. and Michael G. Simpson. 1999. *Eryngium pendletonensis* (Apiaceae), A New Species from Southern California. *Madroño*, 46:1, 61-64.

EXPERIENCE

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| 1/01-present | Associate Resource Ecologist, California Department of Parks and Recreation, Southern Service Center, San Diego. |
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Design long-term monitoring studies to assess the status and condition of vegetation communities, exotic species infestations, and rare plant populations. Conduct vegetation and rare plant inventories within State Parks in southern California. Assess the impacts of maintenance and development projects on biological resources within state park units. Provide technical botanical expertise to Service Center staff when requested. Assist in project environmental clearance under CEQA, ESA, and CESA. Assist other resources section staff in biological survey work and data analysis when necessary.

1/00 –1/01

Associate Biologist in Botany, California Department of Fish and Game, Region 5, San Diego Office.

Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under Section 2835 of the Fish and Game Code (Natural Community Conservation Program). Coordinated with the U.S. Fish and Wildlife Service Habitat Conservation Program staff to ensure HCP conformity with the Federal Endangered Species Act and the California Fish and Game code and other state and federal laws.

9/97-1/00

Fish and Wildlife Biologist/Botanist-U.S. Fish and Wildlife Service, Branch of Habitat Conservation Planning, Ecological Services, Carlsbad Field Office.

Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under section 10 of the Endangered Species Act. Coordinated with California Department of Fish and Game Natural Community Conservation Program (NCCP) staff to ensure HCP conformity with the Endangered Species Act and the Fish and Game code.

Evaluated and commented on projects impacting U.S. Army Corps of Engineers' jurisdictional Waters of the United States pursuant to the Fish and Wildlife Coordination Act. Consulted and conferred with other federal agencies under section 7 of the Endangered Species Act (Act) to analyze effects of federal actions on species proposed for listing or listed as endangered, threatened under the Act.

Provided technical expertise to Field Office staff in evaluation of revegetation, restoration and enhancement projects of upland, riparian, and wetland habitats. Provided general botanical expertise to Field Office staff biologists when needed.

7/96-9/97

Botanist-U.S. Fish and Wildlife Service-Branch of Federal Projects, Ecological Services, Carlsbad Field Office.

Conducted complete biological surveys for plants and wildlife for impact assessments of proposed land and water development projects. Prepared biological technical reports, including analyses of project alternatives developed from the results of directed sensitive species and community surveys. Developed sampling protocols for vegetation communities; provided botanical expertise to staff biologists and made recommendations for resource protection and enhancement. Surveyed for, and monitored the status of, federal candidate, proposed, and listed plant and animal taxa. Assisted in amphibian and reptile pit-fall trapping survey efforts. Provided technical expertise to Field Office staff biologists for evaluation of revegetation, restoration and enhancement efforts of upland, riparian, and wetland habitats.

11/95-7/96

Biologist/Project Manager, U. S. Army Corps of Engineers, Regulatory Branch, San Diego Field Office.

Project management, including evaluation of impacts to jurisdictional Waters of the United States, including wetlands, associated with permit requests pursuant to section 404 of the Clean Water Act, section 10 of the Rivers and Harbors Act, and section 103 of the Marine Sanctuaries Act. Processed permit applications, composed letters to applicants, evaluated compliance with permit conditions and coordinated with other agencies regarding proposed permit activities affecting biological, historical and water resources.

3/95-10/97

Botanist (Seasonal), Lake Cuyamaca Recreation and Park District, Julian, CA.

Project Manager of the Lake Cuyamaca downingia, Lake Cuyamaca larkspur, and Parish's meadowfoam monitoring program. Developed sampling and monitoring protocols for sensitive plant species. Coordinated rare plant monitoring activities in accordance with interagency

Memorandum of Understanding guidelines, including mapping of rare plant populations using Geographic Information System (GIS) technology to assess annual boundary changes of plant subpopulations; prepared annual biological technical reports. Supervised and trained field personnel in established survey methodology; ensured thorough documentation of survey and monitoring activities through complete field notes.

ANUJA K. PARIKH
Principal Ecologist, FLx

EDUCATION AND CERTIFICATIONS

- University of California, Santa Barbara
Ph.D., Plant Geography, 1989.
- University of Bombay, India
M.S., Geography, 1981.
- University of Bombay, India,
B.S., Zoology and Geology, 1979.
- Society of Wetland Scientists
PWS, Certified Professional Wetland Scientist #841, 1995.

SUMMARY OF QUALIFICATIONS

Dr. Parikh has 19 years of field and research experience in the areas of botany, plant ecology, wetlands, biogeography, and earth resources. Her work has included environmental baseline inventories and impact assessments, rare and endangered plant species surveys, revegetation and mitigation plans, restoration and monitoring of native upland and wetland habitats, and coast live oak revegetation studies. She has expertise in field vegetation sampling, plant species identification, wetland delineation, and the collection of physical environmental data. Using aerial photography and field surveys, she has prepared vegetation maps based on classification and quantification of plant communities in a variety of habitats; she also has mapped environmental constraints, incorporating data on sensitive species, natural habitats, and physiographic and man-made features. Dr. Parikh is experienced with experimental design as well as processing and analyzing ecological data using statistical and graphics software.

EXPERIENCE

Rare Plant and Vegetation Surveys and Mapping, Newhall Ranch/Valencia Company Project Sites, Los Angeles and Ventura Counties, CA. Newhall Land and Farming Company, URS Corporation, Impact Sciences, Inc., and Dudek and Associates, Inc. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower) and *Helianthus* sp. (sunflower), vegetation surveys and mapping of plant communities, and report preparation for various sites. Surveys were carried out during four

field seasons in the years 2000, 2001, 2002, and 2003. Participation in the development of a spineflower management plan, preserve design, and associated research activities.

Rare Plant and Vegetation Surveys and Mapping, Los Angeles County, CA. Natural Resource Consultants. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), *Orcuttia californica* (California Orcutt grass), and *Navarretia fossalis* (spreading navarretia), vegetation surveys, and report preparation for three sites in the year 2003.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation and Jordan Environmental Services. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation. Development of general mitigation and restoration success criteria, including sampling design, data collection, statistical data analysis, and reporting for selected reference wetlands for future comparison with wetland mitigation and restoration sites. Participation in activities related to uplands and wetlands habitat restoration with the Restoration Working Group, comprising regulatory agency representatives and Unocal consultants, for the long-term Guadalupe Restoration Project.

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB, CA. U.S. Air Force and The Earth Technology Corporation. Project biologist responsible for directing, planning, and implementing biological field activities related to wetlands creation, upland habitat restoration, coast live oak revegetation, and vegetation monitoring for all mitigation and restoration sites.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Ecologist and principal author responsible for background research and all botanical elements of the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*).

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's

watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

Ventura River Estuary Enhancement Project, Ventura County, CA. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach. The project involved monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities included botanical surveys, survival and growth surveys, photo documentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Plant identification and vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County, CA.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Rare and Endangered Plant Species Surveys. Metropolitan Water District and ERC Environmental and Energy Services Co. Plant species identification and sensitive plant species surveys at proposed reservoir and mitigation sites (Potrero Creek, Harford Springs, Crown/Rawson Valleys, Motte Rimrock Reserve, Domenigoni Valley, Santa Rosa Plateau Preserve, Lake Skinner, and Vail Lake) for the Metropolitan Water District's Eastside Reservoir Project, Riverside County, CA.

Vegetation Mapping and Plant Species Surveys. Santa Barbara County, CA. Vegetation mapping using aerial photographs of riparian communities along the Santa Ynez River, Santa Barbara County; field vegetation and topographical data collection from transects, species

identification, rare and endangered plant species surveys, and report preparation for the County Flood Control District.

Rare and Endangered Plant Species Surveys. California Department of Water Resources.

Rare and endangered plant species identification and mapping along a proposed aqueduct route in the Lompoc and Lake Cachuma areas in Santa Barbara County, and near Santa Margarita, San Luis Obispo County; field verification, ground truthing and mapping of vegetation communities along the Santa Ynez River, CA.

Floristic and Vegetation Surveys. U.S. Department of Agriculture, Forest Service.

Preparation of floras and vegetation surveys in the Los Padres National Forest at Mt. Pinos, a lower subalpine community in Ventura and Kern counties, and at Alder Creek Botanical Area, Monterey County, CA. Identification of plant species and collection of vegetation and site data in permanent plots established in blue oak woodland in San Luis Obispo County, CA, as part of a Forest Service project on vegetation and habitat inventory and classification.

Wetland Vegetation Surveys, Mapping, and Monitoring. Dames & Moore.

Vegetation mapping using aerial photographs, calculations of riparian habitat acreages, and field botanical surveys for a land development project along the Santa Clara River, Los Angeles County, CA. Biological construction monitoring for an archaeological site investigation in the Los Carneros wetlands, Goleta, CA. Field surveys and mapping of wetlands and vernal pools at Beale AFB, CA.

Rare and Endangered Plant Species Surveys and Vegetation Mapping. Jones and Stokes Associates, Inc.

Field surveys for rare and endangered plant species at the proposed Los Vaqueros Reservoir site near Livermore, Contra Costa and Alameda counties, CA, and along ephemeral drainages near Taft in the Central Valley, Kern County, CA, for a project involving clean-up of oil and brea deposits. Habitat mapping and field surveys of riparian vegetation and plant species on transects along the Lower Ventura River, for an aquatic biology survey.

Ecological Survey Reports for Candidate Research Natural Areas. U.S. Department of Agriculture, Forest Service.

Field work, literature reviews, and document preparation for the San Emigdio Mesa and Sawmill Mountain Candidate Research Natural Areas, Los Padres National Forest, Ventura County, CA.

Restoration Plan, Naval Base Ventura County, Port Hueneme Site, CA. Naval Base Ventura County and The Environmental Company.

Field visits and preparation of a habitat protection and restoration plan for four special interest natural areas.

Biological Surveys and Wetlands Delineation for the National Reconnaissance Office (NRO) Campus, Vandenberg AFB. U.S. Air Force and Titan Corporation.

Field biological

surveys, jurisdictional wetlands delineation, and preparation of an addendum to the environmental assessment for The General Plan for the Cantonment Area of the base.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal ecologist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Natural Resources Management Plans. U.S. Air Force and Higginbotham/Briggs & Associates. Participation in data collection, field visits, agency coordination, document preparation and review for Natural Resources Management Plans prepared for Kaena Point Satellite Tracking Station, HI, and Onizuka AFB, CA.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, the All-American Pipeline relocation at Gaviota Creek, and the stabilization of oil wells for the Venoco State Lease 421 piers.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The monitoring project included plant species identification, vegetation sampling, data analysis, photo documentation, and report preparation.

Vegetation Surveys and Analysis. The Herbarium, Department of Biological Sciences, University of California, Santa Barbara. Plant species identification and vegetation sampling in upland and wetland areas for baseline data inventory of botanical resources and rare plants at Fish Slough, Inyo and Mono counties, CA. Project design and field surveys of topography, riparian vegetation, and plant species in the Ventura River estuary, Ventura County, CA; computer graphics, analysis, and document preparation of environmental relationships and distribution of species and vegetation communities. Computer analysis for a project on the botanical wetland resources of the Carpinteria salt marsh, Santa Barbara County, CA.

Wetlands Management Plan. Department of Geography and Campus Wetlands Committee, University of California, Santa Barbara. Field and literature surveys of hydrology and sedimentation of the campus-owned wetland resources in Devereux Slough and the Storke Campus wetlands.

Watershed Surveys. U.S. Department of Agriculture, Forest Service. Geomorphological, botanical, and hydrological field work in preliminary watershed surveys in Santa Barbara and Ventura counties, CA.

Research Activities. Department of Geography, University of California, Santa Barbara. Sampling and monitoring regeneration of tree and herbaceous species in the riparian zone of a chaparral watershed recovering from wildfire (N. Fork Matilija Creek, Ventura County); topographic channel surveys, computer plotting, ecological and botanical field, laboratory and greenhouse experiments, literature review, and data analysis. Vegetation sampling, inventory and analysis, and topographical surveys in chaparral ecosystems and oak woodlands in Burton Mesa chaparral, Santa Barbara County. Field sampling in coniferous forests of the Mendocino National Forest Reserve, CA.

MEMBERSHIPS

California Native Plant Society; Society of Wetland Scientists; Society of Ecological Restoration; California Botanical Society.

SELECTED PUBLICATIONS AND REPORTS

"Coast Live Oak Revegetation on the Central Coast of California," (with N. Gale), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with N. Gale), *Restoration Ecology*, 6(1), 1998, 83-93.

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and N. Gale), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) *Ecology, Conservation, and Management of Vernal Pool Ecosystems*, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

"Peacekeeper Rail Garrison and Small ICBM Mitigation Program, San Antonio Terrace, Vandenberg AFB, California Annual Wetlands Monitoring Report, Annual Upland Monitoring Report, Year 5," Prepared for the U.S. Department of the Air Force, Detachment 10, Space and Missile Systems Center, San Bernardino, CA, February 1996.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale), in M.C. Landin (Ed.) *Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science*, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*)," (with N. Gale), U.S. Fish and Wildlife Service, Ventura, CA, August 1994.

"Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in M.C. Landin (Ed.) *Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS)*, New Orleans, LA, 1993, 368-76.

"First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in A.E. Leviton and M.L.

- Aldrich (Eds.) Proceedings of the Pacific Division, American Association for the Advancement of Science, University of California, Santa Barbara, June 1992, p. 46.
- "Biotic Inventory and Ecosystem Characterization for Fish Slough, Inyo and Mono Counties, California," (with the Fish Slough Research Team), Report to State of California, The Resources Agency, Department of Fish and Game, by the Departments of Biological Sciences, Geography, and Geological Sciences, University of California, Santa Barbara, June 1991.
- "Ecology of a Mediterranean-Climate Estuarine Wetland at Carpinteria, California: Plant Distributions and Soil Salinity in the Upper Marsh," (with R. Callaway, S. Jones, W. Ferren), *Canadian Journal of Botany*, 68, 1990, 1139-1146.
- "Botanical Resources at Emma Wood State Beach and the Ventura River Estuary, California: Inventory and Management," (with W. Ferren, M. Capelli, D. Magney, K. Clark, and J. Haller), Report to the State of California Department of Parks and Recreation, Environmental Report No. 15, The Herbarium, Department of Biological Sciences, University of California, Santa Barbara, August 1990.
- "UCSB Campus Wetlands Management Plan, Part II Technical Report Hydrology, Water Quality, and Sedimentation of West and Storke Campus Wetlands," (with F. Davis, D. Theobald, and R. Harrington), Report to the California Coastal Conservancy and Campus Wetlands Committee, University of California, Santa Barbara, CA, 1990.
- "Recovery of the Chaparral Riparian Zone After Wildfire," (with F. Davis, E. Keller, and J. Florsheim), Proceedings of the California Riparian Systems Conference, September 22-24, 1988, Davis, CA, Protection, Management, and Restoration for the 1990s, Gen. Tech. Rep. PSW-110, U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, 1989, 194-203.
- "Plant Communities and Flora of the Proposed Botanical Reserve on Mt. Pinos, Ventura and Kern counties, CA," (with D. Capralis), Survey Report, U.S. Department of Agriculture, Forest Service, Los Padres National Forest Headquarters, Goleta, CA, August 1988.
- "Terrestrial Vegetation of Rattlesnake Canyon," (with F. Davis), Proceedings of the Chaparral Ecosystems Research Conference, Santa Barbara, CA, Report No. 62, California Water Resources Center, University of California, Davis, CA, 1986, 13-17.

**Katherine Rindlaub
Botanist
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As an independent consultant since 1986, Ms. Rindlaub has extensive experience in many habitats in southern California. Her educational background and work experience emphasize training in native plant identification, vegetation classification and mapping, including wetland and upland habitats, and habitat restoration. A sole proprietor, she frequently teams with wildlife biologists to produce technical appendices for Biological Assessments and Environmental Impact Reports. Field work has emphasized surveys for listed and other special status plant species, including evaluation for potential occurrence based on habitat. She has developed restoration plans for both wetland and upland habitats with budgets, monitoring and reporting requirements, and success criteria. Surveys have included Cowardin and US Army Corps of Engineers jurisdictional wetland delineations. She has mapped and classified vegetation using data derived from remote sensing as well as field work.

Ms. Rindlaub has developed, implemented, and evaluated mitigation, monitoring, and compliance plans, including experimental and sampling design. She prepared a management plan for a new reserve for a listed endangered species that integrated managed grazing for habitat maintenance. Restoration experience includes plan development, installation oversight, and reporting for compliance with requirements of local and State agencies. As a member of Santa Barbara County's Energy Division Environmental Compliance monitoring team, she has monitored and evaluated long-term restoration programs, particularly on pipeline easements. She also coordinated and supervised construction monitoring teams. Agency clients include the National Forest Service, National Park Service, County of Santa Barbara, and City of Santa Barbara. In the private sector, she works with oil and gas companies, private developers, schools, and environmental services corporations.

Other projects encompass construction and soil remediation monitoring, project floras, and multidisciplinary report coordination for EIR preparation. Project locations extend from San Mateo County to Los Angeles County along the coast, and inland from San Benito to San Bernardino County in California. She has experience as an NMFS approved marine mammal observer for sonic testing in the Santa Barbara Channel. Ms. Rindlaub completed training for implementation of Hydrogeomorphic Modeling for the Santa Barbara south coastal area.

Ms. Rindlaub received a B.A. in biology from the University of California at Santa Barbara, and is in the process of completing an M.A. in botany. She worked in the zoology departments of the Santa Barbara Museum of Natural History for ten years and as a naturalist for the Nature Conservancy during her student years. She taught general education biology and botany courses at Santa Barbara City College, and was a teaching assistant for California floristics and general botany at the University of California.

PROFESSIONAL EXPERIENCE

- 2003. Special Status Plant surveys, northwestern Los Angeles County and Cuyama Valley, for private developers.
- 2003. Compliance monitoring, lakeshore gabion wall installation.
- 2003. Revegetation monitoring, Pacific Pipeline, Angeles National Forest.
- 2002-2003. Botanical resources surveys and mitigation plan development for California and Federal listed species in north coastal Santa Barbara County for private developer.
- 2001-2003. Biological Resources Assessments for several lot splits for private residences and commercial developments in the City of Santa Barbara and the County of Santa Barbara.
- 2000-2003. Restoration plan for All American Pipeline crossing, Gaviota State Park, Santa Barbara County, California. (Implementation in progress).
- 1994-2003. Onsite Environmental Coordinator, North County Oil and Gas. Environmental Quality Assurance Program for Santa Barbara County Planning and Development, Energy Division. Subcontract to Storrer Environmental Services, Santa Barbara, CA.
- 1999-2003. Coastal Sage Scrub Restoration Plan for Elings Park. Prepared for the City of Santa Barbara, Engineering Division. (Implementation in progress).
- 2000-2001. Onsite Environmental Coordinator, Level (3) Fiber Optic Cable Installation. Environmental Quality Assurance Program for the County of Santa Barbara. Subcontract to Storrer Environmental Services.
- 2001. Plant surveys for the Casmalia toxic waste landfill for EPA Superfund Site evaluation. Subcontract to L. Hunt and Associates, Santa Barbara.
- 2000. Rare plant surveys and wetland delineation, Castaic Junction area, Los Angeles County, California. Subcontract to URS Greiner Woodward Clyde.
- 1999-2001. Monitoring and reporting for revegetation of soil remediation project on Devereaux Creek, Santa Barbara County. Subcontract to Kitson Nursery for County of Santa Barbara Parks Department.
- 1999. Wetland delineation for Rice Ranch, Orcutt, California. Subcontract to Rincon Consultants for County of Santa Barbara.
- 1999. Biological Resources. SEIR for Rice Ranch, Orcutt, California. Subcontract to Rincon Consultants for the County of Santa Barbara.
- 1999. Management Recommendations for Pillar Point Satellite Tracking Station, San Mateo County. Draft. Prepared for Vandenberg Air Force Base under subcontract to the Santa Barbara Museum of Natural History.
- 1999. Colson Quarry Landslide Botanical Resources Evaluation. Prepared for the County of Santa Barbara. Subcontract to L. Hunt.
- 1999. Biological resources survey Casitas Dam Retrofit Project. Subcontract to URS Greiner Woodward-Clyde.
- 1999. Rare plant survey, California State University, Channel Islands. Subcontract to Rincon Consultants.
- 1999. Biological resources evaluation and mitigation recommendations for GTE Communications, Gaviota State Park. For submission to the California Department of Parks and Recreation.
- 1999. Botanical Resources survey. Several privately owned parcels in the Lompoc, California area. Subcontract to Garcia and Associates.
- 1999. Jurisdictional wetland delineation. Union Valley Parkway extension. Subcontract to Dudek and Associates.
- 1999. Biological Resources. Baseline Avenue Project, Ballard, California. Contract to J.V. Stahl. with P. Collins.

- 1998. Biological Resources Survey for Texaco Pipeline Abandonment on Hollister Ranch, Santa Barbara County, California. Prepared for Texaco Exploration and Production, Ventura, California. With P. Collins.
- 1998. Review of the Dos Pueblos Golf Course Biological Enhancement Landscape Plan. Prepared for the County of Santa Barbara Planning and Development Department, Energy Division.
- 1998. Biological Assessment for the Tajiguas Landfill Expansion. Botanical Resources Section. Subcontract to L. Hunt, Santa Barbara.
- 1998. Grassland Restoration Success Evaluation on the All American Pipeline, Santa Barbara County, California. Prepared for All American Pipeline Company, Bakersfield, California. With G. Reyes-French.
- 1998. Biological Assessment for the Las Positas Valley/Northside Pre-Annexation Study. Prepared for the City of Santa Barbara Community Development Department. With L. Hunt.
- 1998. Restoration, Revegetation and Erosion Control Plan for the Las Positas Park Storm Drain. Prepared for the City of Santa Barbara Engineering Department.
- 1998. Jeter Property Wetland Enhancement and Protection Plan. Prepared for Russell Jeter, Santa Barbara, California.
- 1998. Botanical resources survey of the Lake Casitas Management Area, Ventura County, California. Subcontract to Woodward-Clyde, Santa Barbara, CA.
- 1998. Marine mammal monitor for geological testing at Exxon's Platform Harmony. Sub-contract to Sierra-Pacific Environmental, Santa Barbara.
- 1998. Biological Assessment, Catarina Creek Water Diversion Project. Prepared for the Los Padres National Forest for B. Miles, Agent, Carpinteria, California.
- 1997. Biological Assessment for the Las Positas Park Storm Drain. Prepared for the City of Santa Barbara Engineering Department. With L. Hunt.
- 1997. Environmental Compliance Monitor, Santa Barbara Shores Soil Remediation Project, Santa Barbara County Parks and Recreation. Subcontract to Storrer Environmental Services, Santa Barbara, California.
- 1997. Restoration, Revegetation, and Erosion Control Plan. Molino Gas Project, Molino Energy Company, Los Olivos, California.
- 1996-98. Botanical consultant for the City of Santa Barbara Engineering Department.
- 1996. Biological Resources Technical Report, Consolidated Site Alternative. Prepared for the Molino Energy Company's Molino Gas Project, Gaviota, California.
- 1996. Gaviota Tarplant Mitigation Plan. Prepared for the Molino Energy Company for submission to the California Department of Fish and Game.
- 1996. Jurisdictional Wetlands Delineation for the Storke Estate, Goleta, California. Subcontract to Dudek and Associates, Santa Barbara, CA.
- 1995-96. Atascadero Creek wetlands creation project. Preparation of annual reports for submission to the U.S. Army Corps of Engineers. Planting plan, monitoring program design and execution. Santa Barbara County Flood Control District. Subcontract to Acacia Landscaping and Erosion Control, Santa Barbara, CA.
- 1994-96. Bridge Maintenance Mitigation Measures. A report prepared for the City of Santa Barbara for submission to California Department of Fish and Game pursuant to development of a Memorandum of Understanding.
- 1991-98. Stream Revegetation Monitoring, 1603 Permits, for All American Pipeline Company.
- 1995. Wetland delineation on Orcutt Creek and vernal pools on Site 22, Orcutt Planning area. Contract to Santa Barbara County Planning and Development Department.
- 1995. Biological resources survey of selected sites in the Orcutt Planning Area. Managed contract for both wildlife and botanical surveys for Santa Barbara County Planning and Development Department.

- 1995. Gaviota Tarplant Ecological Preserve Mitigation and Management Plan. Prepared for submission to the California Department of Fish and Game by All American Pipeline Company.
- 1995. Preparation of Planting Plans for California Department of Fish and Game Stream Alteration Agreements (Section 1603) under contract to private individuals.
- 1994-95. Rare plant surveys and quantitative population assessment, Santa Rosa Island. Contract to Channel Islands National Park.
- 1991-97. Vegetation mapping, public workshops, rare plant survey, and revegetation and erosion control plan development for impacts to the Devereux Creek drainage. Construction and mitigation monitoring. Goleta West Sanitary District, Santa Barbara County.
- 1988-96. Rare plant mitigation plan development and implementation. All American Pipeline Company, Santa Barbara.
- 1994. Jurisdictional wetlands delineation at the CalLutheran Campus, Los Angeles County. Subcontract to J. Bowland.
- 1994. Rare plant and vegetation surveys in the Orcutt area for Santa Barbara County Resource Management Department.
- 1994. Biological Resources Technical Report. Prepared for the Molino Energy Company's Molino Gas Project, Gaviota, California.
- 1993. Wetland delineation field assistant for Burbank City Nature Center. Subcontract to Impact Sciences. Los Angeles County.
- 1993. Creek Revegetation Plan for San Ysidro Creek for the San Ysidro Ranch. Subcontract to Penfield and Smith, Santa Barbara County.
- 1990-93. Oak Preservation Plans submitted to Santa Barbara County for several private clients proposing developments in the Santa Ynez Valley.
- 1992. Botanical resources and wetland delineation for a proposed reservoir expansion project on Santa Margarita Lake in San Luis Obispo County. Subcontract to Woodward Clyde, Santa Barbara, CA.
- 1992. Revegetation consultant for the Gibraltar Dam revegetation program on the Santa Ynez River. Subcontract to Woodward Clyde, Inc., for the City of Santa Barbara.
- 1992. Rare plant surveys for the Coastal Aqueduct. Subcontractor for California Department of Water Resources. Rare plants in San Luis Obispo County, California.
- 1991-92. Assessment of and comparative site rating based on potential for sensitive resource occurrence for the Las Virgenes Municipal Water District in the Santa Monica Mountains. Ventura and Los Angeles Counties. Vegetation mapping, preliminary biological assessment. Subcontract to Woodward Clyde, Inc.
- 1990-92. Rare plant surveys and mitigation and erosion control plans for several private clients in Santa Barbara County. Habitats included coastal sage scrub, chaparral, native perennial bunchgrass grassland, wetland, annual grassland.
- 1991. State-listed endangered plant mitigation plan development for the Mariposa Pipeline project in Gaviota, Santa Barbara County. Subcontract to Interface Planning.
- 1991. Rare plant survey for the proposed Cajon Pipeline, Victorville to Cajon Pass in San Bernardino County.
- 1990. Rare plants, vegetation mapping and management recommendations for the botanical resources of Pt. Sal., Santa Barbara County. For the Santa Barbara Land Trust. Subcontract to Storrer and Semonsen. With Rachel Tierney.
- 1990. Vernal, brackish and freshwater wetland classification and mapping. Mitigation design for large housing project in Isla Vista. Subcontract to Interface Planning.
- 1989. Vernal pool habitat and plant surveys, reports to the County of Santa Barbara for private clients, Goleta.

- 1987-89. Revegetation monitor, UNOCAL Pt. Pedernales Project Environmental Quality Assurance Program. Subcontract to A.D. Little, Inc.
- 1988. Biota Report to County of Los Angeles for private client in Saddle Peak area of Malibu Hills.
- 1988. Rare plant surveys. Subcontract to Germaine French for Celeron Pipeline of California.
- 1987-88. Revegetation monitor. Chevron Pt. Arguello Pipeline Project Environmental Quality Assurance Program. Subcontract to Storrer & Semonsen.
- 1987-88. Rare plant surveys and vegetation mapping for private clients in the Santa Ynez Valley, Santa Barbara County, CA. Subcontract to Storrer and Semonsen for Santa Barbara County.
- 1988. Rare plant survey in Toro Canyon, Santa Barbara County. Subcontract to UCSB Vertebrate Museum for Santa Barbara County.
- 1987-88. Rare plant restoration and revegetation plan review specialist on Texaco's Gaviota Interim Marine Terminal Project. Subcontract to Storrer & Semonsen for Santa Barbara County.
- 1987. Botanical resources of the Storke Property, Santa Barbara County. Vegetation map and rare plant survey. Contract to Interface Planning, Santa Barbara.
- 1986. Rare plant survey, Mobil-San Ardo Project, San Benito County. Subcontract to Dames and Moore, Inc. Transmission line corridor.
- 1986. Botanical resources of the Santa Maria River Mouth. Rare plant census and mapping, wetland delineation and mapping. Subcontract to UCSB Herbarium.
- 1983. Vegetation mapping and rare plant surveys for the expansion of the Santa Barbara Airport into the Goleta Slough. For the Santa Barbara Museum of Natural History and the City of Santa Barbara.
- 1977-1979 Field assistant for baseline resource evaluation and preparation of keyworded bibliographic database for terrestrial resources of Channel Islands National Monument.

TEACHING

Santa Barbara City College:

1988-1990. *Lecturer*, Life Sciences Department. General Biology and General Botany.

University of California, Santa Barbara:

1984-1990, 1992. *Teaching Assistant*, Department of Biological Sciences. General Botany, Flora and Vegetation of California, Teaching Assistant Training.

1980-1987. *Lecturer*, UC Extension: Natural History of Santa Cruz Island.

Naturalist/Instructor:

1995-96. Naturalist (volunteer), Audubon Natural History Workshops, Golden Trout Camp, Sierra Nevada.

1979-1994. The Nature Conservancy, Santa Barbara Museum of Natural History and the Santa Barbara Botanic Garden. Public education field trips: botany, birds, geology, marine mammals and marine invertebrates. Many classes/trips taught on shipboard on the California Channel Islands.

1980. H & M Landing, San Diego. Five-day shipboard natural history course on the California Channel Islands.

MUSEUM

1977-1987. Assistant Curator, Vertebrate Zoology, Santa Barbara Museum of Natural History. Duties included specimen preparation, curation, particularly fish and marine mammal tissue collections, marine mammal necropsies, marine mammal data analysis.

1975-76. Curatorial Assistant, Invertebrate Zoology. Santa Barbara Museum of Natural History. Identification and curation of larval squid collection.

EDUCATION

B.A. Biology (Environmental Biology emphasis). Department of Biological Sciences, University of California, Santa Barbara 1980.

M.A. (in progress). Botany. Department of Biological Sciences, University of California, Santa Barbara. Thesis: Comparison of cone morphology and isozymes among Bishop Pine populations on the California Channel Islands.

CERTIFICATES/CONTINUING EDUCATION

Basic Wetland Delineation, Wetland Training Institute.

Wetlands Regulatory Update, March 27, 2000. UC Santa Barbara Extension.

The Hydrogeomorphic Approach to Functional Assessment of Riverine Water/Wetlands in the South Coast Region of Santa Barbara County.

Horizontal Directional Drilling Inspector, Trenchless Technology Institute, Missouri Western State College Division of Continuing Education. Expires December 2006.

OTHER

1999-2000. Volunteer naturalist for the Gaviota Coast Conservancy.

1993-1998. Andree Clark Bird Refuge Advisory Committee member (volunteer).

1994-1997, 2001. Board of Directors, Santa Barbara Oak Creek Owner's Association (volunteer; two years as president).

1984-86. Computer analysis of morphometrics of Spinner Dolphin, Dall's Porpoise and Pacific White-Sided Dolphins (SAS, BMDP). Subcontract to W. A. Walker, for the National Marine Fisheries Service.

1983. Coordinated production of a multidisciplinary EIR/EIS on the expansion of the Santa Barbara Airport into the Goleta Slough as staff member of the Santa Barbara Museum of Natural History, subcontract to The Planning Center.

1977. Review of marine mammal sections of EIR/EIS for development of oil leases in the Santa Barbara Channel. Subcontract to Dr. C. Woodhouse, Santa Barbara Museum of Natural History.

1977-1979. Field assistant and data entry/database management for terrestrial resources of Channel Islands National Monument.

1974-75. Office Manager and assistant on-board instructor for Santa Barbara Underseas Foundation for Marine Education.

ANDREW C. SANDERS

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EDUCATION

B.Sc. in Biology, specializing in Botany;
University of California, Riverside. June 1975.

EMPLOYMENT

1. **U.S. Department of the Interior, Bureau of Land Management (Riverside and Bakersfield Districts and California Desert Plan Staff).** Aug. 1975 to Apr. 1978
During this period I held positions as a Wildlife Biologist, Natural Resource Technician, and Range Conservationist and worked on the following projects:

California Desert Plan
Geothermal Energy Leasing Environmental Impact Statements
 East Mesa
 N. Salton Sea
 Red Mountain
 Yuha Basin
McCain Valley Habitat Management Plan
Owens Valley Range Program
Sun Desert Transmission Line E.I.S.

In the course of these projects I conducted extensive field surveys of vegetation and wildlife in the desert of southern California and in the Owens Valley.

2. **University of California, Riverside. Dept. of Biology.** Staff Research Associate and resident biologist at the James Reserve in the San Jacinto Mountains of Riverside County California. April 1978 to Sept. 1979. While at the James Reserve I surveyed the flora and fauna of the San Jacinto Mtns. and began the compilation of a list of the plants of the reserve, which was later completed in cooperation with Ken Berg, my successor.
3. **University of California, Riverside. Dept. of Botany & Plant Sciences.** Since September 1979 I have been Museum Scientist and curator of the Herbarium. This has

involved extensive work with the flora of the southwestern U.S. and adjacent areas. I have identified literally tens of thousands of plant specimens and have enlarged the UCR collection to ten times its former size. I have personally collected over 24,000 plant specimens in western North America. As a result of my work at the herbarium, I have come to be extremely familiar with the flora of southern California and can identify the overwhelming majority of plant species from this area on sight.

Additional Experience

I have contributed botanical/biological inventories for the following projects in California. This list is not comprehensive, but is representative.

Imperial Co.

Botanical Survey for U.S. Navy, Chocolate Mtns. Aerial Gunnery Range. 1988-1991.

Kern Co.

Biological Survey for a parcel near Rosamond, prepared for Land Concepts, Inc. 1988.

Botanical Survey for Silver Peak Mine Expansion, prepared for Weber & Weber Mining Consultants. 1989.

Botanical Survey of the Wind Wolves Preserve (San Emigdio Ranch), prepared for the Wildlands Conservancy. In progress.

Los Angeles Co.

Botanical Survey for Portuguese Bend Land Use Plan, prepared for England and Nelson Environmental Consultants. 1976.

Botanical survey of El Segundo Dunes, for L.A. International Airport, through Agresearch, Inc. 1987-1988.

Botanical surveys for several projects in the Lancaster vegetation management zone, prepared for the Dept. of Community Development, City of Lancaster. 1988-1989.

Orange Co.

Botanical survey for Land Use Plan for the Silverado-Santiago area of the Santa Ana Mtns., prepared for England & Nelson Environmental Consultants. 1976.

Riverside Co.

Botanical survey for the Riverside Co. Southwest Territory General Plan, for Riverside Co. Planning Dept. 1977.

Botanical survey for the Army Corps of Engineers Whitewater Flood Control Project. 1980.

Botanical Survey for Kacor Realty Wolf Valley Development, prepared through L. LaPré, consultant. 1981.

Botanical survey of the U. C. Motte Reserve near Perris. 1982.

Botanical survey of 500 ac. property near Murrieta, prepared for P. Principe, consultant. 1988.

Botanical survey of the Nature Conservancy Oasis de Los Osos Preserve. 1985-1988.

Biological Survey for Proposed Sanderson Ave. Bridge and Realignment, near San Jacinto, prepared for Myra L. Frank and Associates. 1990.

Rare plant Survey for the Coachella Valley Multi-Species Habitat Conservation Plan, prepared through Thomas Olson & Associates. 1995.

Botanical Survey of a pipeline route along the San Jacinto River, prepared through KDJ and Associates. 1996.

Botanical Survey of the Shipley Multi-species Reserve at Lake Skinner. In progress.

San Bernardino Co.

Biological survey for Big River Development, Colorado River near Parker. 1980.

Botanical Survey for Cactus Hill Mine, Ivanpah Mtns, prepared for J. McMains, consultant. 1985.

Biological survey of 640 ac. parcel near Pioneertown prepared for The Nature Conservancy. 1986.

Botanical Survey for Don Brown Racing Facility, Cajon Pass area. 1986.

Botanical Survey for Hart Mine expansion, Mojave Desert, prepared for J. McMains, consultant. 1986.

Scoping Report for Santa Ana River Resource Management Plan, prepared for the County of San Bernardino Dept. of Environmental Public Works. 1987.

Biological survey for Devil Canyon Powerplant expansion, prepared for the California Dept. of Water Resources. 1987.

Botanical survey for Glen Helen Sheriff's Academy expansion, prepared for the San Bernardino County Sheriff's Dept. 1987.

Biological Survey for the Daley Transit Mix Property near Ft. Irwin, Mojave Desert. 1988

Botanical Survey for proposed Davis Ranch Mine, Cajon Pass, prepared for Weber & Weber Mining Consultants. 1989.

Botanical Survey for Silver Peak Mine Expansion, prepared for Weber & Weber Mining Consultants. 1990.

Botanical Survey for Cajon East (Cleghorn) Mine Expansion, prepared for Weber & Weber Mining Consultants. 1990.

Botanical Survey for National Can Parcel, Verdemon, prepared for McClelland Associates. 1990.

Biological Survey of Birmingham Ranch, prepared for the City of Yucaipa. 1992.

Biological Survey of Porter Ranch, prepared for the City of Yucaipa. 1993.

Biological Survey of the Yount/Mitchell property near Yucaipa, prepared for Robin Isakson & Associates. 1993.

Biological Survey of 100 acre property in Yucaipa, prepared for George Polycrates and Associates. 1996.

Botanical Survey of the central Avawatz Mtns., Mojave Desert, prepared for Gordon F. Pratt, consulting entomologist. 1997.

Outside of California I have done extensive field work and made numerous plant collections throughout the southwestern U.S., but particularly in Nevada and Arizona. I have also worked extensively in Mexico and am presently involved in three floristic projects in that country. I spent 12 weeks doing botanical survey work in Costa Rica during 1995 and 1996.

In addition to the above, I regularly make plant identifications (including fossils) for professional biological consultants, for scientific researchers, and for the general public. I commonly make plant identifications for biological consultants, and over the years have literally made thousands of

such determinations. I have identified plants on one or more occasions for the following Riverside County Qualified Environmental Consulting Firms and have done so regularly for several of them (*):

AMEC Earth & Envir., Inc.*
Beaman Biological Consulting
Biological Resource Specialists
Campbell Biological Consulting
CH2M Hill*
David E. Bramlet
Glen Lukos Assoc.
Harmsworth Assoc.
James Cornett Ecol. Cons
Joan R. Callahan
Kelly Volansky*
Ken Osborne
LSA Assoc.*
Natural Resource Assessment, Inc.*
P. & D. Environmental*
PCR Inc.
Principe and Assoc.
San Bernardino Co., Museum
Statistical Research Inc.
Ted Rado
TeraCor Resource Mgmt.*
TetraTech
Thomas Olsen & Assoc.*
Tierra Madre Consultants*
Tom Dodson & Assoc.*
VHBC Consulting
W.D. Wagner
White & Leatherman*

I am generally recognized as one of the foremost authorities on the flora of Southern California and am regularly contacted by the US Fish & Wildlife Service and California Dept. of Fish and Game for information on the status and distribution of threatened and endangered plant species. In particular, I was queried regularly about species covered by the Riverside County MSHCP. I am regularly called upon to identify plant fragments which represent evidence in criminal cases.

PUBLICATIONS

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- Sanders, A. C., 1996. "Noteworthy Collections, California -- *Acrachne racemosa*, *Aegilops cylindrica*, *Atriplex mulleri*, *Baileya multiradiata*, *Bromus secalinus*, *Cenchrus ciliaris*, *Centaurea diffusa*, *Centaurea maculosa*, *Ceratonia siliqua*, *Chloris truncata*, *Cynanchum louiseae*, *Ephedra funerea*, *Eragrostis curvula* var. *conferta*, *Fatoua villosa*, *Linanthus orcuttii*, *Matricaria globifera*, *Melica californica*, *Melissa officinalis*, *Panicum antidotale*, *Panicum maximum*, *Pistacia atlantica*, *Schinus polygamus*, *Schoenus nigricans*, *Scribneria bolanderi*, *Senna obtusifolia*, *Solanum mauritianum*, *Triteleia hyacinthina*", Madroño 43(4):524-532.
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- White, S., A. C. Sanders & M. Wilcox 1996. "Noteworthy Collections, California, -- *Androstaphyllum breviflorum*, *Claytonia lanceolata*, *Nicotiana acuminata*, *Ranunculus scleratus*, Madroño 43 (2): 334-335.

DARREN SMITH

EDUCATION

- San Diego State University
M.A. geography with an emphasis in biogeography 1996
- Humboldt State University
B.A. geography 1989

EXPERIENCE SUMMARY

Darren Smith has twelve years experience in biological resource management. He has participated in a large number of biological research and production projects at San Diego State University (SDSU), working with Dr. John O'Leary and Dr. Janet Franklin. Mr. Smith worked for Dudek and Associates from 1997 to 2001 as an associate biologist working on a variety of conservation and development projects. He has also worked for the City of San Diego and the California Coastal Commission. Mr. Smith is currently working at California State Parks as an associate resource ecologist. His work experience in research, private consulting and government has encompassed a wide variety of projects involving intensive vegetation sampling, biological inventories and monitoring, and applying GIS and remote sensing technology to biological resource conservation and development problems. Mr. Smith has produced or played a significant role in five southern California regional vegetation mapping efforts, and participated in numerous post-burn, post-impact and revegetation monitoring projects. Mr. Smith has conducted field-based research in mediterranean-type and tropical ecosystems, focusing on patterns of plant species composition and diversity and their relationship to physical environment and disturbance. The outcome of these skills and work experience has led to the production of timely, well-received research, technical reports, and data products.

SELECTED PROFESSIONAL ASSIGNMENTS

Vegetation and Resource Mapping

- Supervised field and GIS production of TJ River Watershed vegetation and landcover database in San Diego County, California and Baja California.
- Produced vegetation maps for Fallbrook Naval Weapons Station, and Marine Corps Air Station.
- Produced vegetation, and sensitive lands data layers for the City of San Diego Environmental Tier/Future Urbanizing Area project.

Sensitive Plant Surveys

- Conducted rare plant surveys and mapped vegetation for a variety of projects in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Kern, Santa Barbara, and San Luis Obispo Counties (1997-current). A selection of projects include: Moreno-Lakeside Pipeline, Wilson Creek Mitigation Bank, SCE Power Pole maintenance and replacement, White Water golf Course, Canyon Vista Estates, MSCP Black Mountain Sensitive Plant Inventory, Santa Fe Pipeline project, NCTB Miramar Curve, Oceanside/Melrose, Lone Tree Estates, Santa Fe Valley Properties, Chula Vista SPA1 and Wolf Canyon, Chino Hills State Park Inventory, Monitoring, and Assessment Program, La Purisima Visitor Center, Chino Hills Visitor Center, Red Rock-Last Chance Canyon Riparian Bypass, Piute Butte Boulderling Constraints, and Lower Topanga Canyon Rare Plant Inventory.

Vegetation Monitoring

- Monitored saltmarsh, and riparian revegetation efforts at Rancho Santa Fe Road Bridge, Sorrento Valley Utilities Improvements, Tijuana River Emergency Channel Mitigation Projects.
- Conducted pre-burn vegetation surveys of Burton-Mesa chaparral, Santa Barbara County.
- Monitored riparian vegetation for recovery following the removal of vehicular impacts in Coyote Canyon Anza-Borrego Desert State Park.
- Conducted long-term regional monitoring of post-burn coastal sage scrub in San Diego, Riverside and Orange Counties.
- Participated in a long-term California gnatcatcher habitat assessment including multi-year breeding and non-breeding season vegetation surveys in breeding pair home ranges and nesting sites, at MCAS Miramar, San Diego County.
- Participated in long-term study of vegetation recovery on San Clemente Island in Los Angeles County.

CATHLEEN M. WEIGAND

Botanist / Biologist

EDUCATION/REGISTRATION

- Humboldt State University
B.S., Botany and Biology, 2000
- New Dawn Center (Finca Alba Nueva), San Isidro, Costa Rica
Senior Thesis Study, 1997

PROFESSIONAL CERTIFICATIONS

- Certified Wetland Delineator (#2133) - Army Corps of Engineers Wetland Delineation & Management Training Program - 2002
- U.S.F.S. Wildland Firefighter Red Card Certified

EXPERIENCE SUMMARY

Ms. Weigand is a botanist/biologist with over four years experience in field studies, environmental document preparation, habitat restoration and conservation, vegetation resource mapping, and biological assessments. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetland delineations, permitting, mitigation design, implementation and monitoring, and endangered and sensitive plant species surveys. Projects include issues relative to the California Coastal Act, the California Department of Fish and Game Code (Sections 1601 and 1603), and the federal Clean Water Act (Sections 401 and 404). Ms. Weigand has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Her current role at Dudek & Associates includes biological resources assessment and impact analysis, wetland delineations and permitting, and habitat restoration and monitoring.

PROFESSIONAL ASSIGNMENTS

Focused rare plant surveys. Newhall Ranch, Los Angeles County, California. Conducted rare plant surveys for the state-listed endangered San Fernando spineflower (*Chorizanthe parryi* var. *fernandina*) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003.

Experience with seed and plant propagation

Greenhouse work (Humboldt State University- volunteer): watering, caring and maintenance of plants, re-potting/propagation, nomenclature of species housed in greenhouse, and preparation of species used for classroom and experimental purposes.

Horticulture and nursery experience: watering, fertilizing, caring and maintenance of plants, propagation (plant cuttings, roots, and seeds), re-potting, installation and design of irrigation systems.

Experience with growth chambers, preparation and implementation of fertilizers and composts, and the irrigation of greenhouses and farm properties.

Riparian and wetland revegetation implementation.

Seed and pollen collection.

Supervising of farm and revegetation crews.

Implementation of farm crops, community and personal gardens using sustainable agricultural practices.

Revegetation and landscape design and implementation, monitoring, maintenance, and data collection.

TRICIA L. WOTIPKA
Environmental Specialist

EDUCATION

- Pennsylvania State University
B.S. Wildlife and Fisheries Science (2000)
(Dean's Honor List, Fall 1998 - Spring 2000)

PROFESSIONAL AFFILIATIONS

- Audobon Society, 2000
- Womens Environmental Council, past Secretary, 2001 and Newsletter Chair, 2002

EXPERIENCE SUMMARY

Ms. Wotipka has over two years experience in environmental document preparation and resource conservation planning. Project experience includes rare plant surveys, biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design and monitoring, and endangered species surveys. Projects include issues relative to the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the National Environmental Policy Act (NEPA), the Migratory Bird Treaty Act, and the Endangered Species Act (ESA). Ms. Wotipka has also trained with the Wetlands Training Institute, Inc. and has successfully completed a course in basic wetlands delineation.

PROFESSIONAL ASSIGNMENTS

- **Sewer Line Relocation and Park Improvements.** Aliso Creek Emergency Sewer and Park Improvements Project, Orange County, California. Assisted in focused rare plant surveys for the federally-listed threatened and state-listed endangered thread-leaved brodiaea (*Brodiaea filifolia*). Prepared a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Prepared and processed a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Negotiated with resource agencies to identify appropriate mitigation measures, including the creation and enhancement of southern willow scrub and mule fat scrub wetlands within the reserve.

- **Railway Expansion Project.** Sorrento-Miramar Curve Realignment and Second Main Track Project. City of San Diego, California. Conducted field surveys for sensitive, state- and federally-listed plant species on approximately 190 acres.
- **Church Development Project.** St. Jerome=s Catholic Church Project. City of San Diego, California. Conducted field surveys for state- and federally-listed species on approximately 18 acres.
- **Residential Subdivision and Roadway Improvements Project.** University Commons Development Project, City of San Marcos, California. Performed a delineation of Awaters of the United States@ and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game. Prepared and processed a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code.
- **Residential Subdivision.** Goodwin Drive Residential Development, City of Vista, California. Conducted a delineation of Awaters of the United States@ and wetlands under the jurisdiction of the U. S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG). Obtained a Section 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Negotiated with resource agencies to identify appropriate mitigation measures, including the creation of southern willow scrub wetlands.
- **Conservation Planning.** Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included research on potentially covered plant species followed by syntheses of ecological information and the preparation of sensitive species conservation analysis.

RELEVANT EXPERIENCE

- Restoration/Maintenance volunteer - Habitat West, Vista, California. Assisted in the restoration and management of native habitats for the coastal California gnatcatcher.
- Restoration/Maintenance volunteer - Habitat West, Vista, California. Evaluated the health of newly planted vegetation; identified and removed pestilent species when necessary; identified shrubs and native scrub communities.
- Pennsylvania Cooperative Fish & Wildlife Service Unit. Flushed and recorded the location of ruffed grouse to note the effects of timber harvest on grouse management.

- Pennsylvania Wildlife Habitat Evaluation Project. Judged over 60 kids aged 8-18 years old in a multi-county wildlife evaluation competition in Pennsylvania.
- Pennsylvania Wildlife Habitat Evaluation Project. Evaluated students based on their knowledge of PA wildlife habitats, correct identification of wildlife foods, oral presentations, and on-site written management plans.

PUBLICATIONS

- Researched and prepared the introduction of the "Spring Creek Watershed Water Sampling Protocol" for the Clearwater Conservancy - Fall 1999.
- Designed and produced a web page in Spring 2000 (now out of service) entitled "Beaks and Buds". It was located at <http://www.personal.psu.edu/tlw188>.

APPENDIX B
VASCULAR PLANT SPECIES OBSERVED
AT SALT CREEK (2003)

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

LYCOPODIAE

SELAGINELLACEAE - SPIKE-MOSS FAMILY

Selaginella bigelovii - Bigelow's spike-moss

EQUISETAE

EQUISETACEAE - HORSETAIL FAMILY

Equisetum hyemale – common scouring-rush

Equisetum laevigatum - smooth scouring-rush

FILACEAE

DENNSTAEDTIACEAE - BRAKEN FAMILY

Adiantum jordanii - California maiden-hair

Pellaea andromedifolia - coffee fern

Pellaea mucronata var. *mucronata* - bird's-foot fern

Pentagramma triangularis - goldenback fern

DRYOPTERIDACEAE – WOOD FERN FAMILY

Dryopteris arguta – coastal wood fern

POLYPODIACEAE - POLYPODY FAMILY

Polypodium californicum - California polypody

ANGIOSPERMAE (DICOTYLEDONES)

AMARANTHACEAE - AMARANTH FAMILY

* *Amaranthus albus* - tumbleweed

Amaranthus blitoides - prostrate amaranth

* *Amaranthus retroflexus* - rough pigweed

ANACARDIACEAE - SUMAC FAMILY

Malosma laurina - laurel sumac

Rhus ovata - sugar-bush

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

Rhus trilobata - squaw bush

Toxicodendron diversilobum - poison-oak

APIACEAE - CARROT FAMILY

- Apiastrum angustifolium* - wild celery
- * *Apium graveolens* - celery
- Berula erecta* - cutleaf water-parsnip
- Bowlesia incana* – American bowlesia
- * *Conium maculatum* – poison hemlock
- * *Coriandrum sativum* - cilantro
- * *Daucus carota* – Queen Anne’s lace
- Daucus pusillus* – rattlesnake weed
- Lomatium caruifolium* - Alkali Parsnip
- Lomatium utriculatum* - common lomatium
- Osmorhiza brachypoda* – California sweet-cicely
- * *Petroselinum crispum* - parsley
- Sanicula bipinnata* - poison sanicle
- Sanicula crassicaulis* – Pacific sanicle
- * *Torilis arvensis* – Japanese hedge-parsley
- * *Torilis nodosa* – knot hedge-parsley
- Yabea microcarpa* - California hedge parsley

ASCLEPIADACEAE - MILKWEED FAMILY

Asclepias fascicularis - narrow-leaf milkweed

ASTERACEAE - SUNFLOWER FAMILY

Achillea millefolium – yarrow

Achyrachaena mollis – blow-wives

Acourtia microcephala – sacapellote

Agoseris grandiflora – large-flowered agoseris

Agoseris retrorsa – spear-leaf agoseris

Ambrosia acanthicarpa - annual burweed

Ambrosia confertifolia - weak-leaved burweed

Ambrosia psilostachya - western ragweed

Artemisia californica - coastal sagebrush

Artemisia douglasiana - California mugwort

Artemisia dracunculus - tarragon

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

- Artemisia tridentata* - Great Basin sagebrush
- Baccharis douglasii* - marsh baccharis
- Baccharis pilularis* - coyote brush
- Baccharis salicifolia* - mule fat
- Brickellia californica* - California brickellbush
- Brickellia nevinii* - Nevin's brickellbush
- * *Carduus pycnocephalus* - Italian thistle
- * *Centaurea melitensis* - star thistle
- Chaenactis artemisiifolia* – artemisia pincushion
- Chaenactis glabriuscula* - yellow pincushion
- Cirsium occidentale* var. *californicum*- California thistle
- Cirsium occidentale* var. *occidentale*- cobwebby thistle
- * *Cirsium vulgare* - bull thistle
- * *Cnicus benedictus* - blessed thistle
- Conyza canadensis* - horseweed
- Conyza coulteri* - Coulter's conyza
- Coreopsis bigelovii* – Bigelow's coreopsis
- Corethrogyne filaginifolia* - virgate cudweed aster
- * *Cotula australis* - Australian brass-buttons
- Deinandra increscens* ssp. *increscens* – no common name
- Encelia californica* - California bush sunflower
- Ericameria palmeri* var. *pachylepis* - goldenbush
- Erigeron foliosus* - leafy daisy
- Eriophyllum confertiflorum* - long-stem golden yarrow
- Filago californica* - California fluffweed
- Filago gallica* - narrow-leaf filago
- Gnaphalium bicolor* - bicolor cudweed
- Gnaphalium californicum* - California everlasting
- Gnaphalium canescens* ssp. *microcephalum* - white everlasting
- * *Gnaphalium luteo-album* - white cudweed
- * *Gnaphalium palustre* - lowland cudweed
- Gnaphalium stramineum* – cotton-batting plant
- Grindelia* sp. – gumplant
- Hazardia squarrosa* ssp. *grindelioides* - saw-toothed goldenbush
- Helianthus annuus* - common sunflower
- Hemizonia fasciculata* - fascicled tarweed

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

- Heterotheca grandiflora* - telegraph weed
- Heterotheca sessiliflora* - golden aster
- * *Hypochaeris glabrata* – smooth cat’s ear
- * *Hypochaeris radicata* – hairy cat’s ear
- Isocoma menziesii* - goldenbush
- Isocoma menziesii* var. *menziesii* [*Haplopappus venetus*] - Menzies' goldenbush
- * *Lactuca serriola* - prickly lettuce
- Lagophylla ramosissima* – common hareleaf
- Lasthenia californica* - coast goldfields
- Layia glandulosa* – white layia
- Layia platyglossa* – tidy tips
- Lepidospartum squamatum* - scale-broom
- Madia exigua* – small tarweed
- Madia gracilis* – slender madia
- Malacothrix clevelandii* – Cleveland’s malacothrix
- Malacothrix saxatilis* - cliff malacothrix
- * *Matricaria matricarioides* - pineapple weed
- Micropus californicus* - slender cottonweed
- * *Picris echinoides* – bristly ox-tongue
- Pluchea odorata* - marsh-fleabane
- Pluchea sericea* - arrow weed
- Psilocarphus tenellus* – slender woolly-heads
- Rafinesquia californica* - California chicory
- Senecio flaccidus* var. *douglasii* - butterweed
- * *Senecio vulgaris* - common groundsel
- * *Silybum marianum* – milk thistle
- Solidago californica* – California goldenrod
- * *Sonchus asper* - prickly sow-thistle
- * *Sonchus oleraceus* - common sow-thistle
- * *Spartium junceum* – Spanish broom
- Stebbinoseris heterocarpa* [*Microseris heterocarpa*] – brown puffs
- Stephanomeria cichoriacea* - chicory-leaved stephanomeria
- Stephanomeria exigua* - small wreathplant
- Stephanomeria pauciflora* - wire-lettuce
- Stephanomeria virgata* - twiggy wreathplant
- Stylocline gnaphaloides* - everlasting nest-straw
- Uropappus lindleyi* [*Microseris lindleyi*] – silver puffs

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

Xanthium spinosum - spiny cocklebur

Xanthium strumarium – cocklebur

BORAGINACEAE - BORAGE FAMILY

Amsinckia menziesii var. *intermedia* - yellow fiddleneck

Amsinckia menziesii var. *menziesii* - yellow fiddleneck

Amsinckia tessellata – devil's lettuce

Cryptantha decipiens – gravel cryptantha

Cryptantha intermedia - common forget-me-not

Cryptantha micrantha – redroot cryptantha

Cryptantha microstachys – tejon cryptantha

Cryptantha muricata – prickly cryptantha

Heliotropium curassavicum - wild heliotrope

Pectocarya linearis - slender pectocarya

Pectocarya penincillata - pectocarya

Plagiobothrys arizonicus - popcorn flower

Plagiobothrys canescens - rusty popcorn flower

Plagiobothrys nothofulvus - popcorn flower

BRASSICACEAE - MUSTARD FAMILY

Arabis sparsiflora – no common name

Athysanus pusillus – dwarf athysanus

* *Brassica nigra* - black mustard

* *Capsella bursa-pastoris* - shepard's purse

Caulanthus lasiophyllus – California mustard

Erysimum capitatum – wall flower

* *Hirschfeldia incana* - short-podded mustard

Lepidium oblongum - peppergrass

Lepidium virginicum - wild peppergrass

* *Rorippa nasturtium-aquaticum* - water cress

* *Sisymbrium altissimum* - tumble mustard

* *Sisymbrium irio* - London rocket

* *Sisymbrium officinale* - hedge mustard

* *Sisymbrium orientale* - Oriental mustard

Stanleya pinnata var. *pinnata*– Prince's plume

Thysanocarpus curvipes – fringe pod

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

Thysanocarpus laciniatus – lacepod

Tropidocarpum gracile – slender dobie-pod

CACTACEAE - CACTUS FAMILY

Opuntia californica var. *parkeri* - cane cholla

Opuntia littoralis - coastal prickly-pear

Opuntia x vaseyi - prickly-pear cactus

CAMPANULACEAE - BELLFLOWER FAMILY

Nemacladus ramosissimus – Nuttall's threadplant

CAPPARACEAE - CAPER FAMILY

Isomeris arborea - bladderpod

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

Lonicera interrupta – chaparral honeysuckle

Lonicera subspicata - southern honeysuckle

Sambucus mexicana - Mexican elderberry

CARYOPHYLLACEAE - PINK FAMILY

- * *Cerastium glomeratum* - sticky mouse-ear
- * *Herniaria hirsute* ssp. *cinerea* - gray herniaria
- Loeflingia squarrosa* - no common name
- * *Silene gallica* - common catchfly
- * *Stellaria media* - common chickweed
- Stellaria nitens* – shining chickweed

CHENOPODIACEAE - GOOSEFOOT FAMILY

- Atriplex canescens* - four-winged saltbush
- * *Atriplex heterosperma* - weedy orache
- Atriplex lentiformis*- big saltbush, quail brush
- * *Atriplex semibaccata* - Australian saltbush
- Atriplex serenana* var. *serenana* - bractscale
- * *Atriplex suberecta* - Australian saltbush
- * *Bassia hyssopifolia* - five-hooked bassia
- * *Chenopodium album* - lamb's-quarters

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

- Chenopodium berlandieri* - pitseed goosefoot
Chenopodium californicum - California goosefoot
* *Chenopodium murale* - nettle-leaved goosefoot
* *Salsola tragus* - Russian-thistle

CONVOLVULACEAE - MORNING-GLORY FAMILY

- Calystegia peirsonii* - Peirson's morning-glory
* *Convolvulus arvensis* - bindweed

CRASSULACEAE - STONECROP FAMILY

- Crassula connata* - dwarf stonecrop
Dudleya lanceolata - lanceleaf dudleya

CUCURBITACEAE - GOURD FAMILY

- Cucurbita foetidissima* - coyote-melon, calabazilla
Marah fabaceus - California Manroot
Marah macrocarpus - wild cucumber

CUSCUTACEAE - DODDER FAMILY

- Cuscuta californica* - California dodder

ERICACEAE - HEATH FAMILY

- Arctostaphylos glandulosa* ssp. *mollis* - manzanita
Arctostaphylos glauca - bigberry manzanita

EUPHORBIACEAE - SPURGE FAMILY

- Chamaesyce albomarginata* - rattlesnake spurge
Chamaesyce polycarpa - small-seed sand mat
Eremocarpus setigerus - doveweed
Euphorbia spathulata - reticulate-seed spurge

FABACEAE - PEA FAMILY

- Amorpha californica* var. *californica* – false indigo
Astragalus didymocarpus – white dwarf locoweed
Astragalus gambelianus – Gambel's locoweed
Astragalus trichopodus - Santa Barbara locoweed

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

- Lathyrus vestitus* - wild pea
Lotus hamatus – grab lotus
Lotus humistratus - lotus
Lotus purshianus - Spanish-clover
Lotus salsuginosus - coastal lotus
Lotus scoparius var. *scoparius* - deerweed
Lotus strigosus - strigose deerweed
Lupinus bicolor - Lindley's annual lupine
Lupinus excubitus var. *excubitus* - grape soda lupine
Lupinus excubitus var. *hallii* - grape soda lupine
Lupinus hirsutissimus - stinging lupine
Lupinus microcarpus var. *densiflorus* - chick lupine
Lupinus microcarpus var. *microcarpus* - chick lupine
Lupinus sparsiflorus - Coulter's lupine
Lupinus succulentis - arroyo lupine
Lupinus truncatus - collar lupine
* *Medicago polymorpha* - California burclover
* *Melilotus alba* - white sweet-clover
* *Melilotus indica* - yellow sweet-clover
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum - tree clover
Trifolium fucatum – bull clover
Trifolium gracilentum – pin-point clover
* *Trifolium hirtum* - rose clover
Trifolium microcephalum – maiden clover
Trifolium willdenovii – valley clover
Vicia americana – American vetch
Vicia exigua – slender vetch
Vicia hassei – Hesse's vetch
* *Vicia vilosa* – hairy vetch

FAGACEAE - BEECH FAMILY

- Quercus agrifolia* - coast live oak
Quercus berberidifolia - scrub oak
Quercus chrysolepis – canyon live oak

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

Quercus douglasii x *lobata* - oak

Quercus lobata - valley oak

GERANIACEAE - GERANIUM FAMILY

- * *Erodium cicutarium* - red-stemmed filaree
- * *Erodium botrys* – long-beaked filaree
- * *Erodium moschatum* – white-stemmed filaree

GROSSULARIACEAE - CURRANT FAMILY

Ribes aureum - golden currant

Ribes californicum - California gooseberry

Ribes malvaceum - chaparral currant

HYDROPHYLLACEAE - WATERLEAF FAMILY

Emmenanthe penduliflora - whispering bells

Eriodictyon crassifolium var. *nigrescens* - yerba santa

Eucrypta chrysanthemifolia - common eucrypta

Nemophila menziesii var. *integrifolia* - Baby Blue Eyes

Nemophila pedunculata – Littlefoot Nemophila

Phacelia cicutaria var. *hispida* – caterpillar phacelia

Phacelia cicutaria var. *hubbyi* - caterpillar scorpionweed

Phacelia distans - blue fiddleneck

Phacelia imbricata ssp. *imbricata* - imbricate phacelia

Phacelia minor - wild canterbury-bell

Phacelia ramosissima - shrubby phacelia

Phacelia viscida - sticky phacelia

Pholistoma auritum – fiesta flower

JUGLANDACEAE - WALNUT FAMILY

Juglans californica - southern California black walnut

LAMIACEAE - MINT FAMILY

- * *Lamium amplexicaule* - henbit
- * *Marrubium vulgare* - horehound
- Monardella lanceolata* - mustang mint
- Salvia apiana* - white sage
- Salvia columbariae* - chia

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

Salvia leucophylla - purple sage
Salvia mellifera - black sage
Salvia x bernardina – no common name
Scutellaria tuberosa – Danny's skullcap
Stachys ajugoides var. *rigida* - rigid hedge-nettle
Stachys albens - white hedge-nettle
Trichostema lanatum – woolly bluecurls
Trichostema lanceolatum - vinegar weed

LAURACEAE - LAUREL FAMILY

Umbellularia californica - California laurel

LOASACEAE - STICK-LEAF FAMILY

Mentzelia sp. – no common name
Mentzelia laevicaulis - blazing star

MALVACEAE - MALLOW FAMILY

Malacothamnus fasciculatus ssp. *laxiflorus* – chaparral bush mallow
* *Malva parviflora* - cheeseweed

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia* [*M. californica*]- California wishbone-bush

OLEACEAE - OLIVE FAMILY

Fraxinus dipetala - California ash
* *Fraxinus uhdei* – tropical ash
* *Olea europaea* - mission olive

ONAGRACEAE - EVENING-PRIMROSE FAMILY

Camissonia bistorta – southern sun cup
Camissonia bistorta x *hirtella* – sun cup
Camissonia boothii ssp. *decorticans* – shredding evening primrose
Camissonia californica - mustard primrose
Camissonia hirtella - sun cup
Clarkia cylindrica - speckled clarkia
Clarkia purpurea - winecup clarkia

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

Clarkia unguiculata - elegant clarkia
Epilobium brachycarpum - willow herb
Epilobium canum ssp. *canum* - California fuchsia
Epilobium ciliatum - California cottonweed

OROBANCHACEAE - BROOM-RAPE FAMILY

Orobanche fasciculata – clustered broom-rape

PAEONIACEAE - PEONY FAMILY

Paeonia californica - California peony

PAPAVERACEAE - POPPY FAMILY

Dendromecon rigida - tree poppy
Dicentra ochroleuca - yellow bleeding heart
Eschscholzia californica - California poppy
Meconella denticulata – small-flower meconella
Papaver californicum – fire poppy

PLANTAGINACEAE - PLANTAIN FAMILY

Plantago erecta - dot-seed plantain
Plantago c.f. *ovata* – woolly plantain

PLATANACEAE - SYCAMORE FAMILY

Platanus racemosa - western sycamore

POLEMONIACEAE - PHLOX FAMILY

Allophyllum divaricatum - purple false gilyflower
Eriastrum densifolium ssp. *densifolium* - woollystar
Eriastrum sapphirinum - sapphire eriastrum
Gilia angelensis - angel gilia
Gilia capitata – globe gilia
Gilia splendens – splendid gilia
Leptodactylon californicum - prickly phlox
Linanthus androsaceus – common linanthus
Navarretia atractylodes - holly-leaf skunkweed
Phlox gracilis – slender phlox

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

POLYGONACEAE - BUCKWHEAT FAMILY

- Chorizanthe staticoides* - turkish rugging
- Eriogonum* sp. - buckwheat
- Eriogonum* sp. - buckwheat
- Eriogonum elongatum* - long-stemmed buckwheat
- Eriogonum fasciculatum* ssp. *foliolosum* - California buckwheat
- Eriogonum c.f. gracile* - slender woolly buckwheat
- Eriogonum c.f. viridescens* - buckwheat
- Eriogonum nudum* - naked buckwheat
- Lastarriaea coriacea* - lastarriaea
- * *Polygonum arenastrum* - common knotweed
- Pterostegia drymarioides* – granny’s hairnet
- * *Rumex conglomeratus* - whorled dock
- * *Rumex crispus* - curly dock
- Rumex hymenosepalus* - wild rhubarb
- Rumex salicifolius* - willow dock

PORTULACACEAE - PURSLANE FAMILY

- Calandrinia ciliata* - redmaids
- Claytonia parviflora* - small-leaved montia
- Claytonia perfoliata* – miner’s lettuce

PRIMULACEAE - PRIMROSE FAMILY

- * *Anagallis arvensis* – scarlet pimpernel

RANUNUCULACEAE - BUTTERCUP FAMILY

- Clematis ligusticifolia* - yerba de chiva
- Delphinium cardinale* – scarlet larkspur
- Delphinium parryi* spp. *parryi* – Parry’s larkspur

RHAMNACEAE - BUCKTHORN FAMILY

- Ceanothus crassifolius* - hoary-leaved ceanothus
- Ceanothus foliosus* – southern blue lilac
- Ceanothus leucodermis* – white-bark ceanothus
- Rhamnus crocea* - redberry
- Rhamnus ilicifolia* - holly-leaf redberry

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

ROSACEAE - ROSE FAMILY

Adenostoma fasciculatum – chamise
Cercocarpus betuloides var. *betuloides* - birch-leaf mountain-mahogany
Cercocarpus betuloides var. *blancheae* - island mountain-mahogany
Heteromeles arbutifolia - toyon
Prunus ilicifolia - holly-leaf cherry
Prunus virginiana var. *demissa* – western choke-cherry
Rosa californica - California rose
Rubus ursinus - California blackberry

RUBIACEAE - MADDER FAMILY

Galium angustifolium - narrow-leaved bedstraw
* *Galium aparine* - goose grass
Galium nuttallii – Nuttall's bedstraw
Galium porrigens - climbing bedstraw

SALICACEAE - WILLOW FAMILY

Populus fremontii - Fremont's cottonwood
Salix exigua - narrow-leaved willow
Salix gooddingii - black willow
Salix laevigata - red willow
Salix lasiolepis - arroyo willow

SAURURACEAE - LIZARD'S-TAIL FAMILY

Anemopsis californica - yerba mansa

SAXIFRAGACEAE - FIGWORT FAMILY

Lithophragma bolanderi - Bolander's woodland star
Saxifraga californica - California saxifrage

SCROPHULARIACEAE - FIGWORT FAMILY

Antirrhinum coulterianum - white snapdragon
Antirrhinum multiflorum - withered snapdragon
Castilleja affinis - coast paintbrush
Castilleja exserta - common owl's-clover
Castilleja foliolosa - woolly Indian paintbrush

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

- Collinsia heterophylla* – purple Chinese houses
Collinsia parviflora - maiden blue eyed Mary
Cordylanthus rigidus – bird's beak
Keckiella cordifolia - heart-leaf penstemon
Mimulus aurantiacus - bush monkeyflower
Mimulus aurantiacus var. *pubescens* - bush monkeyflower
Mimulus brevipes - yellow monkeyflower
Mimulus guttatus - seep monkeyflower
Penstemon centranthifolius - scarlet bugler
Scrophularia californica - California figwort
* *Veronica anagallis-aquatica* - water speedwell
* *Veronica persica* – Persian speedwell

SOLANACEAE - NIGHTSHADE FAMILY

- Datura wrightii* - western jimsonweed
* *Nicotiana glauca* - tree tobacco
* *Solanum americanum* - small-flowered nightshade
Solanum douglasii - white nightshade
Solanum xanti - chaparral nightshade

TAMARICACEAE - TAMARISK FAMILY

- * *Tamarix* sp. - tamarisk

URTICACEAE - NETTLE FAMILY

- Hesperocnide tenella* – western nettle
Parietaria hespera – western pellitory
Urtica dioica - giant creek nettle
* *Urtica urens* - dwarf nettle

VERBENACEAE - VERVAIN FAMILY

- Verbena lasiostachys* - western verbena

VIOLACEAE – VIOLET FAMILY

- Viola pedunculata* – Johnny jump-ups

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

VISCACEAE - MISTLETOE FAMILY

Phoradendron macrophyllum - big leaf mistletoe

Phoradendron villosum - oak mistletoe

ZYGOPHYLLACEAE - CALTROP FAMILY

* *Tribulus terrestris* - puncture vine

ANGIOSPERMAE (MONOCOTYLEDONES)

CYPERACEAE - SEDGE FAMILY

Carex sp. - sedge

Cyperus eragrostis - tall cyperus

Eleocharis montevidensis - slender creeping spike-rush

Scirpus americanus - winged three-square

Scirpus maritimus – alkali bulrush

Scirpus robustus - Pacific coast bulrush

IRIDACEAE - IRIS FAMILY

Sisyrinchium bellum – blue-eyed grass

JUNCACEAE - RUSH FAMILY

Juncus sp. - rush

Juncus balticus - wire rush

Juncus bufonius - toad rush

Juncus xiphioides - iris-leaved rush

LILIACEAE - LILY FAMILY

Bloomeria crocea – common goldenstar

Calochortus clavatus var. *gracilis* - slender mariposa lily

Calochortus venustus - mariposa lily

Calochortus weedii var. *vestus* – late-flowered mariposa lily

Chlorogalum pomeridianum - soap plant

Dichelostemma capitatum - blue dicks

Yucca whipplei – Our Lord's candle

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

POACEAE - GRASS FAMILY

- Achnatherum coronatum* - giant needlegrass
- * *Agrostis viridis* - water bent
- Aristida adscensionis* - six-weeks three-awn
- * *Arundo donax* - giant reed
- * *Avena barbata* - slender oat
- * *Avena fatua* - wild oat
- * *Avena sativa* - cultivated oat
- * *Bromus arenarius* - Australian brome
- Bromus carinatus* - California brome
- * *Bromus diandrus* - ripgut grass
- Bromus grandis* - tall brome
- * *Bromus hordeaceus* - soft chess
- * *Bromus madritensis* ssp. *rubens* - foxtail chess
- * *Bromus sterilis* – sterile brome
- * *Bromus tectorum* - cheat grass
- * *Cynodon dactylon* - Bermuda grass
- Distichlis spicata* - salt grass
- * *Echinochloa crus-galli* - barnyard grass
- Elymus elymoides* – bottlebrush squirreltail
- Elymus glaucus* - western wild-rye
- Eragrostis mexicana* - lovegrass
- * *Hordeum marinum* - Mediterranean barley
- * *Hordeum murinum* - glaucous foxtail barley
- Koeleria macrantha* - Junegrass
- * *Lamarckia aurea* - goldentop
- * *Leptochloa uninerva* - Mexican sprangletop
- Leymus condensatus* - giant ryegrass
- Leymus triticoides* - beardless wild rye
- * *Lolium multiflorum* - Italian ryegrass
- * *Lolium perenne* - perennial ryegrass
- * *Lolium temulentum* - darnel
- Melica imperfecta* - California melic
- Muhlenbergia microsperma* - littleseed muhly
- Nassella cernua* - nodding needlegrass
- Nassella lepida* - foothill needlegrass

APPENDIX B

VASCULAR PLANT SPECIES – SALT CREEK

- Nassella pulchra* – purple needlegrass
Paspalum distichum – knotgrass
* *Phalaris minor* - Mediterranean canary grass
* *Piptatherum miliaceum* - smilo grass
* *Poa annua* – annual bluegrass
Poa secunda - Malpais bluegrass
* *Polypogon monspeliensis* - rabbit's-foot grass
* *Schismus barbatus* – abumashi
* *Triticum aestivum* – cereal wheat
Vulpia microstachys - fescue
* *Vulpia myuros* - rattail fescue
Vulpia octoflora - six-weeks fescue

TYPHACEAE - CATTAIL FAMILY

- Typha dominigensis* – southern cattail
Typha latifolia - broad-leaved cattail

* signifies introduced (non-native) species

APPENDIX C

CALIFORNIA NATURAL DIVERSITY

DATABASE FORMS – SALT CREEK

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus weedii* var. *vestus*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: Jun 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Upper central portion of the Salt Creek watershed in Salt Canyon at the crest of the Santa Susana Mountains, south of State Route 126 just east of the Los Angeles/Ventura County line.

Quad Name: Simi Valley East

34° 21' 30" N 118° 40' 00" W

☒ 7 1/2' ☐ 15'

Elevation: 2,800-3,200'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? ☒ Yes ☐ No If not, reason:

Is this a new location record? ☒ Yes ☐ No ☐ Unknown

Total # of Individuals = ~50 plants Is this a subsequent visit? ☐ Yes ☒ No Compared to your last visit: ☐ more ☐ same ☐ fewer

Phenology (plants): ☐ % vegetative ☒ 100* % flowering ☐ % fruiting *(of the plants observed)

Population Age Structure (animals): ☐ # adults ☐ # juveniles ☐ # others

Site Function for Species (animals): ☐ breeding ☐ foraging ☐ wintering ☐ roosting ☐ denning ☐ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on an east facing slope above the fire road with macro-slope gradients ranging between 10 degrees and 50 degrees. Soils are typically sandstone based. Open walnut woodland with *Juglans californica*, *Calochortus clavatus* var. *gracilis*, *Lupinus excubitus*, *Quercus lobata*, *Corethrogyne filaginifolia*, numerous grasses.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: plants grow to the edge of the cut slope for the ridge road; Possible Threats: road maintenance.

Overall Site Quality: ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Comments: Plants were observed during the bloom period and occur in one (1) polygon (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

☒ Keyed in a site reference: Jepson, Munz

☒ Compared with specimen housed at: UCR, RSA

☐ Compared with photo/drawing in:

☐ By another person (name):

☒ Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject

Type

☒ Plant/Animal

☒ Slide

☒ Habitat

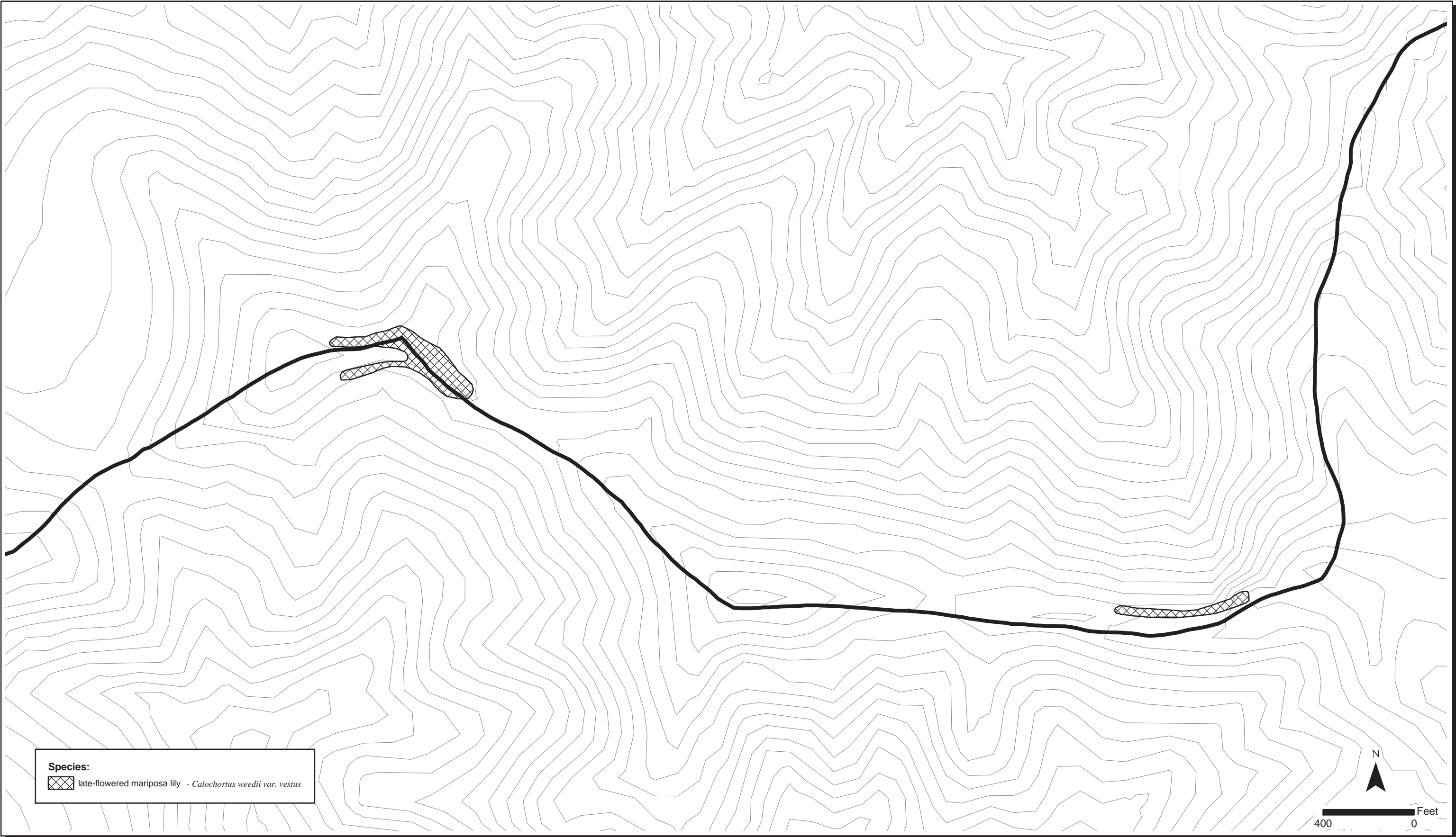
☐ Print

☒ Diagnostic Feature

☐ Other

May we obtain duplicates at our cost?

☒ Yes ☐ No



Species:
late-flowered mariposa lily - *Calochortus weedii* var. *vestus*

Upper Eastern Salt Creek Canyon
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE ATTACH OR DRAW A MAP ON BACK.**

| | | | |
|----------|------|------------|------|
| Document | Code | Quad | Code |
| Index | Code | Occurrence | # |
| c | o | p | y |
| S | e | n | t |
| T | c | | |

Scientific name (no codes): *Navarretia sp. nova*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb: UCR, IRVC, RSA

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Lower to Middle portions of the Western Fork of Salt Creek, south of State Route 126 just west of the Los Angeles/Ventura County line, on gentle north facing slopes.

Quad Name: Val Verde and Simi Valley East

34° 23' 03" N 118° 41' 27" W

X 7½' _ 15' Elevation: 1,100-1,600'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ___ No If not, reason:

Is this a new location record? X Yes ___ No ___ Unknown

Total # of Individuals = ~60,000 plants Is this a subsequent visit? ___ Yes X No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative 80 % flowering 20 % fruiting

Population Age Structure (animals): ___ # adults ___ # juveniles ___ # others

Site Function for Species (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ___ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on gentle north facing slopes with macro-slope gradients typically ranging between 5 degrees and 20 degrees. Soils are typically clay lenses. Dense to open valley needle grassland surrounded by California sagebrush-purple sage with *Lolium perenne*, *Bloomeria crocea*, *Dichelostemma pulchellum*, *Elemus glauca*, *Sanicula sp.*, *Nassella lepida*, *Hazardia squarosa*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing; Possible Threats: Utility access road bisect one of the polygons.

Overall Site Quality: X Excellent ___ Good ___ Fair ___ Poor

Comments: This is a previously undescribed species in the *Navarretia mitrocarpum* section.

Should/Could this site be protected? How?

Other comments: four other collections of this undescribed species are known to exist, all in the Santa Clara River Valley area between the LA/Ven Co. line and Ojai.

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: RSA, UCB

___ Compared with photo/drawing in:

X By another person (name): J. Mark Porter, RSABG

___ Other: personal knowledge

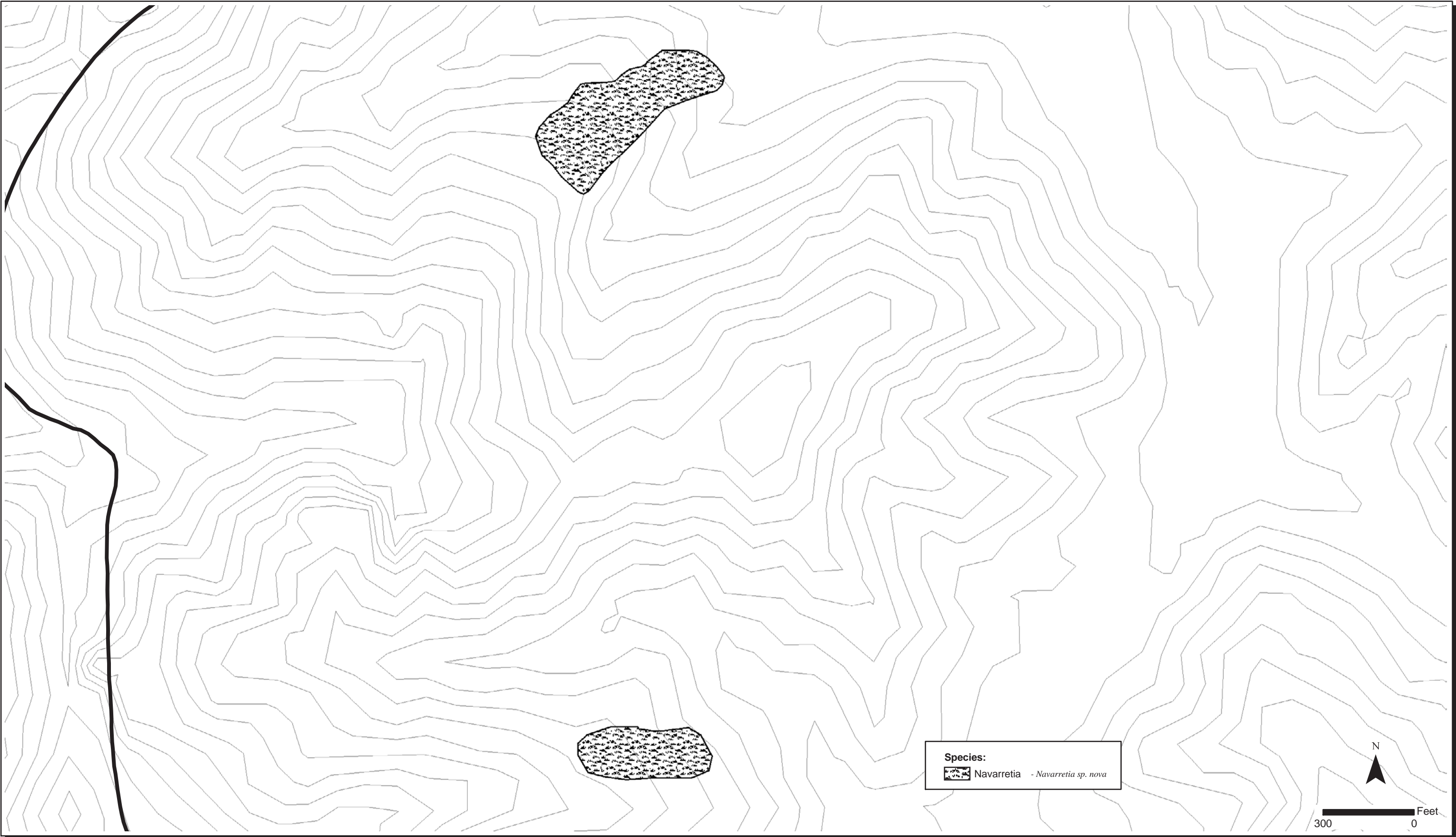
OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)


PHOTOGRAPHS (Check one or more)

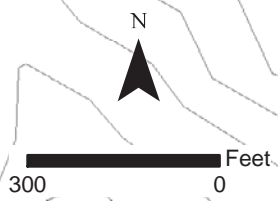
| Subject | Type |
|-----------------------------|----------------|
| <u>X</u> Plant/Animal | <u>X</u> Slide |
| <u>X</u> Habitat | ___ Print |
| <u>X</u> Diagnostic Feature | |
| ___ Other | |

May we obtain duplicates **at our cost?**

X Yes ___ No



Species:
 Navarretia - *Navarretia sp. nova*



Lower Western Fork Salt Creek
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Lower portions of the Eastern Fork of Salt Creek, south of State Route 126 just east of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Val Verde 34° 23' 43" N 118° 40' 39" W
X 7 1/2' 15' Elevation: 1,000-1,200'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~200 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100* % flowering % fruiting *(of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Development proposed for nearby, may experience edge effects.

Overall Site Quality: Excellent X Good Fair Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

 Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

X Habitat Print

X Diagnostic Feature

 Other

May we obtain duplicates at our cost?

X Yes No



Species:
●●●● slender mariposa lily - *Calochortus clavatus* var. *gracilis*

N
300 0 Feet

Lower Eastern Fork Salt Creek
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Lower Salt Canyon, south of State Route 126 just west of the Los Angeles/Ventura County line, on ridges and north facing slopes around the base of Salt Creek.

Quad Name: Val Verde

34° 23' 41" N 118° 41' 31" W

X 7½' 15'

Elevation: 900-1,300'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~20,000 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100* % flowering % fruiting *(of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: None known.

Overall Site Quality: X Excellent Good Fair Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

 Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

X Habitat Print

X Diagnostic Feature

 Other

May we obtain duplicates at our cost?

X Yes No



Lower Salt Creek
2003 Rare Plant Survey Results

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Middle portions of the Eastern Fork of Salt Creek, south of State Route 126 just east of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Val Verde 34° 23' 11" N 118° 39' 02" W
X 7½' 15' Elevation: 1,100-1,800'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~500 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100* % flowering % fruiting *(of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Development proposed for nearby, may experience edge effects.

Overall Site Quality: Excellent X Good Fair Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

 Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

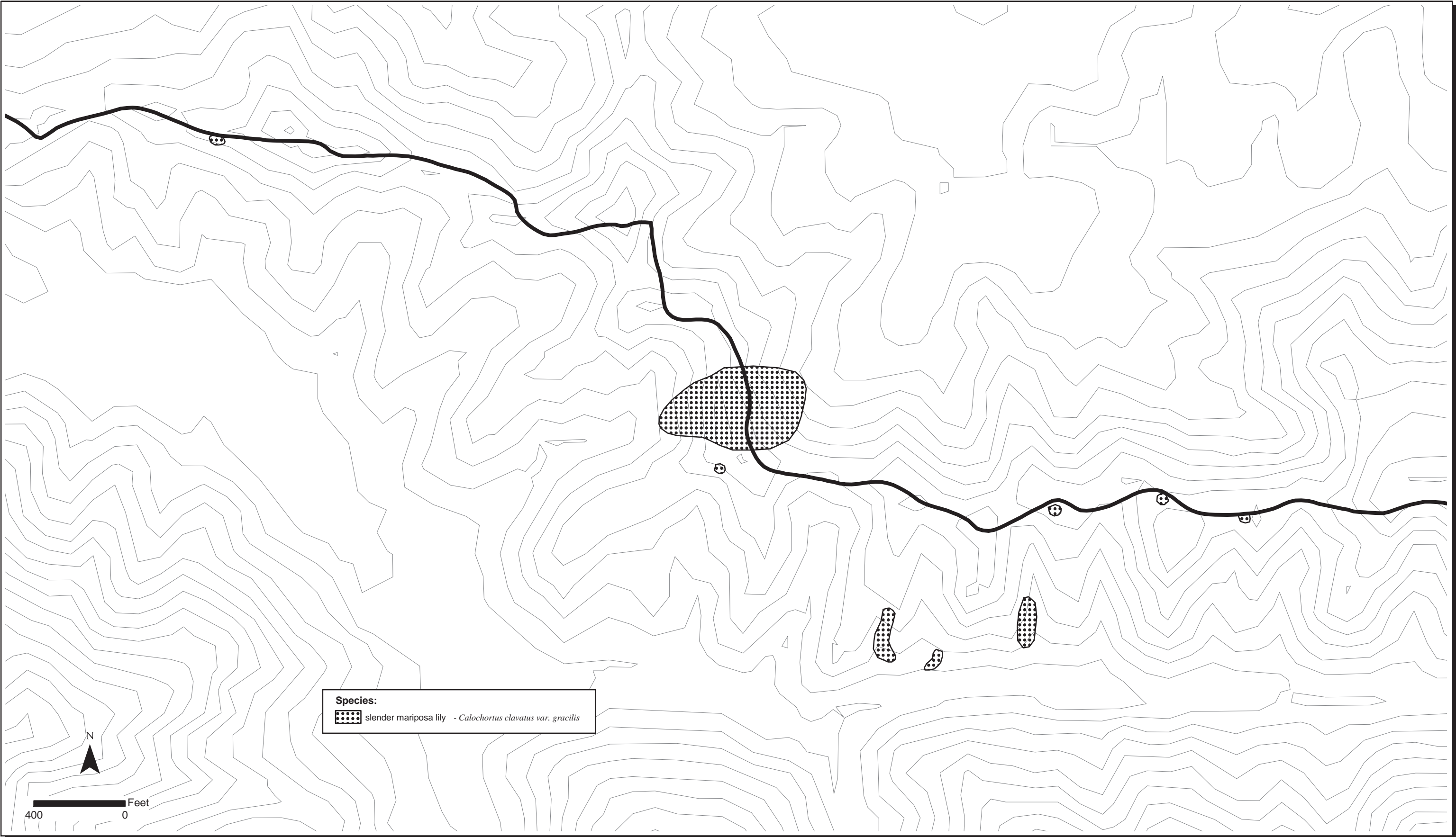
X Habitat Print

X Diagnostic Feature

 Other

May we obtain duplicates at our cost?

X Yes No



Middle Eastern Fork Salt Creek
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
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ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, On the edge of a ridge/mesa in the central middle area of Salt Canyon, south of State Route 126 just east of the Los Angeles/Ventura County line, on ridges and north and south facing slopes.

Quad Name: Val Verde 34° 22' 20" N 118° 39' 02" W
X 7½' 15' Elevation: 1,800-2,200'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~50 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 70* % flowering 30* % fruiting * (of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and either north or south facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Development proposed for nearby, may experience edge effects.

Overall Site Quality: Excellent X Good Fair Poor

Comments: Plants were observed during the end of the bloom period, some plants were in fruit and were cryptic. There were two (2) polygons observed (see map). The total number of individuals was not estimated, just the number of blooming and fruiting plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

 Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

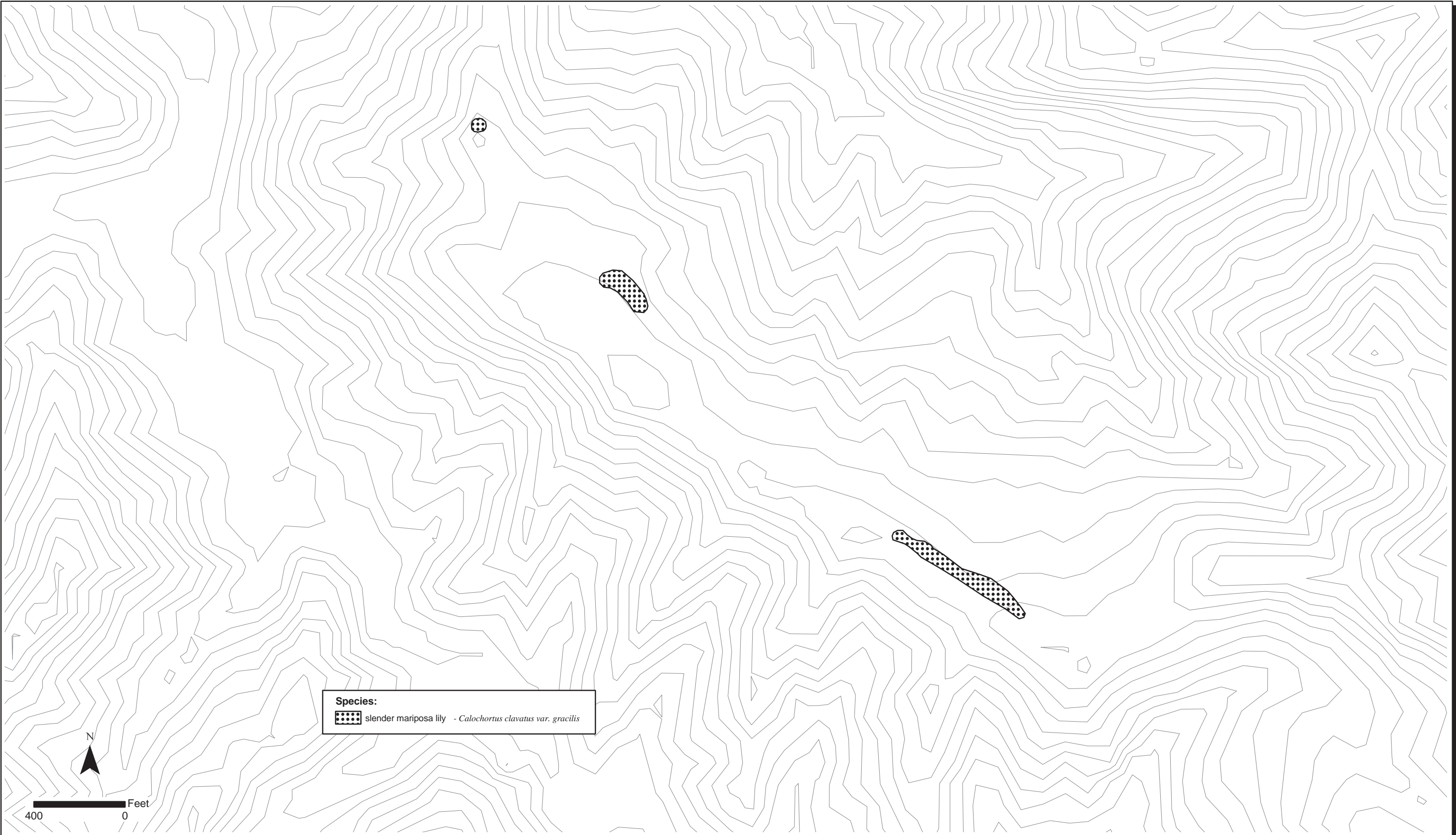
X Habitat Print

X Diagnostic Feature

 Other

May we obtain duplicates at our cost?

X Yes No



Middle Mesa Salt Creek Canyon
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Upper portions of the Salt Creek watershed in Salt Canyon at the crest of the Santa Susana Mountains, south of State Route 126 just east of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Simi Valley East

34° 21' 27" N 118° 39' 59" W

X 7 1/2' 15' Elevation: 2,500-3,100'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ___ No If not, reason:

Is this a new location record? X Yes ___ No ___ Unknown

Total # of Individuals = ~3,800 plants Is this a subsequent visit? ___ Yes X No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative 90* % flowering 10* % fruiting *(of the plants observed)

Population Age Structure (animals): ___ # adults ___ # juveniles ___ # others

Site Function for Species (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ___ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing; Possible Threats: None known.

Overall Site Quality: X Excellent ___ Good ___ Fair ___ Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming and/or fruiting plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

___ Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

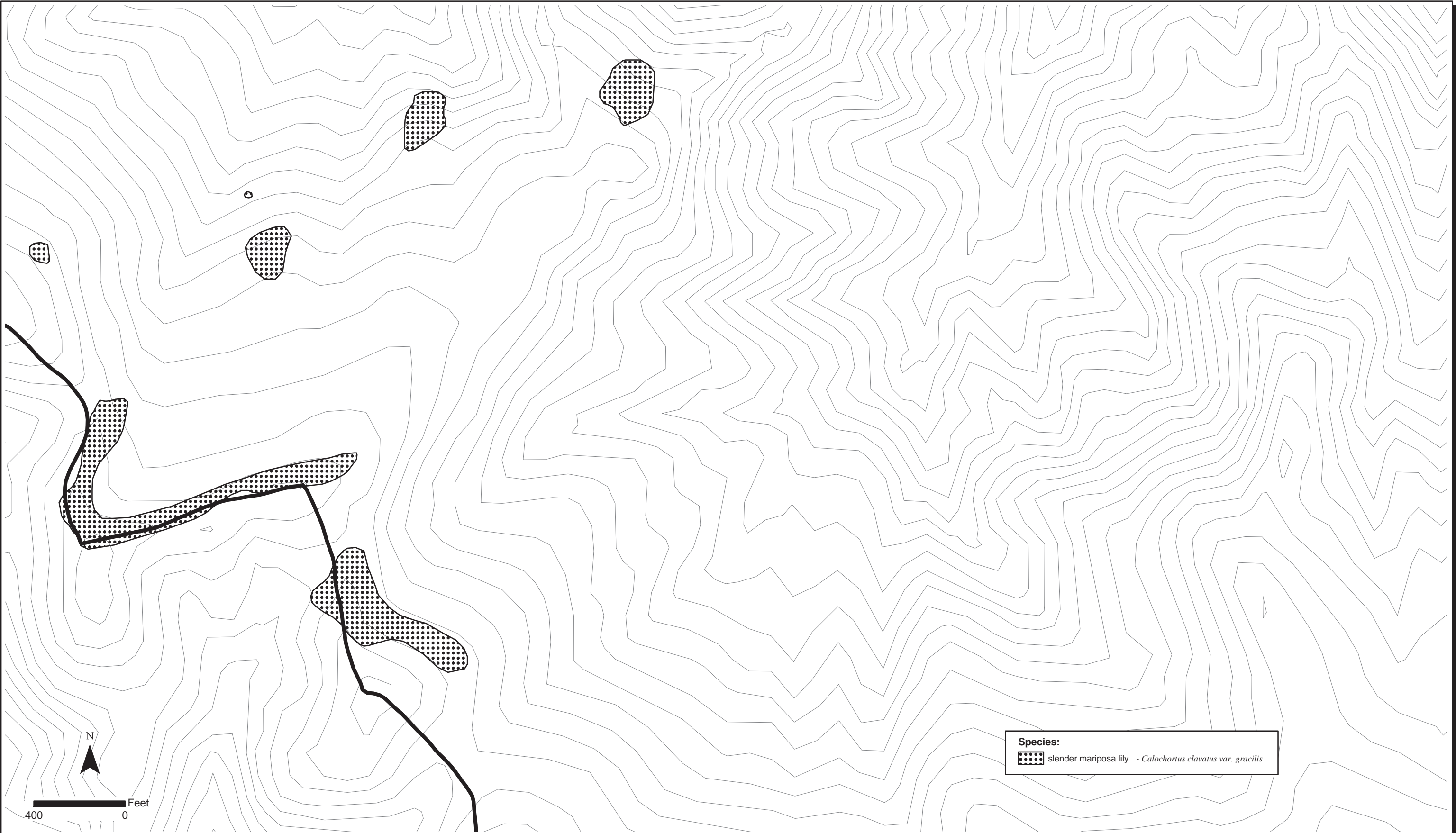
X Habitat ___ Print

X Diagnostic Feature

___ Other

May we obtain duplicates at our cost?

X Yes ___ No



Upper Central Salt Creek Canyon
2003 Rare Plant Survey Results

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Upper portions of the Western Fork of Salt Creek, south of State Route 126 just west of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Simi Valley East

34° 21' 42" N 118° 40' 58" W

X 7½' 15'

Elevation: 1,600-2,900'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~1,250 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100* % flowering % fruiting *(of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: None known.

Overall Site Quality: X Excellent Good Fair Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

 Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

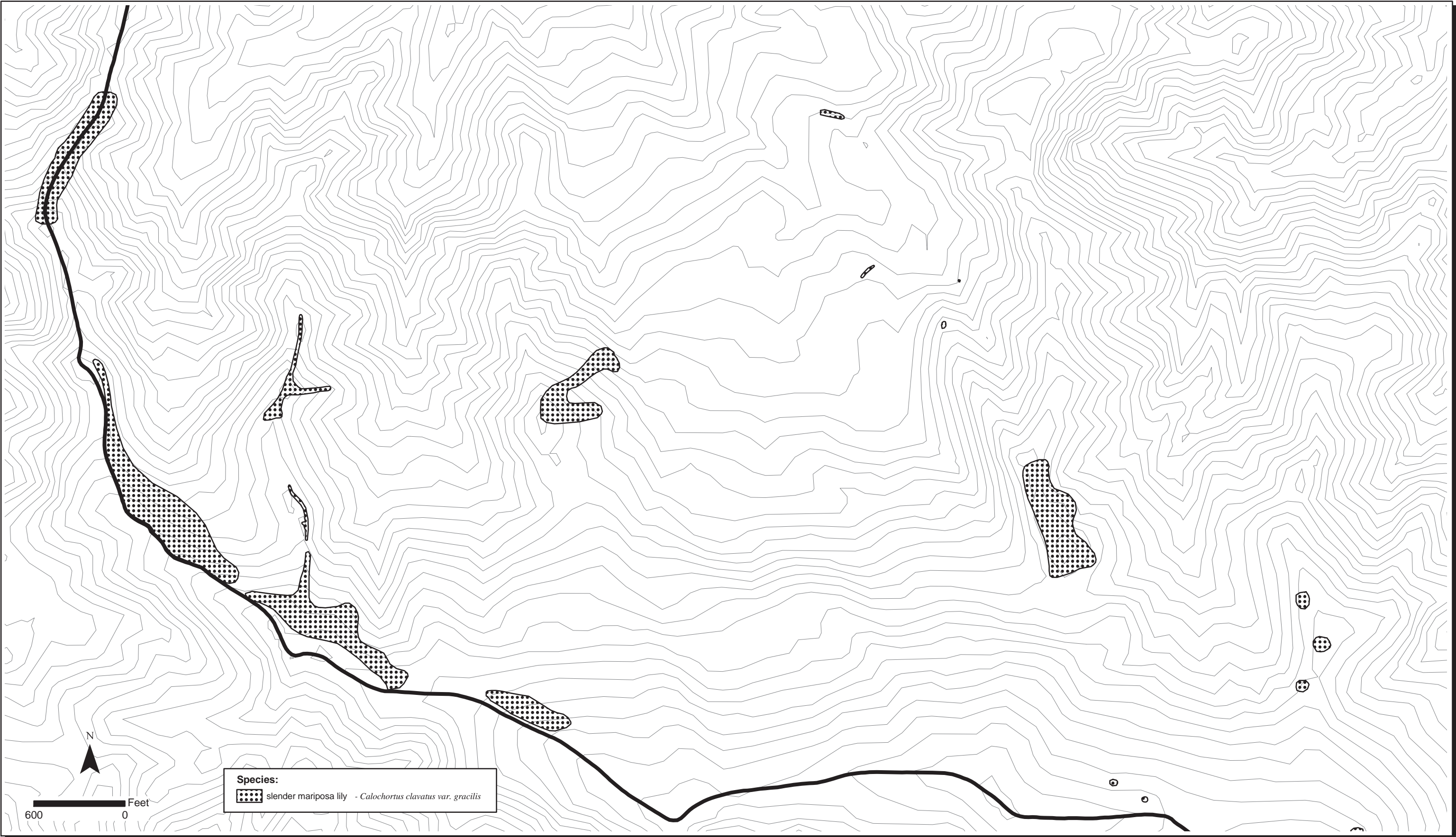
X Habitat Print

X Diagnostic Feature

 Other

May we obtain duplicates at our cost?

X Yes No



Upper Western Fork Salt Creek
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE
ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Upper eastern portions of the Salt Creek watershed in Salt Canyon at the crest of the Santa Susana Mountains, south of State Route 126 just east of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Simi Valley East

34° 21' 08" N 118° 38' 38" W

X 7 1/2' ___ 15' Elevation: 2,800-3,200'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ___ No If not, reason:

Is this a new location record? X Yes ___ No ___ Unknown

Total # of Individuals = ~250 plants Is this a subsequent visit? ___ Yes X No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative 90* % flowering 10* % fruiting * (of the plants observed)

Population Age Structure (animals): ___ # adults ___ # juveniles ___ # others

Site Function for Species (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ___ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing; Possible Threats: None known.

Overall Site Quality: X Excellent ___ Good ___ Fair ___ Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming and/or fruiting plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

___ Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

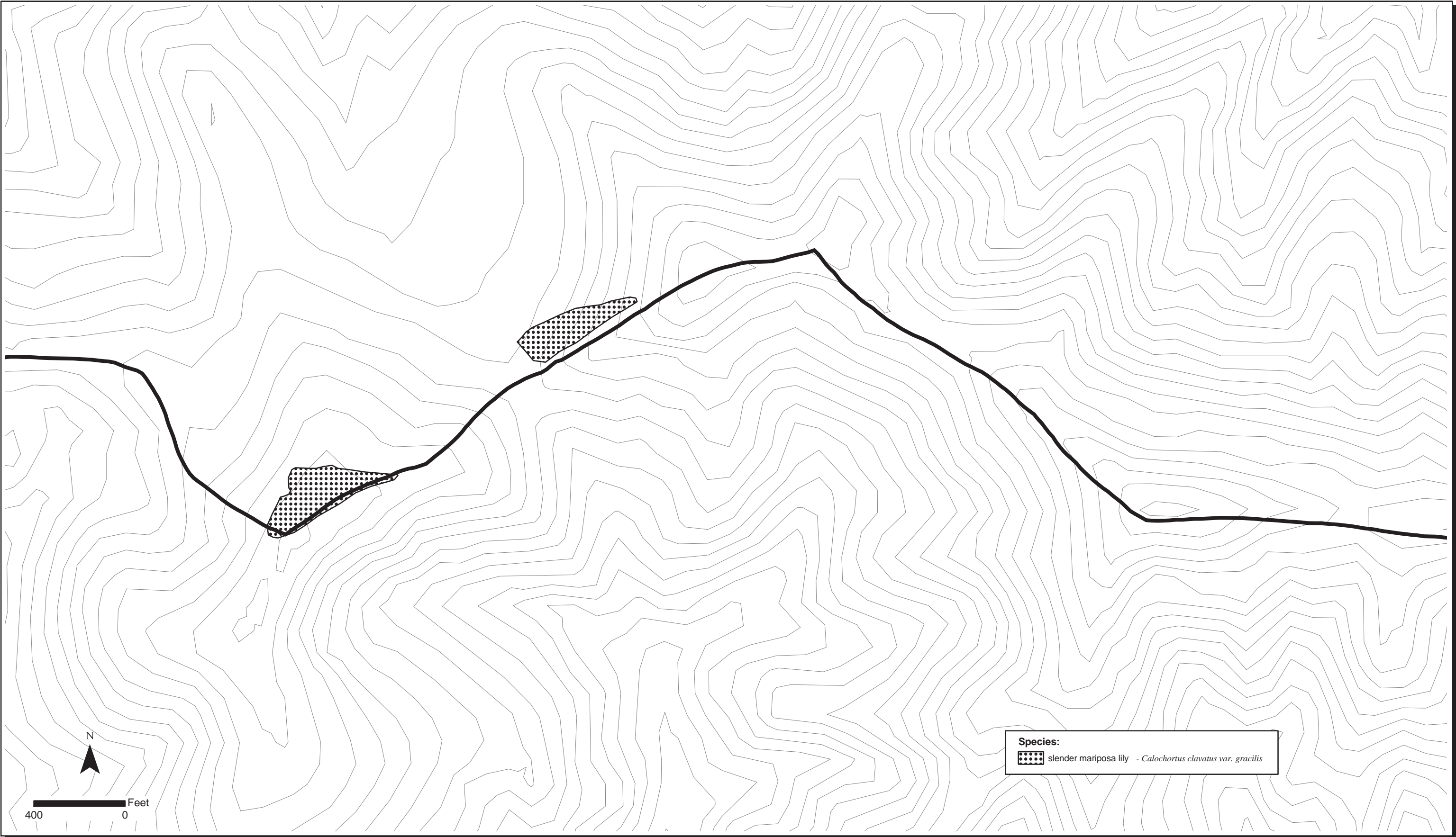
X Habitat ___ Print

X Diagnostic Feature

___ Other

May we obtain duplicates at our cost?

X Yes ___ No



Upper Eastern Salt Creek Canyon
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus weedii* var. *vestus*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: Jun 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Upper central portion of the Salt Creek watershed in Salt Canyon at the crest of the Santa Susana Mountains, south of State Route 126 just east of the Los Angeles/Ventura County line.

Quad Name: Simi Valley East

34° 21' 30" N 118° 40' 00" W

☒ 7 1/2' ☐ 15'

Elevation: 2,800-3,200'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? ☒ Yes ☐ No If not, reason:

Is this a new location record? ☒ Yes ☐ No ☐ Unknown

Total # of Individuals = ~50 plants Is this a subsequent visit? ☐ Yes ☒ No Compared to your last visit: ☐ more ☐ same ☐ fewer

Phenology (plants): ☐ % vegetative ☒ 100* % flowering ☐ % fruiting *(of the plants observed)

Population Age Structure (animals): ☐ # adults ☐ # juveniles ☐ # others

Site Function for Species (animals): ☐ breeding ☐ foraging ☐ wintering ☐ roosting ☐ denning ☐ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on an east facing slope above the fire road with macro-slope gradients ranging between 10 degrees and 50 degrees. Soils are typically sandstone based. Open walnut woodland with *Juglans californica*, *Calochortus clavatus* var. *gracilis*, *Lupinus excubitus*, *Quercus lobata*, *Corethrogyne filaginifolia*, numerous grasses.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: plants grow to the edge of the cut slope for the ridge road; Possible Threats: road maintenance.

Overall Site Quality: ☐ Excellent ☒ Good ☐ Fair ☐ Poor

Comments: Plants were observed during the bloom period and occur in one (1) polygon (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

☒ Keyed in a site reference: Jepson, Munz

☒ Compared with specimen housed at: UCR, RSA

☐ Compared with photo/drawing in:

☐ By another person (name):

☒ Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject

Type

☒ Plant/Animal

☒ Slide

☒ Habitat

☐ Print

☒ Diagnostic Feature

☐ Other

May we obtain duplicates at our cost?

☒ Yes ☐ No



Species:
late-flowered mariposa lily - *Calochortus weedii* var. *vestus*

Upper Central Salt Creek Canyon
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. **PLEASE ATTACH OR DRAW A MAP ON BACK.**

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Upper portions of the Western Fork of Salt Creek, south of State Route 126 just west of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Simi Valley East 34° 21' 42" N 118° 40' 58" W
X 7½' 15' Elevation: 1,600-2,900'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~1,250 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100* % flowering % fruiting *(of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: None known.

Overall Site Quality: X Excellent Good Fair Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

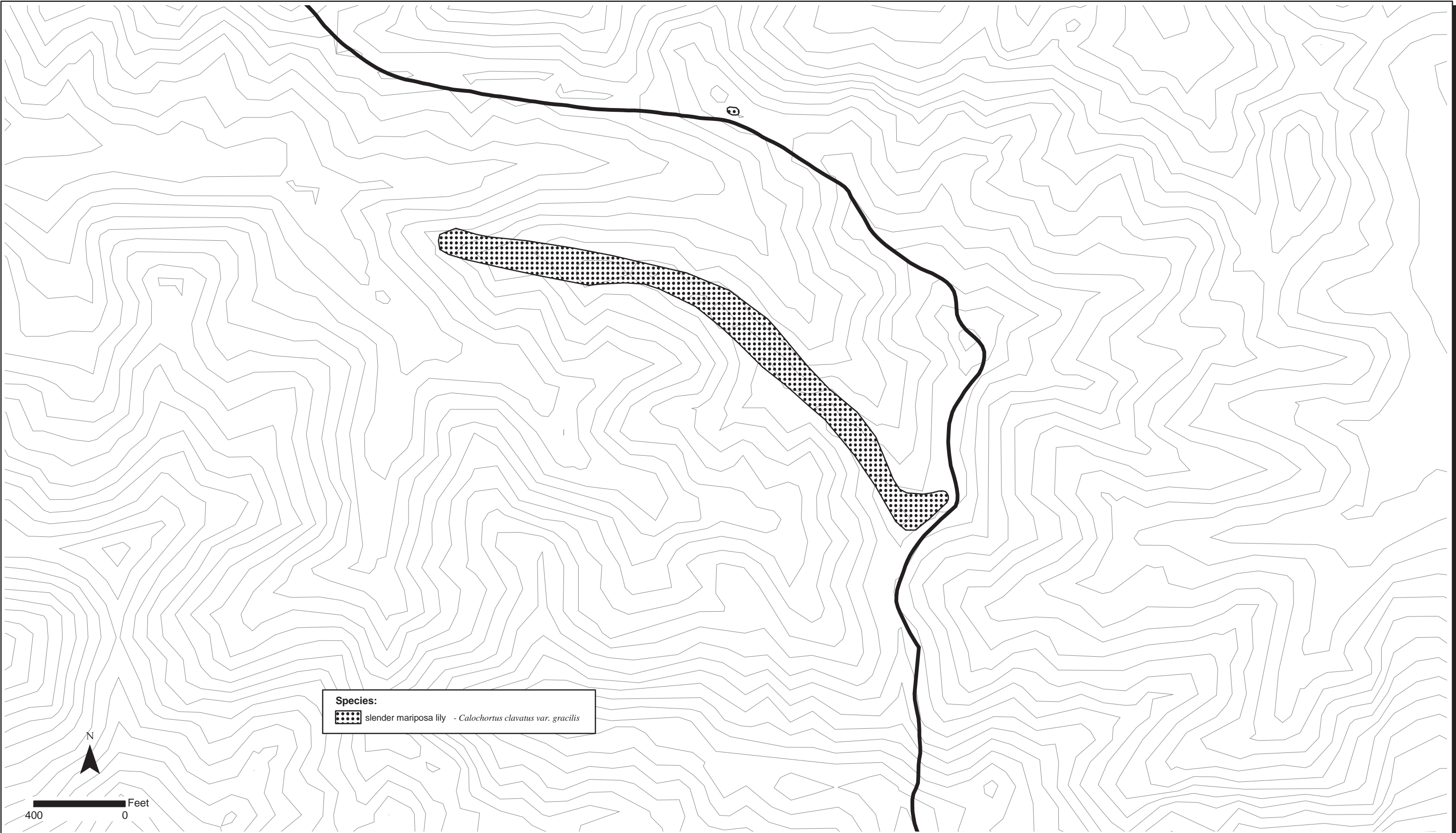
X Keyed in a site reference: Jepson, Munz
X Compared with specimen housed at: UCR, RSA
 Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

| | |
|-----------------------------|-------------------|
| Subject | Type |
| <u>X</u> Plant/Animal | <u>X</u> Slide |
| <u>X</u> Habitat | <u> </u> Print |
| <u>X</u> Diagnostic Feature | |
| <u> </u> Other | |

May we obtain duplicates **at our cost?**
X Yes No



Species:
slender mariposa lily - *Calochortus clavatus* var. *gracilis*

N
400 0 Feet

Upper Eastern Fork Salt Creek
2003 Rare Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

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PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
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Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin

Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: May 2003 County: Los Angeles Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Lower to Middle portions of the Western Fork of Salt Creek, south of State Route 126 just west of the Los Angeles/Ventura County line, on ridges and north facing slopes.

Quad Name: Val Verde and Simi Valley East

34° 23' 03" N 118° 41' 27" W

X 7½' 15' Elevation: 1,100-1,800'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? X Yes No Unknown

Total # of Individuals = ~5,000 plants Is this a subsequent visit? Yes X No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100* % flowering % fruiting *(of the plants observed)

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on ridges and north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, *Heteromeles arbutifolia*, *Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Open space; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: None known.

Overall Site Quality: X Excellent Good Fair Poor

Comments: Plants were observed during the bloom period and occur in a number of polygons (see map). The total number of individuals was not estimated, just the number of blooming plants observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Jepson, Munz

X Compared with specimen housed at: UCR, RSA

 Compared with photo/drawing in:

X By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

X Plant/Animal X Slide

X Habitat Print

X Diagnostic Feature

 Other

May we obtain duplicates at our cost?

X Yes No



Lower Western Fork Salt Creek
2003 Rare Plant Survey Results