

pt
year

**SLOVER AND SYCAMORE AVENUES
PROJECT SITE**

(APN Numbers 0254-014-15)

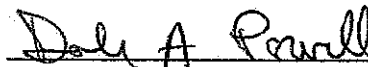
**Focused Survey for the
Delhi Sands Flower-loving Fly**

Prepared for:

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Dale A. Powell Ph.D.
TE-006559-7

October 6, 2018

SANTA ANA AND RIVERSIDE AVENUES PROJECT SITE

Focused Survey for the Delhi Sands Flower-loving Fly

October 6, 2018

Introduction

This report presents the results of a focused survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on an approximately 1.27-acre site located in the City of Rialto, San Bernardino County. This property is under consideration for development in the future. The County of San Bernardino and the U.S. Fish and Wildlife Service require that focused surveys be conducted to determine whether this proposed development would impact this federally endangered insect. This survey, the first, conducted by Powell Environmental Consulting, resulted in negative findings.

Site Description

The approximately 1.27-acre site is located in the city of Rialto, on a portion of the central area of Section 26, Township 1 South, Range 5 West; San Bernardino Baseline and Meridian; USGS 7.5' San Bernardino South Quad (See Maps 1 & 2). It is rectangular in outline. The site sits on the southeast side of the intersection of Santa Ana and Riverside Avenues (APN Number - 0254-014-15). The site is relatively flat and its elevation is approximately 1,000 feet above sea level. Except for a small open field to the southeast of the site, the site is surrounded by industrial development to the south, west and north. Across Sycamore Avenue to the east of the site is a strip of open sandy soil and beyond that is industrial development.

According to a soil map (U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of San Bernardino County Southwestern Part, California, 1980.) the site possesses Delhi Fine Sand (Db). The Delhi fine sands is a "nearly level to strongly sloping soil on alluvial fans that have been reworked by wind action." (U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of San Bernardino County Southwestern Part, California, 1980.). Based upon my field examination I concur with the soil map. Most of the site's soil has been fairly well compacted, because the site was used previously by industry. Most of the site possesses exposed soil, except for a few plants.

Plants such as Russian thistle (*Salsola tragus*), common sunflower (*Helianthus annuus*), tree tobacco (*Nicotiana glauca*), mule-fat (*Baccharis salicifolia*), non-native ornamentals, and grasses are found growing upon the site. Three of the four DSFLF "indicator plants": California croton, annual bursage, and telegraph weed were observed growing upon the site. Disturbances observed on the site include the invasion of non-native plant and animal species, and minor trash dumping.

Delhi Sands Flower-loving Fly Background Information

The Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) (family Mydidae) was listed as an endangered species under the Endangered Species Act, as amended on September 23, 1993. The California Natural Diversity Data Base lists the DSFLF rank as being: G1T1S1 - Federally listed as being extremely endangered (G1); found only in California (T1); and as being extremely endangered in California (S1).

The Delhi Sands Flower-loving Fly is considered to be endangered primarily because of the loss of its habitat, mainly due to the habitat's conversion to agricultural, residential, and industrial uses. Its historic range has been reduced by over approximately 97% (USFWS, 1993). The fly is known only to inhabit areas where Delhi series soils are located. These soils consist of fine, sandy soils, often forming wholly or partially consolidated dunes, located in an irregular 40 square mile area, in southwestern San Bernardino and northwestern Riverside Counties (Soil Conservation Service, 1980).

Fine unconsolidated soils are required for oviposition. The female fly inserts the end of her abdomen deep into the soil to lay her eggs (Rogers and Mattoni, 1993). The life history of the larval stages are unknown, however, it is presumed, that the larvae develop underground (Greg Ballmer, D. Hawks, pers. comm.). The Delhi Sands Flower-loving Fly's adult flight period lasts approximately ten weeks from late June through mid-September. The adult is approximately 1 inch long, tan to orange-brown in color, with dark brown bands and spots upon its abdomen. Its wings are hyaline. It has large green eyes and a long slender proboscis, which it has been seen to use to feed upon nectar from California buckwheat and telegraph weed. The adults frequent open areas, usually near unconsolidated soil. The adult males patrol open areas looking for females to mate with. The females are more sedentary and perch upon plants or sit upon the ground for long periods. Adults are most often observed from 9 or 10 AM until 3 or 4 PM.

The DSFLF is frequently associated with certain plants: California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), annual bursage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*), are sometimes called "indicator plants". Other native plant species also occur in DSFLF habitat: California evening primrose (*Oenothera californica*), deerweed (*Lotus scoparius*), lessinga (*Lessingia glandulifera*), rancher's fiddleneck (*Amsinckia menziesii*), sapphire woolly-star (*Eriastrum sapphirinum*), and Thurber's buckwheat (*Eriogonum thurberi*)

Delhi Sands Flower-loving Fly Recovery Plan

In 1997 the U.S. Fish and Wildlife Service issued the final recovery plan for the Delhi Sands Flower-loving Fly (USFWS, 1997). The plan establishes three recovery units: the Colton, Jurupa, and Ontario Recovery Units. The Colton Recovery Unit contains the most known habitat, followed by the Jurupa Recovery Unit. Of the three recovery units, the Ontario Recovery Unit contains the least suitable habitat. Most of the Ontario Recovery Unit's habitat has been degraded by long-term agricultural use and much of the remainder of "suitable" habitat is highly fragmented and is in very close proximity to residential, commercial, or industrial development. While the fly is known to occur in the Ontario Recovery Unit, the possibility of using the Ontario

Recovery Unit to protect the Delhi Sands Flower-loving Fly is limited because of its prior history and fragmented nature.

The Santa Ana and Riverside Avenues Project site is located within the Colton Recovery Unit.

Methods

Prior to the initiation of the focused survey, the Carlsbad Field Office of the USFWS was notified on June 28, 2018 of Powell Environmental Consultant's intent to perform the survey. This focused survey was initiated on July 2, 2018 and continued with biweekly site surveys until September 19, 2018. All field surveys and activities associated with this study were conducted in accordance with the Interim General Guidelines for the Delhi Sands Flower-loving Fly and conditions set forth in the surveyors 10(a)(1)(A) permits. Surveys were conducted by entomologists Dale Powell and Jun Powell (both authorized under permit TE-006559-7). Survey dates and times, ambient air temperatures, wind speed, general weather conditions, insect families/species detected, and other pertinent field data were recorded on field survey forms and are included in Table 1 and in the Appendices.

Results and Discussion

No Delhi Sands Flower-loving Flies were observed upon the site during the focused survey. The closest known Delhi Sands Flower-loving Fly observation was made approximately several hundred feet southeast of the site, across Sycamore and Slover Avenues upon the Vulcan Materials Inc., Colton Dunes Conservation Bank. One member of the family Mydidae to which the Delhi Sands Flower-loving Fly belongs was observed upon the site. Members of the closely related family Asilidae were observed upon the site. Three of the four DSFLF "indicator plants": California croton, annual bursage, and telegraph weed were observed growing upon the site.

Table 1. Dates, survey times, person hours, and weather conditions.

Delhi Sands Flower-loving Fly Survey Results

Date	Time	Minutes Surveyed	Weather (at start)	Temp (°F)	Wind (mph) aver*/max
7/2/18 ³	13:30-14:00	60	Clear	88°	5/7
7/5/18 ³	11:20-11:50	60	Clear	88°	2/4
7/9/18 ³	11:25-11:45	60	Haze	96°	3/7
7/11/18 ³	11:25-11:50	50	Partly Cloudy	93°	2/4
7/16/18 ¹	12:00-12:30	30	Clear	88°	3/7
7/19/18 ²	11:30-12:00	30	Clear	95°	2/4
7/23/18 ¹	11:30-12:00	30	Clear	96°	3/5
7/26/18 ¹	10:40-11:10	30	Clear	96°	2/4
7/30/18 ¹	11:00-11:30	30	10% Clouds	96°	2/5
8/1/18 ¹	11:20-11:50	35	Clear	91°	2/4
8/6/18 ¹	11:00-11:30	30	Clear	93°	0/0
8/8/18 ¹	11:00-11:30	30	Haze	91°	3/5
8/13/18 ¹	10:40-11:15	35	Clear	85°	2/4
8/15/18 ¹	10:50-11:20	30	Clear	84°	0/0
8/20/18 ²	11:15-11:45	30	Clear	84°	2/4
8/22/18 ²	10:50-11:30	40	Clear	82°	0/0
8/27/18 ²	10:55-11:25	30	Clear	74°	2/4
8/29/18 ²	12:10-12:40	30	20% Clouds	88°	2/4
9/3/18 ¹	10:25-10:55	30	Clear	75°	2/4
9/5/18 ¹	10:20-10:50	30	Clear	72°	1/3
9/10/18 ¹	10:55-11:25	30	Clear	82°	1/3
9/12/18 ¹	10:30-11:00	30	Clear	73°	0/0
9/17/18 ¹	10:25-10:55	30	Clear	80°	1/3
9/19/18 ²	12:20-12:50	30	Clear	78°	1/3

¹ Dale Powell

² Jun Powell

³ Dale and Jun Powell

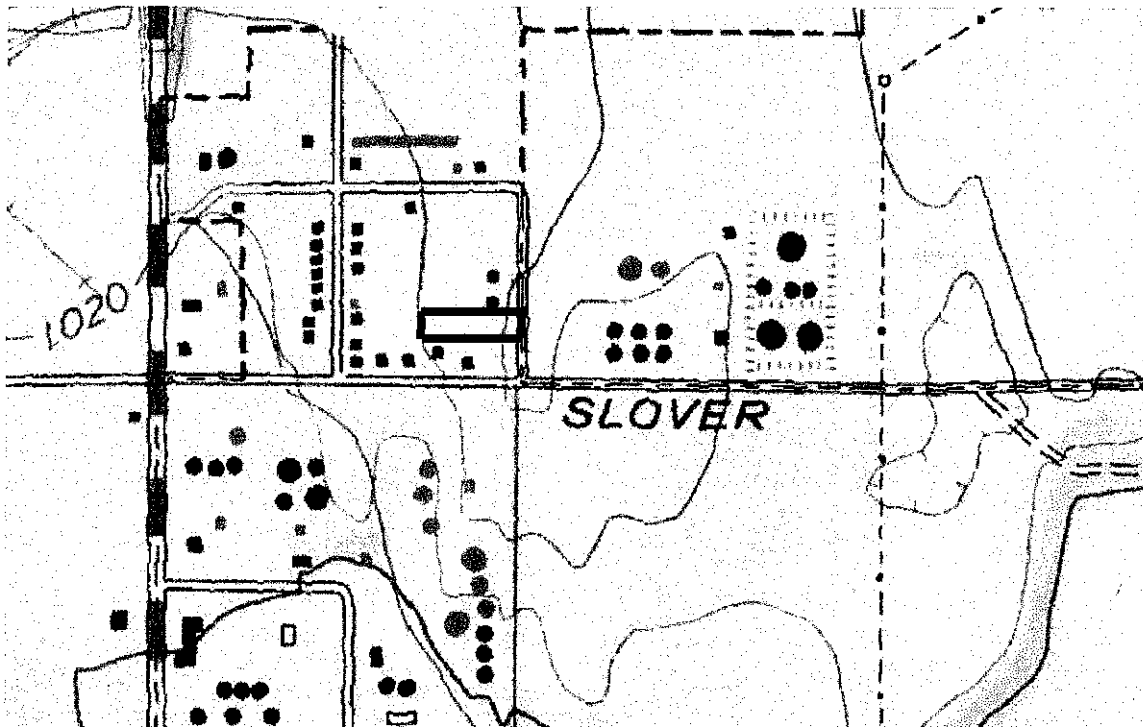
* Over a 20 second period.

REFERENCES

- Emmel, T.C. and J.F. Emmel. 1973. The Butterflies of Southern California. Natural History Museum of Los Angeles. Science Series 26: 1-148.
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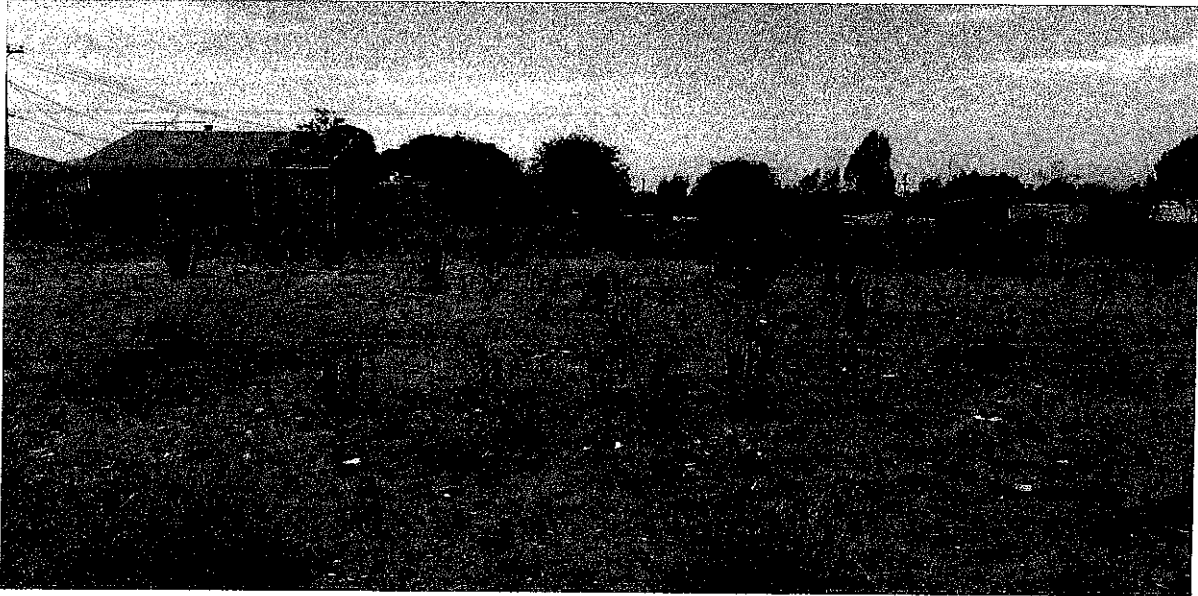
APPENDIX

Map 1. General location of the Santa Ana and Riverside Avenues Project.



SANTA ANA AND RIVERSIDE AVENUES PROJECT SITE

Picture 1. Overview of the site facing west from the southeastern corner.



Picture 2. Overview of the site facing northwest from the southeastern corner.



SANTA ANA AND RIVERSIDE AVENUES PROJECT SITE

Picture 3. Overview of the site facing north from the southeastern corner.



FIELD NOTES

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: Sycamore & Slaver Avenues

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/2/18	Temp					88°		
Week	Wind					5/7		
1	Weath					Clear		
7/5	Temp			88°				
Week	Wind			2/4				
1	Weath			Clear				
7/9	Temp			96°				
Week	Wind			2/7				
2	Weath			Haze				
7/11	Temp			93°				
Week	Wind			2/4				
2	Weath			PC				
7/17	Temp				88°			
Week	Wind				3/7			
3	Weath				Clear			
7/19	Temp				95°			
Week	Wind				2/4			
3	Weath				Clear			
7/23	Temp			96°				
Week	Wind			3/5				
4	Weath			Clear				
7/26	Temp			96°				
Week	Wind			2/4				
4	Weath			Clear				
7/30	Temp				93°			
Week	Wind				3/5			
5	Weath				10% cloud			
8/1	Temp			91°				
Week	Wind			2/4				
5	Weath			Clear				
8/6	Temp			93°				
Week	Wind			2/0				
6	Weath			Clear				
8/8	Temp			91°				
Week	Wind			2/5				
6	Weath			Haze				
8/13	Temp		85°					
Week	Wind		2/4					
7	Weath		Clear					

Wind: First number is average (20 seconds) / second number is maximum.

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: Sycamore + Blower Avenue

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
8/15	Temp			84°				
Week	Wind			9/8				
7	Weath			Clear				
8/20	Temp			84°				
Week	Wind			2/4				
8	Weath			Clear				
8/22	Temp			82°				
Week	Wind			0/0				
8	Weath			Clear				
8/27	Temp			74°				
Week	Wind			2/4				
9	Weath			Clear				
8/29	Temp				88°			
Week	Wind				5/4			
9	Weath				20% cloud			
9/3	Temp		75°					
Week	Wind		2/4					
10	Weath		Clear					
9/5	Temp		72°					
Week	Wind		1/3					
10	Weath		Clear					
9/10	Temp			82°				
Week	Wind			1/3				
11	Weath			Clear				
9/11	Temp		73°					
Week	Wind		8/5					
11	Weath		Clear					
9/17	Temp		80°					
Week	Wind		1/3					
12	Weath		Clear					
9/19	Temp				78°			
Week	Wind				1/3			
12	Weath				Clear			
	Temp							
Week	Wind							
	Weath							
	Temp							
Week	Wind							
	Weath							

Wind: First number is average (20 seconds) / second number is maximum.

Delhi Sands Flower-loving Fly Dale and Jun Rong Powell

Dale and Jun Rong Powell

[illegible]

Power-Loving Fly

Dale and Jun Rong Powell

[illegible]

2nd year

**SLOVER AND SYCAMORE AVENUES
PROJECT SITE**

(APN Numbers 0254-014-15)


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Delhi Sands Flower-loving Fly**

Prepared for:

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Dale A. Powell Ph.D.
TE-006559-7

September 22, 2019

SANTA ANA AND RIVERSIDE AVENUES PROJECT SITE

Focused Survey for the Delhi Sands Flower-loving Fly

September 22, 2019

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Site Description

The approximately 1.27-acre site is located in the city of Rialto, on a portion of the central area of Section 26, Township 1 South, Range 5 West; San Bernardino Baseline and Meridian; USGS 7.5' San Bernardino South Quad (See Maps 1 & 2). It is rectangular in outline. The site sits on the southeast side of the intersection of Santa Ana and Riverside Avenues (APN Number - 0254-014-15). The site is relatively flat and its elevation is approximately 1,000 feet above sea level. Except for a small open field to the southeast of the site, the site is surrounded by industrial development to the south, west and north. Across Sycamore Avenue to the east of the site is a strip of open sandy soil and beyond that is industrial development.

According to a soil map (U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of San Bernardino County Southwestern Part, California, 1980.) the site possesses Delhi Fine Sand (Db). The Delhi fine sands is a "nearly level to strongly sloping soil on alluvial fans that have been reworked by wind action." (U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of San Bernardino County Southwestern Part, California, 1980.). Based upon my field examination I concur with the soil map. Most of the site's soil has been fairly well compacted, because the site was used previously by industry. Most of the site possesses exposed soil, except for a few plants.

Plants such as Russian thistle (*Salsola tragus*), common sunflower (*Helianthus annuus*), tree tobacco (*Nicotiana glauca*), mule-fat (*Baccharis salicifolia*), non-native ornamentals, and grasses are found growing upon the site. Three of the four DSFLF "indicator plants": California croton, annual bursage, and telegraph weed were observed growing upon the site. Disturbances observed on the site include the invasion of non-native plant and animal species, and minor trash

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degraded by long-term agricultural use and much of the remainder of "suitable" habitat is highly fragmented and is in very close proximity to residential, commercial, or industrial development. While the fly is known to occur in the Ontario Recovery Unit, the possibility of using the Ontario Recovery Unit to protect the Delhi Sands Flower-loving Fly is limited because of its prior history and fragmented nature.

The Santa Ana and Riverside Avenues Project site is located within the Colton Recovery Unit.

Methods

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Table 1. Dates, survey times, person hours, and weather conditions.

Delhi Sands Flower-loving Fly Survey Results

Date	Time	Minutes Surveyed	Weather (at start)	Temp (°F)	Wind (mph) aver*/max
7/1/19 ²	10:30-11:00	30	Clear	85°	0/1
7/3/19 ²	10:30-11:00	30	20% Clouds	77°	0/1
7/8/19 ²	10:30-11:00	30	Clear	74°	0/1
7/10/19 ²	12:20-12:50	30	Clear	92°	2/4
7/15/19 ²	10:20-10:50	30	Clear	85°	1/3
7/17/19 ²	12:20-12:50	30	Clear	94°	2/4
7/22/19 ²	10:50-11:20	30	50% Clouds	89°	1/3
7/24/19 ²	12:20-12:50	30	20% Clouds	99°	1/3
7/29/19 ²	09:50-10:20	30	10% Clouds	84°	1/3
7/31/19 ²	10:55-11:25	30	Clear	89°	1/3
8/5/19 ²	12:10-12:40	30	Clear	97°	0/1
8/7/19 ²	10:50-11:20	30	40% Clouds	85°	1/3
8/12/19 ²	10:25-10:55	30	Clear	81°	0/1
8/14/19 ²	12:30-13:00	30	Clear	97°	1/3
8/19/19 ²	10:25-10:55	30	Clear	76°	0/1
8/21/19 ²	12:25-12:55	30	Clear	95°	0/1
8/27/19 ²	10:25-10:55	30	Clear	86°	0/1
8/29/19 ²	12:30-13:00	30	Clear	95°	0/1
9/2/19 ²	10:20-10:50	30	50% Clouds	83°	0/1
9/4/19 ²	10:20-10:50	30	Clear	90°	0/1
9/9/19 ²	12:25-12:55	30	20% Clouds	85°	1/3
9/11/19 ¹	11:20-14:15	30	Clear	76°	3/5
9/16/19 ¹	11:30-12:00	30	35% Clouds	86°	2/4
9/18/19 ²	12:25-12:55	30	Clear	85°	1/3

¹ Dale Powell

² Jun Powell

* Over a 20 second period.

REFERENCES

- Emmel, T.C. and J.F. Emmel. 1973. The Butterflies of Southern California. Natural History Museum of Los Angeles. Science Series 26: 1-148.
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APPENDIX

SUBCONTRACTOR CONCURRENCE

I, Dale A. Powell, having performed focused surveys for the Delhi Sands Flower-loving Fly for the Slover and Sycamore Avenues Project site, Rialto, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Dale A Powell
SIGNATURE

9/22/2019
DATE

I, Jun R. Powell, having performed focused surveys for the Delhi Sands Flower-loving Fly for the Slover and Sycamore Avenues Project site, Rialto, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

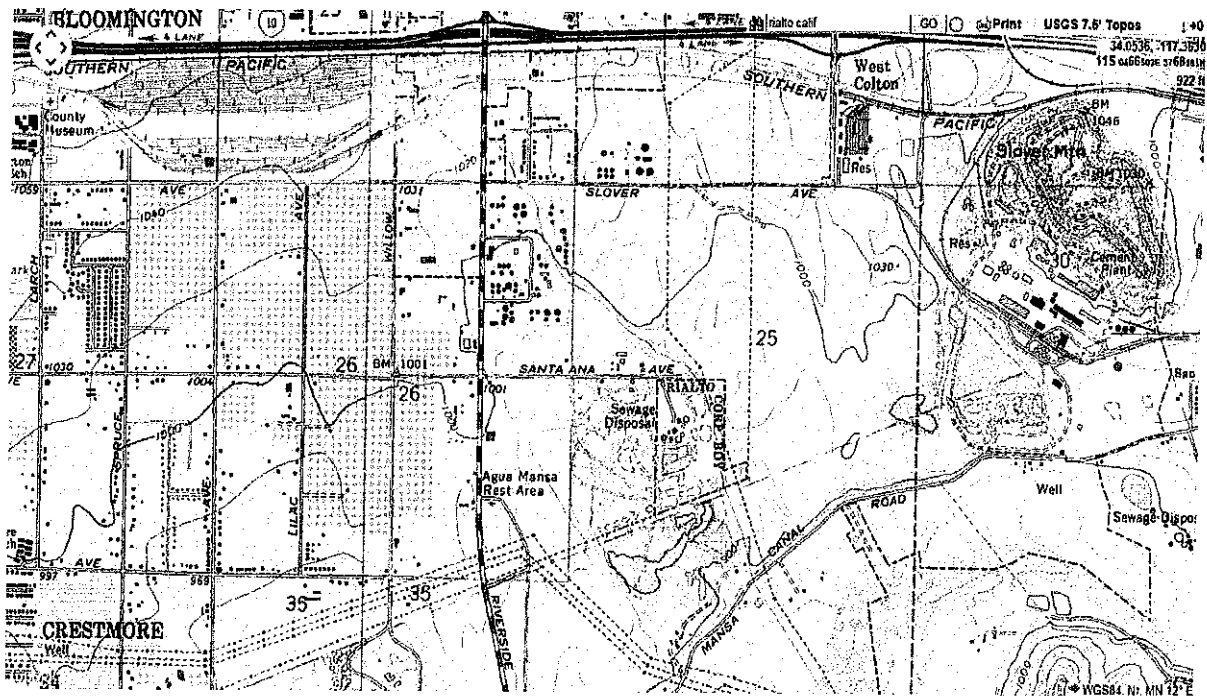
Jun R. Powell
SIGNATURE

9/22/2019
DATE

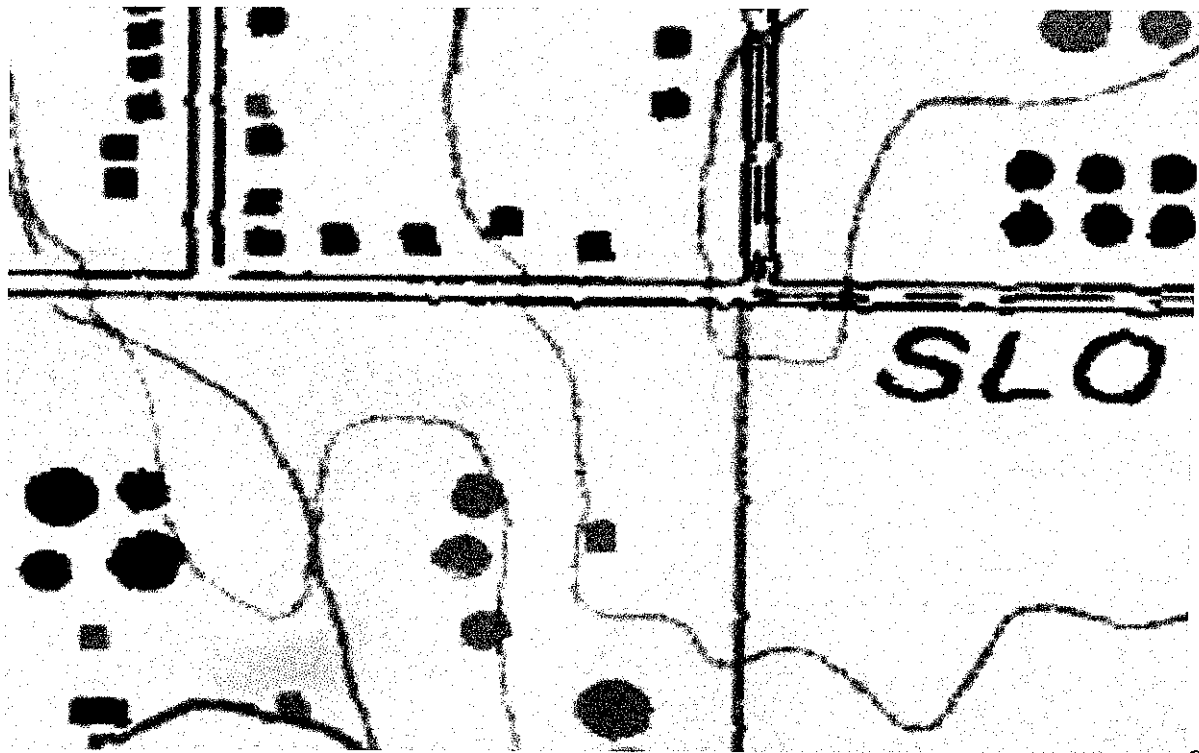
APPENDIX

SANTA ANA AND RIVERSIDE AVENUES PROJECT SITE

Map 1. General location of the Santa Ana and Riverside Avenues Project.



Map 2. Location of the Santa Ana and Riverside Avenues Project.



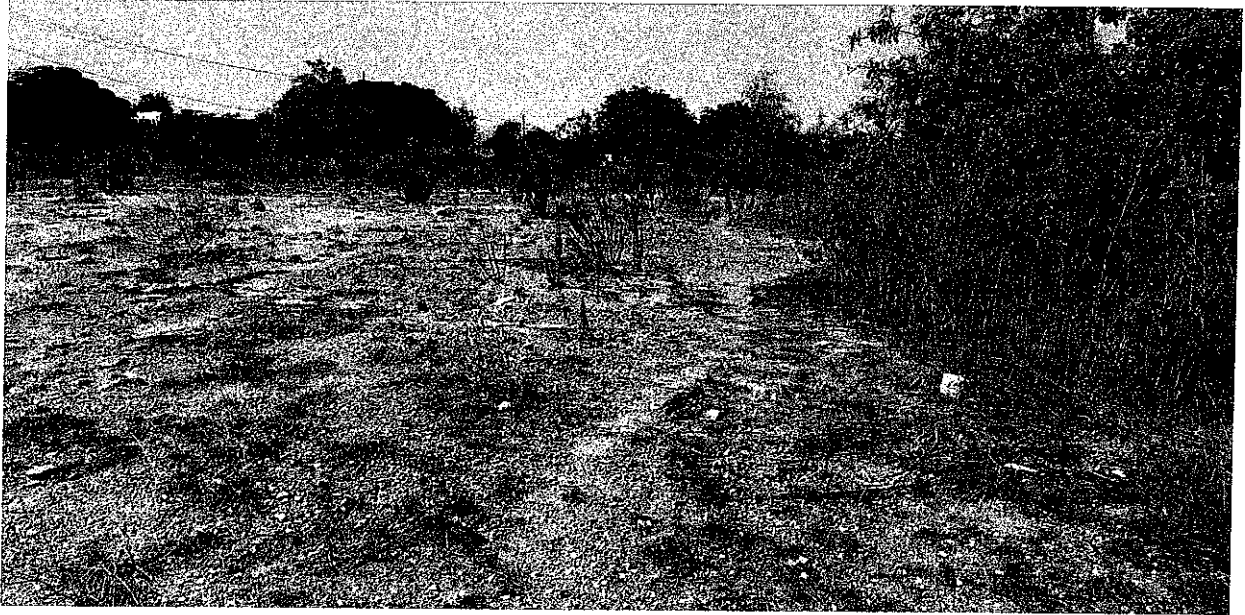
S

ANTA ANA AND RIVERSIDE AVENUES PROJECT SITE

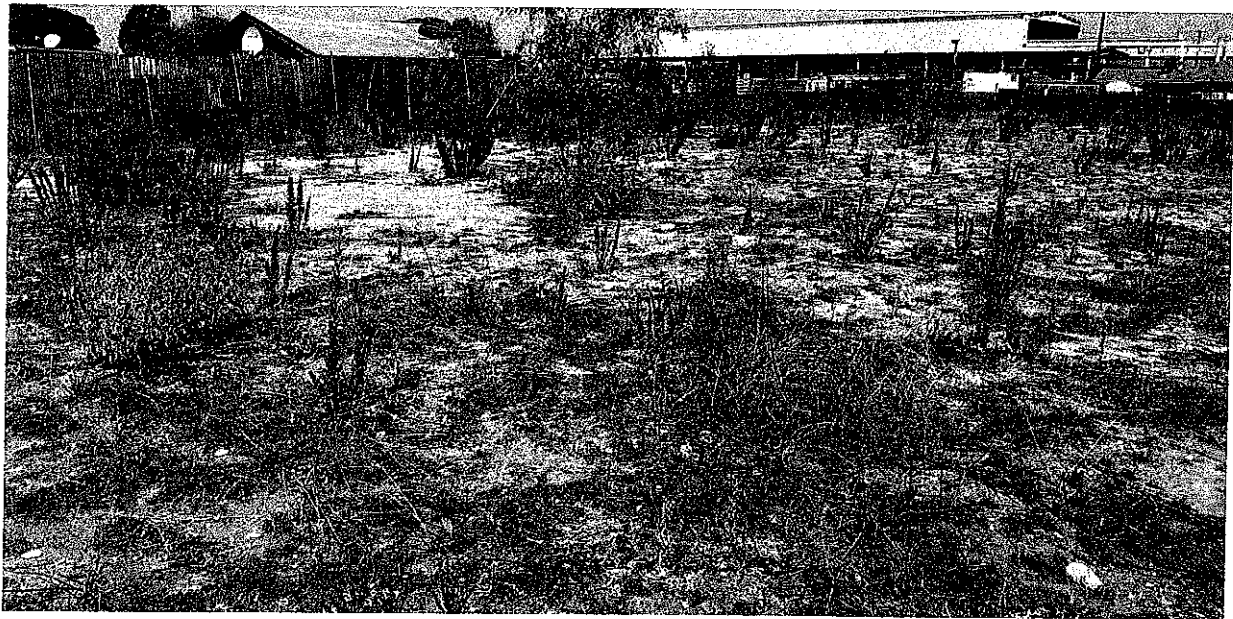
Picture 1. Overview of the site facing southwest from the northeastern corner.



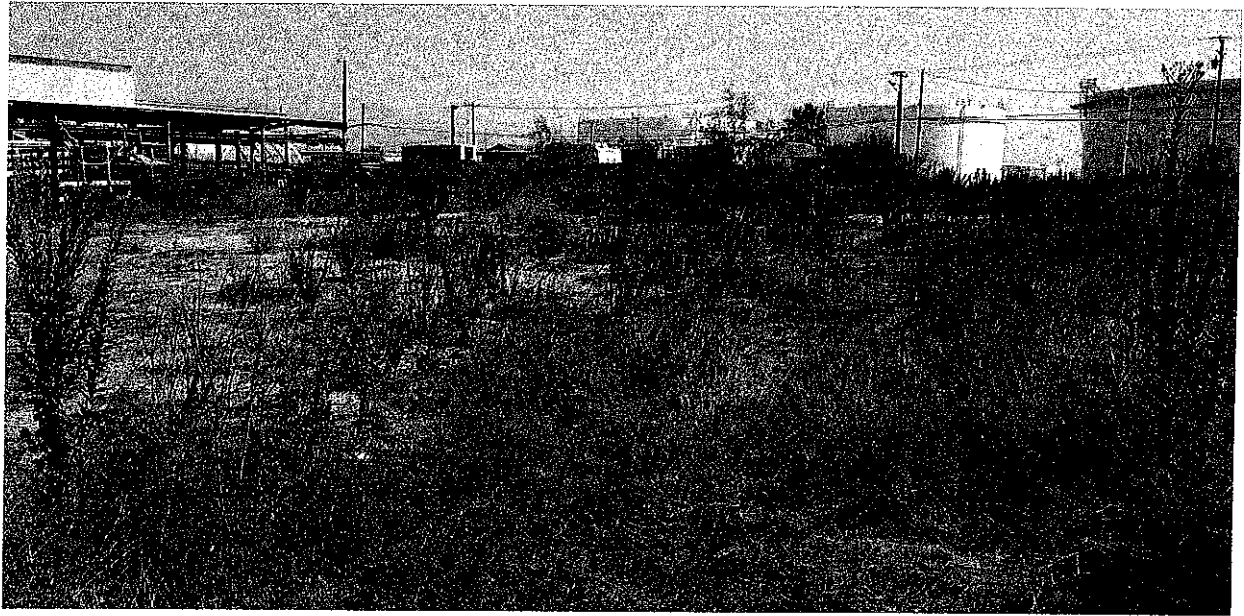
Picture 2. Overview of the site facing west from the northeastern corner.



Picture 3. Overview of the site facing northwest from the southeastern corner.



Picture 4. Overview of the site facing northeast from the southwestern corner.



FIELD NOTES

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: *Slover*

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/1/19	Temp		85°					
Week	Wind		0/1					
1	Weath		clear					
7/3/19	Temp		77°					
Week	Wind		0/1					
1	Weath		20% clouds					
7/8	Temp		74°					
Week	Wind		0/1					
2	Weath		10% clouds					
7/10	Temp				92°			
Week	Wind				2/4			
2	Weath				clear			
7/15	Temp		85°					
Week	Wind		0/1					
3	Weath		clear					
7/17	Temp				94°			
Week	Wind				2/4			
3	Weath				clear			
7/22	Temp			89°				
Week	Wind			1/3				
4	Weath			5% clouds				
7/24	Temp				99°			
Week	Wind				1/3			
4	Weath				20% clouds			
7/29	Temp		84°					
Week	Wind		1/3					
5	Weath		10% clouds					
7/31	Temp			89°				
Week	Wind			1/3				
5	Weath			clear				
8/15	Temp				97°			
Week	Wind				1/3			
6	Weath				clear			
8/7	Temp			85°				
Week	Wind			1/3				
6	Weath			40% clouds				
8/12	Temp		81°					
Week	Wind		0/1					
7	Weath		clear					

Wind: First number is average (20 seconds) / second number is maximum.

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

[illegible]

