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GLENN LUKOS ASSOCIATES	
Project	Fairy Shrimp
Regulatory Services	
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October 18, 2000

Michael J. Schlesinger
Taylor Woodrow Homes California, Ltd.
24461 Ridge Route Drive
Laguna Hills, California 92653-

Subject: Results of Wet Season Surveys for the Federally Listed Endangered San Diego Fairy Shrimp, Newport Banning Ranch, Orange County, California

Dear Mr. Schlesinger:

Glenn Lukos Associates biologist Tony Bomkamp conducted protocol surveys for the federally-listed endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*) on the Newport Banning Ranch site during late winter and early spring of 2000. The surveys were conducted accordance with the most recent U.S. Fish and Wildlife Service Guidelines¹ and guidelines provided in Section 10(a)(1)(A) Permit TE-825679.

PROJECT LOCATION

The Newport Banning Ranch site is located partly in an unincorporated portion of the County of Orange and partially in the City of Newport Beach. The site is bordered by Pacific Coast Highway on the south, the U.S. Army Corps of Engineers Wetland restoration site and existing development on the west, Talbert Regional Park and 16th Street on the north and existing development on the east [Exhibits 1 and 2].

GENERAL SITE DESCRIPTION

The Banning Ranch site is generally composed of a flat lowland area along the western portion of the site and more-or-less level ground associated with the Newport Beach Mesa over the eastern portion of the site. The site has been in active oil production for the past 50 years and remnant wells and pipelines coexist with operating pumps and

¹United States Department of the Interior. 1996. Interim Survey Guidelines to Permittees under Section 10(a)(1)(A) of the Endangered Species Act for the listed Vernal Pool Branchiopods. U.S. Fish and Wildlife Service, Ecological Services Sacramento Field Office, April 19, 1996.

processing facilities. A number of inactive wells have been removed from both lowland and mesa-top areas along with pipelines, tanks, and other oilfield infrastructure.

The site supports a variety of vegetation types include wetlands, riparian areas and areas of ruderal vegetation in the lowlands. Undeveloped portions of the mesa top generally support non-native grasslands, ruderal areas, scattered patches of coastal bluff scrub and limited areas of grassland/scrub ecotone. A vernal pool, covering about 0.50 acre is located on the mesa top along with other smaller depressional areas. The vernal pool and all of the other depressional areas addressed in this report were artificially created and do not represent areas of native vernal pool habitat.

METHODOLOGY

Identification of Depressional Areas

The vernal pool was identified during focused botanical surveys conducted jointly by PCR Services and GLA during spring of 1998.² Although the mesa top was thoroughly evaluated during spring of 1998, no other obvious depressional areas were noted. The 1999 rainfall season produced below-average rainfall and no ponding was observed on the mesa portions of the site. With the onset of rainfall sufficient to induce ponding on February 22, 2000, the mesa top areas were again covered on foot in order to identify seasonally-ponded areas and initiate wet-season surveys as appropriate.

A total of six areas [Exhibit 3] were identified that exhibited ponding of sufficient duration to support the San Diego fairy shrimp and wet-season surveys were initiated for these areas within one week of the initial ponding event of February 22, 2000.

Wet-Season Surveys

Wet-season surveys were initiated according to U.S. Fish and Wildlife Service guidelines on February 29, 2000, within one week of the first ponding event. Surveys were conducted on February 29, March 13, March 15, March 21, March 28 and April 7.

² Dry-season surveys were conducted in fall of 1998 wherein fairy shrimp cysts consistent with the San Diego fairy shrimp were identified and for purposes of the various environmental documents addressing the biological resources on the site, the presence of the San Diego fairy shrimp was assumed for the vernal pool.

RESULTS

Depression 1

Depression 1 is a shallow, artificial depression located on the mesa-top site near the southeast corner of the property. This depression was formed by incidental earthmoving activities overlaying asphalt-like material which has created an artificial hardpan. At its greatest extent of ponding, this depression measured approximately ten feet by 22 feet by two inches deep. Specific conductance ranged from 211 to 390 μ Mhos over the course of the surveys and temperature ranged from 13.1 to 18.5°C.

Fairy shrimp nauplii were observed during the February 29th visit. Mature fairy shrimp collected on March 13 and were identified as the versatile fairy shrimp (*Branchinecta lindahli*). Between the March 13 and March 21 visits, the depression dried down and ponding was no longer exhibited.

Depression 2

Depression 2 is a shallow, artificial depression located on the mesa-top site near the southern boundary of the property. This depression was formed in the mid-1990s during excavation and cleanup of soil contaminated by petroleum products [Exhibit 4, Photograph 1]. At its greatest extent of ponding, this depression measured approximately 11 feet by 24 feet by seven inches deep. Specific conductance ranged from 417 to 436 μ Mhos over the course of the surveys and temperature ranged from 11.5 to 22°C.

Fairy shrimp nauplii were observed during the February 29th visit. Mature fairy shrimp collected on March 13 and were identified as the versatile fairy shrimp. A second cohort was also observed during the March 13 visit which were also identified as the versatile fairy shrimp based upon specimens collected on the March 21. Between the March 21 and March 28 visits, the depression dried down and ponding was no longer evident.

Depression 3

Depression 3 is a three-foot-deep, artificial depression located on the mesa-top site immediately south of Depression 2. This depression was formed in the mid-1990s during excavation and cleanup of soil contaminated by petroleum products. Only a small area in the bottom of the depression exhibited ponding, covering two feet by four feet by four

inches deep. Specific conductance ranged from 384 to 429 μ Mhos over the course of the surveys and temperature ranged from 11.1 to 18.5°C.

Fairy shrimp nauplii were observed during the February 29th visit. Mature fairy shrimp collected on March 13 and were identified as the versatile fairy shrimp. The versatile fairy shrimp were still present during the March 21 visit. Between the March 21 and March 28 visits, the depression dried down and ponding was no longer evident.

Depression 4

Depression 4 is an artificial depression located on the mesa-top site near the center of the site. This depression was formed in late 1996 during excavation and cleanup of soil contaminated by petroleum products [Exhibit 4, Photograph 3]. Specific conductance ranged from 384 to 429 μ Mhos over the course of the surveys and temperature ranged from 11.1 to 18.5°C.

This depression was first identified on March 15 and two cohorts of fairy shrimp were observed. Individuals from the first cohort (determined by the distinctly larger size) were collected and identified as the versatile fairy shrimp. During the March 21 visit, 20 males were collected (approximately 10 from each cohort) and each one was examined. All twenty males were versatile fairy shrimp. By the March 28 visit, the depression had dried down and ponding was no longer evident.

Vernal Pool

An artificially created vernal pool is located near the center of the site, just south of 17th Street extended. The pool was created in the early 1970's as a baseball diamond, and the current boundary is generally coincident with the former infield area [Exhibit 4, Photographs 4, 5, and 6]. The pool is dominated by creeping spikerush (*Eleocharis macrostachya*) and supports other wetland species such as saltgrass (*Distichlis spicata*), western goldenrod (*Euthamia occidentalis*), and mulefat (*Baccharis salicifolia*). Vernal pool plant species are generally limited to the Southwest corner of the pool and include dwarf woolly heads (*Psilocarphus brevissimus*), water pygmy weed (*Crassula aquatica*), and waterfern (*Marsilea vestita*). At maximum extent, the pool covers approximately 0.50 acre and averages approximately six inches deep. During the spring 2000 surveys, the ponding covered approximately 0.20 acre with average depths of three to four inches. Specific conductance ranged from 247 to 254 μ Mhos over the course of the surveys and temperature ranged from 13.2 to 17.4°C.

Fairy shrimp nauplii were observed during the February 29th visit. Mature fairy shrimp from two cohorts were collected on March 13, including 14 males and 6 females, and were identified as the San Diego fairy shrimp. Between the March 21 and March 28 visits, the vernal pool dried down considerably, exhibiting only localized ponding with no fairy shrimp present on March 28. The pool was dry by April 7. The pool exhibited moderate to high density of the San Diego fairy shrimp with densities estimated at 10 to 20 per square foot or approximately 85,000 to 170,000 within the area ponded in 2000 (includes fairy shrimp from both cohorts). At maximum ponding, densities typically decrease near the margins of the pools and it is estimated that at maximum ponding this pool would support between 175,000 and 350,000 fairy shrimp.

Depression 5

Depression 5 is located immediately south of the Vernal Pool. This shallow depression covers approximately 0.01 acre at maximum ponding with depths of two to three inches [Exhibit 4, Photograph 2]. The pool is artificial in origin and appears to have been created by incidental earth moving activities associated with oil field operations.

Fairy shrimp were noted in the depression on March 15. Three males and six females were collected and were identified as the San Diego fairy shrimp. During the March 15 visit, the depression covered approximately 15 feet by 25 feet with an average depth of two inches with local areas up to three inches deep. Specific conductance was measured at 275 μ Mhos and the temperature was 11.2°C. The density of fairy shrimp was low with less than one per square foot. Total number of fairy shrimp was estimated at approximately 300.

Lowland Pond

A lowland pond occurs within an area of alkali meadow in the northern portion of the site. The pond is filled throughout much of the year by saline groundwater and also receives direct precipitation during the winter and spring.

Fairy shrimp were noted in the depression on March 15 and were identified as the San Francisco brine shrimp (*Artemia franciscana*).

Michael J. Schlesinger
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If you have any questions regarding this report please do not hesitate to contact me at
(949) 837-0404.

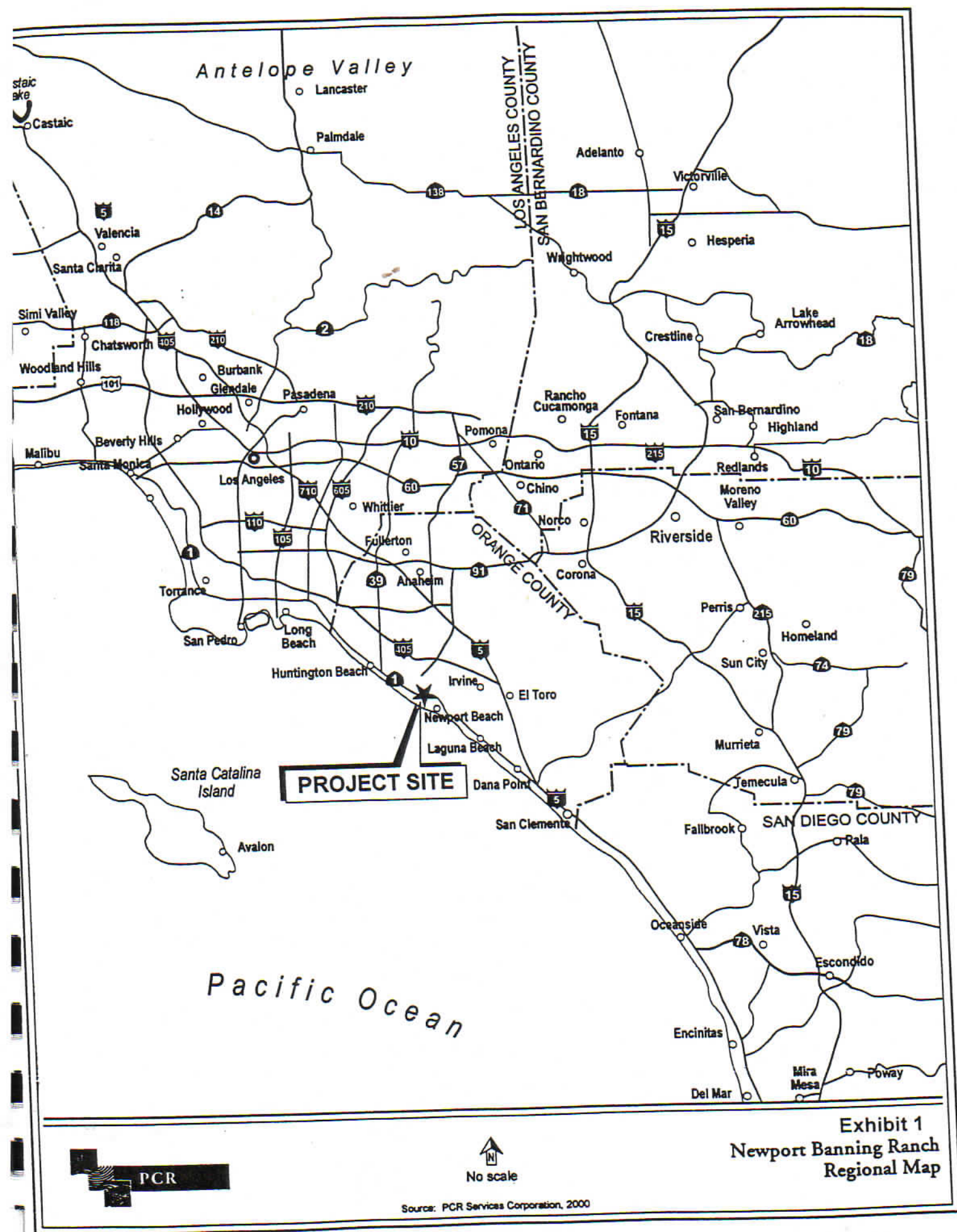
Sincerely,

GLENN LUKOS ASSOCIATES

A handwritten signature in cursive script that reads "Tony Bomkamp".

Tony Bomkamp
Senior Biologist

0282-1a.shr



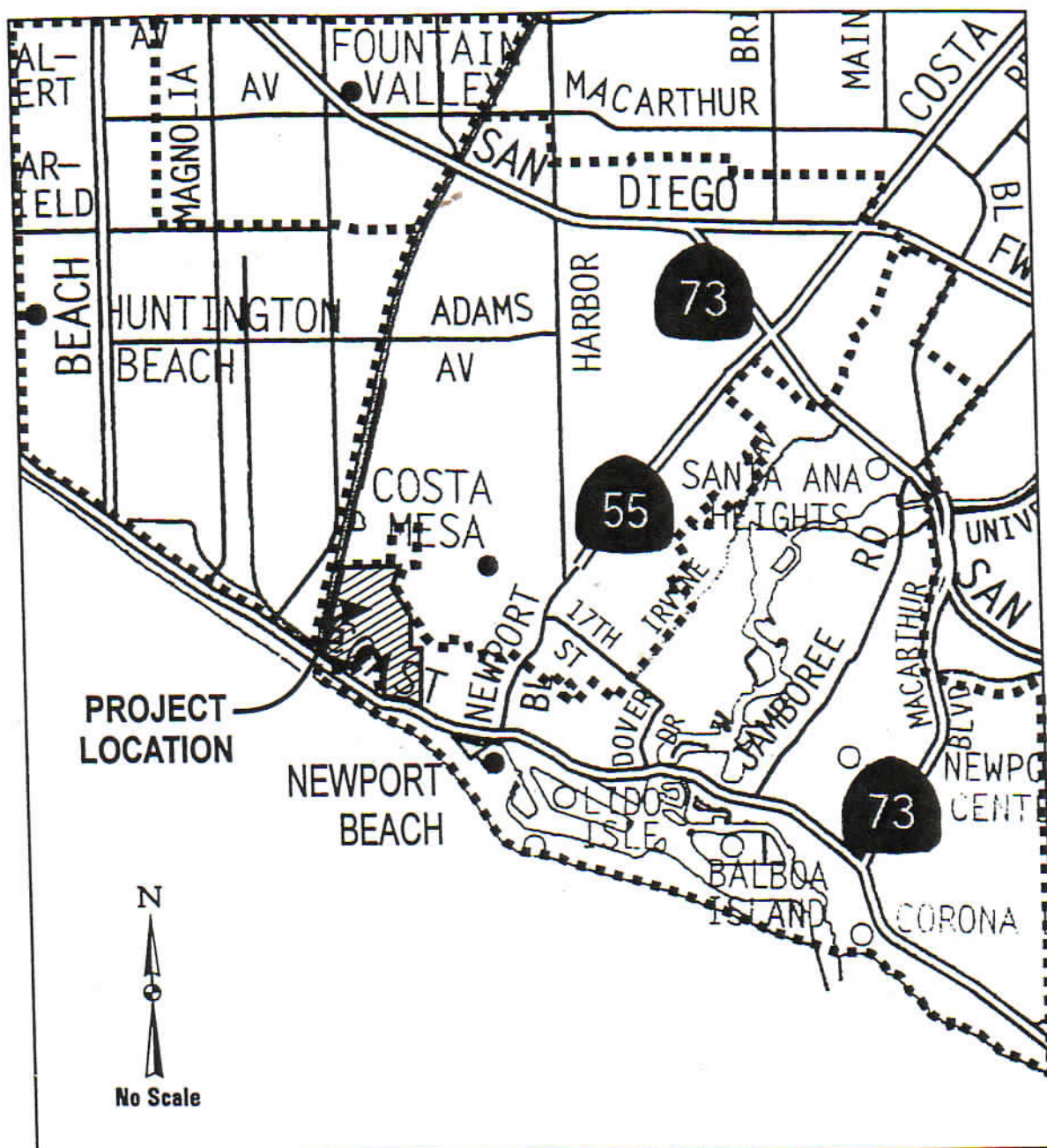
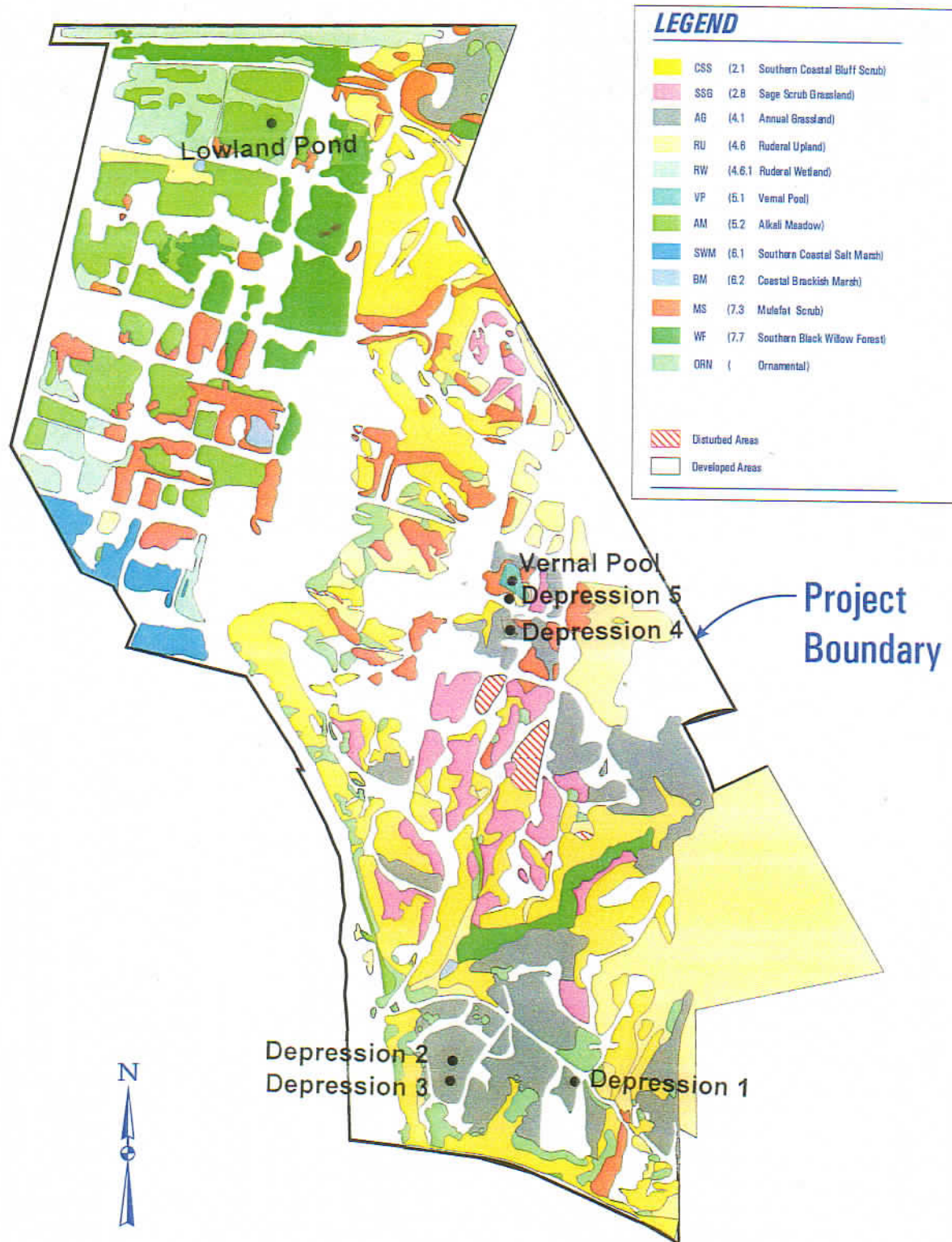


Exhibit 2
Vicinity Map

Date Prepared: 4-7-00





Date Prepared: 4-7-00

Exhibit 3

Existing Vegetation

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Regulatory Services



FUSCOE
ENGINEERING





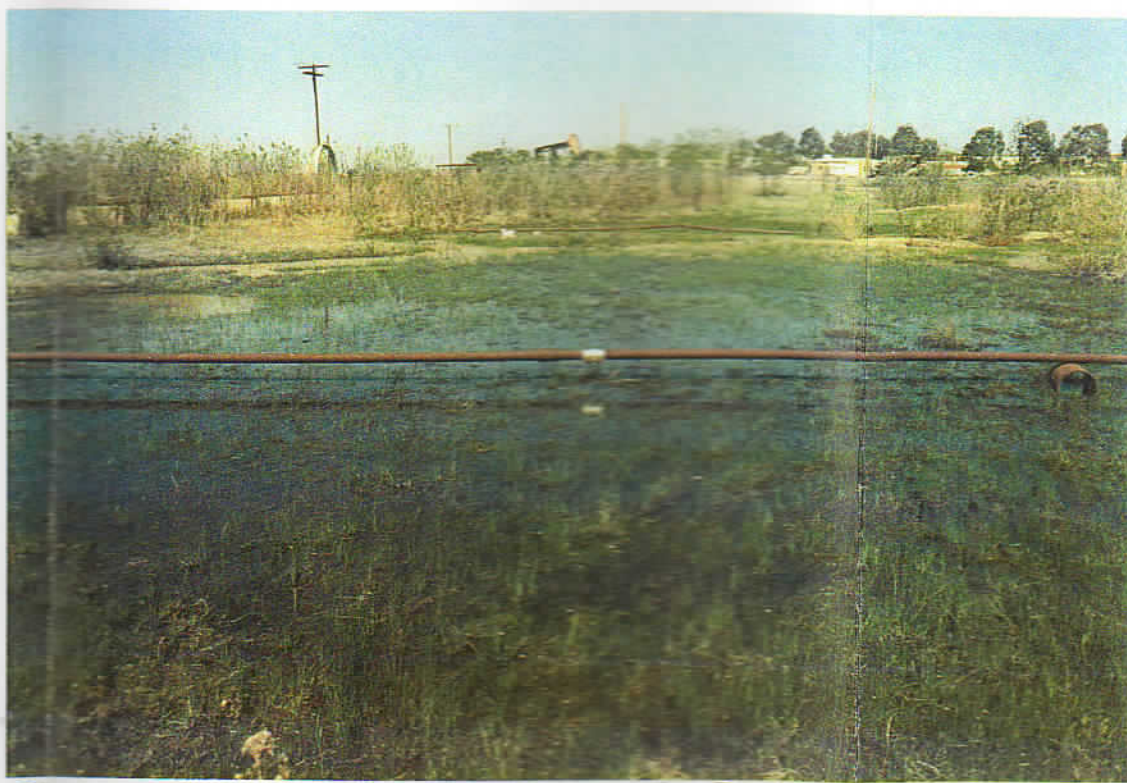
Photograph 1. Depression 2 looking west. This artificial depression is occupied by the versatile fairy shrimp.



Photograph 3. Depression 4 looking west. This artificial depression is occupied by the versatile fairy shrimp



Photograph 2. Depression 5 looking west. This artificial depression is occupied by the San Diego fairy shrimp



Photograph 4. Vernal pool looking north. Pool is occupied by The San Diego fairy shrimp.



Photograph 5. Vernal pool looking west.



Photograph 6. Vernal pool looking southwest.



GLENN LUKOS ASSOCIATES

Exhibit 4

**NEWPORT BANNING RANCH
FAIRY SHRIMP SURVEYS**

Photographs