

**ATTACHMENT P-3**

**AMPHIBIAN AND REPTILE DATA**

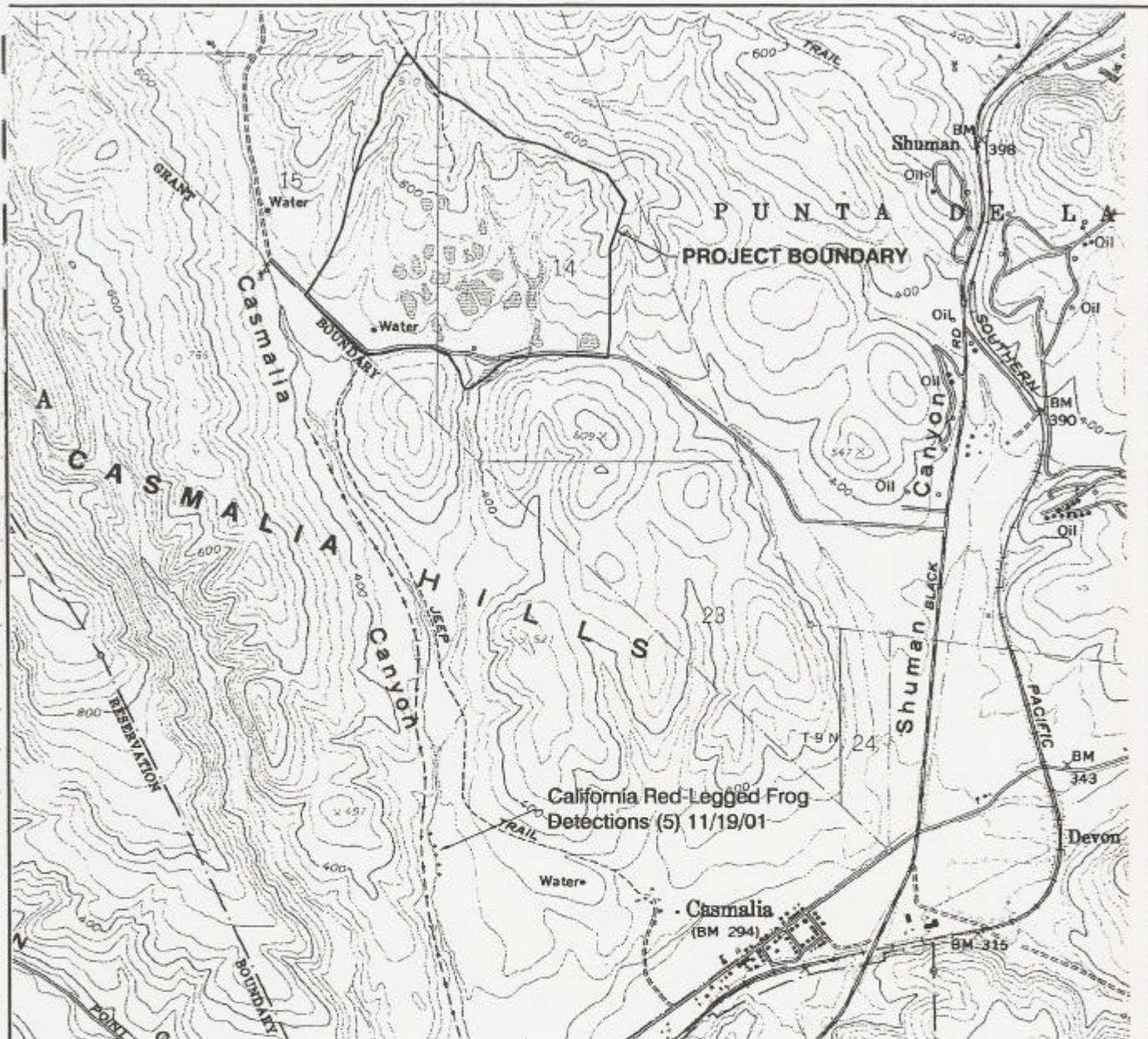
**Casmalia Hazardous Waste Management Facility  
Biological Surveys for Remedial Investigation/Feasibility Study  
Amphibians and Reptiles Observed Within and Adjacent to the Landfill**

**March-August 2001 (unless otherwise indicated)**

Common Name	Scientific Name	Federal/State Regulatory Status	Observations
Western toad	<i>Bufo boreas</i>	None	<p>2 May 2001: One adult toad found on N shoreline of Pond 18 (2240 hrs). Three adult toads found along W and N shoreline of RCF Pond (2330 hrs).</p> <p>14 May 2001: Adult toad found being eaten by probable California red-sided garter snake (<i>Thamnophis sirtalis infernalis</i>) along SE shoreline of A-Series Pond (1330 hrs).</p>
Pacific chorus frog	<i>Pseudacris regilla</i>	None	<p>The most common amphibian on-site, found in and around most water sources on-site during all site visits at night. Adult males heard calling from RCF Pond, Pond 13, A-Series Pond, and Pond 18 at night on each site visit; adult males calling from catch basin next to Treatment Building; adults and larvae repeatedly observed in Casmalia Creek, and in cattle trough around corrals W of landfill. Adults and larvae also found in ephemeral puddles and surface runoff puddles surrounded by weedy grassland at bottom of V-ditches at toes of Pesticides/Solvents Landfill, Caustics/Cyanide Landfill, and Acids Landfill.</p>
California red-legged frog	<i>Rana aurora draytonii</i>	Threatened/Species of Special Concern	<p>24 April 2001: One subadult frog found along N shoreline of RCF pond in daytime (1100 hrs).</p> <p>2 May 2001: One subadult found along N-central shoreline of RCF Pond (2300-2400 hrs). One adult frog and a small subadult frog observed along NW shoreline of Pond A-5 (2030-2110 hrs). Four adult and two subadult frogs observed along S, SE, and NW shoreline of A-Series Pond (2120-2230 hrs). No frogs found in Pond 18 (2230-2250 hrs). Pond 13 not surveyed at this time.</p> <p>14 May 2001: One adult observed along S shoreline of A-Series Pond in daytime (1345 hrs).</p> <p>1 June 2001: 1 subadult frog found along NW shoreline of RCF Pond (2100-2200 hrs); no frogs found in A-Series Pond (2230-2345 hrs). Pond A-5, Pond 13, and Pond 18 not surveyed at this time.</p> <p>31 July 2001: 1 subadult found along N-central shoreline of RCF Pond (2045-2200 hrs); 4 adults and 1 subadult frog found along S, SW, and NW shoreline of A-series pond (2245-2400 hrs); Pond A-5, Pond 13, and Pond 18 not surveyed at this time.</p>

Western fence lizard	<i>Sceloporus occidentalis</i>	None	Probably the most common lizard on-site. Adults, juveniles, and hatchlings commonly observed in most habitats, including the landfill caps.
Coast horned lizard	<i>Phrynosoma coronatum</i>	Federal Sensitive Species/Species of Special Concern	<p>20 April 2001: One adult observed in disturbed grassland/coastal sage scrub in ravine W of PCB landfill (1030 hrs).</p> <p>23 April 2001: One adult observed in disturbed grassland at NE corner of landfill cap on Caustics/Cyanide Landfill next to perimeter access road; escaped down burrow (1500 hrs).</p> <p>18 July 2001: Two adult and two subadult horned lizards observed in grassland between Caustics/Cyanide Landfill and Metals Landfill. One adult and one subadult captured and relocated to coastal sage scrub on other side of fence line in NE corner of landfill boundary. Sightings follow vegetation removal on Caustics/Cyanide Landfill the previous day.</p>
Western skink	<i>Eumeces skiltonianus</i>	None	20 April 2001: One juvenile found in grass in riparian corridor at top of east bank of Casmalia Creek approximately 500 feet north of corrals W of landfill (1100 hrs).
Southern alligator lizard	<i>Gerrhonotus multicarinatus</i>	None	<p>20 April 2001: Two adults found beneath boards next to corral between landfill and Casmalia Creek (1030 hrs). Adult observed in weedy grassland in ravine W of W end of RCF Pond (11500 hrs).</p> <p>23 April 2001: Large adult found in weedy grassland at toe of Caustics/Cyanide landfill (0830 hrs).</p> <p>24 April 2001: Very large adult found beneath trash on W side of Administration Building near front entrance gate to landfill (1230 hrs).</p> <p>4 May 2001: Large adult DOR on entrance road to landfill, approximately 0.5 road miles W jct Black Road (= Lompoc-Casmalia Road); weedy grassland on both sides of road (0945 hrs).</p> <p>16-24 July 2001: Adults, subadults, and juveniles found on Metals Landfill and Caustics/Cyanide Landfill following discing for cap construction.</p>
California whipsnake	<i>Masticophis lateralis</i>	None	24 July 2001: Large adult found in weedy grassland on lower slopes of S side of Caustics/Cyanide Landfill following discing for cap construction. Apparently came out of burrow on hillside; captured and relocated to grassland N of landfill boundary.
Ringneck snake	<i>Diadophis punctatus</i>	None	April 1998: Adult found beneath stone at gate to pasture S of A-Series Pond.

Gopher snake	<i>Pituophis melanoleucus</i>	None	<p>2 May 2001: Large adult found AOR on Black Road (= Lompoc-Casmalia Road), approximately 200 ft N of jct Casmalia Landfill access road.</p> <p>23 July 2001: Three adult gopher snakes found beneath concrete slabs at toe of Caustics/Cyanide Landfill; two captured and relocated to grassland N of landfill, one killed by machinery and deposited in Santa Barbara Museum of Natural History.</p> <p>October 1998: One adult observed in marshy area W of RCF Pond.</p> <p>April 1999: One adult observed along S shoreline of A-Series Pond.</p> <p>25 April 2001: One adult observed in weedy grassland between Metals and Caustics/Cyanide Landfill.</p> <p>April 2001: One 1-2 yr old found in grassland at top of E bank of Casmalia Creek, approximately 700 feet N of corrals W of landfill.</p> <p>14 May 2001: Large adult observed eating a western toad (<i>Bufo boreas</i>), along SE shoreline of A-Series Pond (1345 hrs).</p> <p>23 April 2001: One adult observed basking on concrete V-ditch next to pooled water at tow of Pesticides/Solvents Landfill; escaped under plastic liner when disturbed (0930 hrs).</p> <p>2-3 May 2001: Two adults observed in marshy grassland on flats at toe of landfills N of RCF Pond; escaped into grass when disturbed.</p> <p>20 April 2001: One 1-yr old observed under boards at corral between landfill and Casmalia Creek.</p> <p>17 July 2001: Large adult found in weedy grassland on S slope toe of Caustics/Cyanide Landfill following discing for cap construction; captured and relocated to grassland N of landfill.</p> <p>23 July 2001: Large adult found beneath concrete slabs with three gopher snakes (<i>Pituophis melanoleucus</i>), in weedy grassland at S toe of Metals Landfill; captured and relocated to grassland approximately 0.5 miles E of landfill.</p>
Western terrestrial garter snake	<i>Thamnophis elegans</i>	None	
California red-sided garter snake	<i>Thamnophis sirtalis infernalis</i>	None	
Two-striped garter snake	<i>Thamnophis hammondi</i>	None/Species of Special Concern	
Western rattlesnake	<i>Crotalus viridis</i>	None	



**LEGEND**

- Landfill Boundaries
- Facility and Zone 1 boundary
- Perimeter source control trench (PSCT)
- Plume capture collection trench (PCT)
- Clay Barrier
- Creek
- Pond outline

- Survey Transect Route
- CA Red-Legged Frog Detection Point



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**Harding ESE**  
A MACTEC COMPANY

**Location of Fall Season  
Amphibian and Reptile Surveys**  
November 2001  
Casmalia Landfill  
Casmalia, California

PLATE

**3-B**

DRAWN  
CN

JOB NUMBER  
47588 8000

APPROVED

DATE  
12/01

REVISED DATE

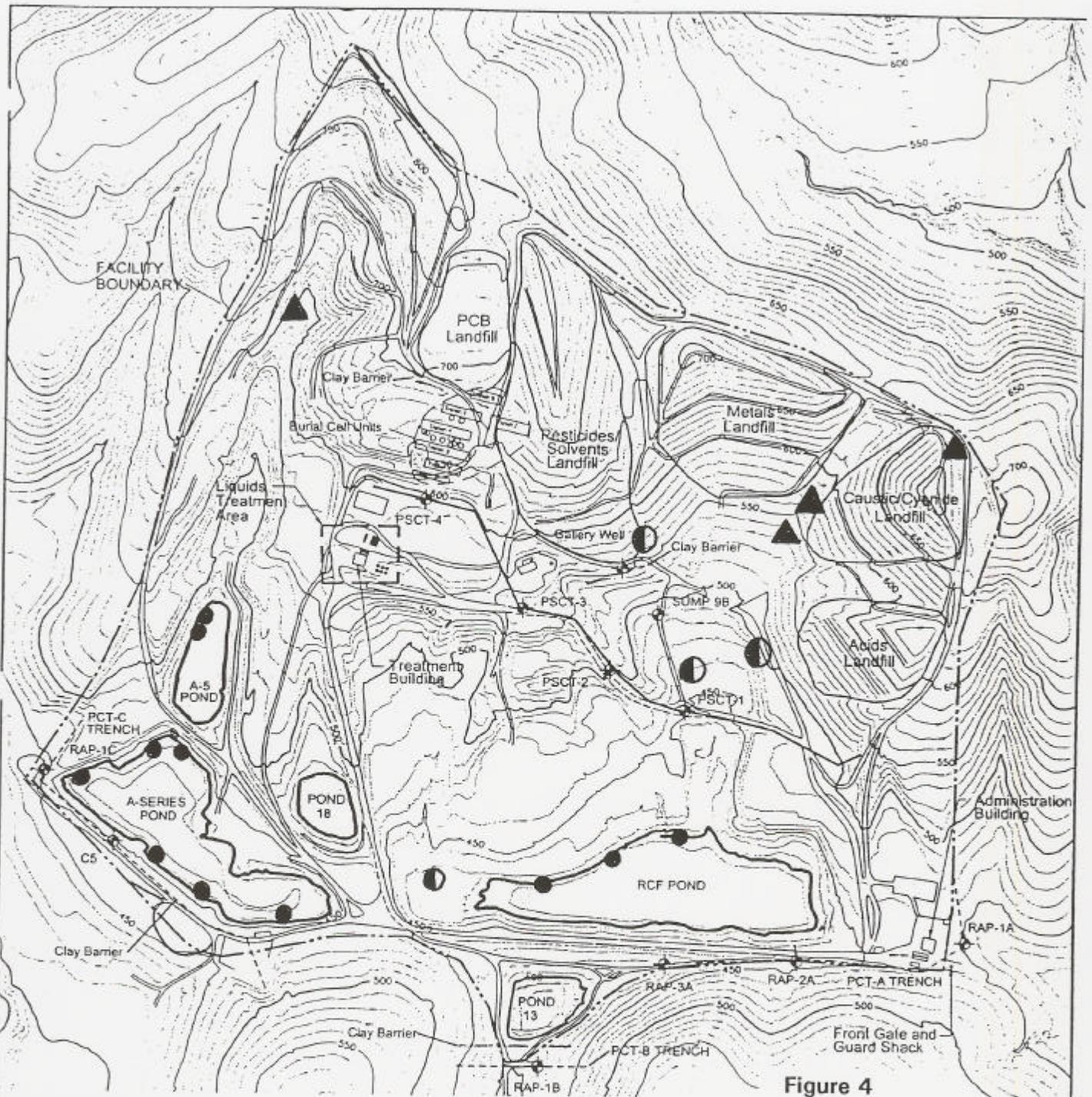
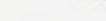


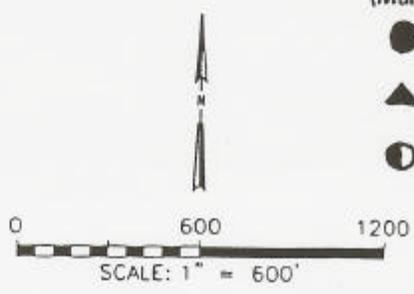
Figure 4

**EXPLANATION**

-  Landfill boundaries
-  Facility boundary
-  Perimeter Source Control Trench (PSCT)
-  Plume Capture Trench (PCT)
-  Clay barrier
-  Pond outline (current water area shaded)
-  Extraction points

**Special-Status Amphibians and Reptiles (Mar-Aug 2001):**

-  California red-legged frog
-  Coast horned lizard
-  Two-striped garter snake



Current Site Layout  
Casmaia Disposal Site

**CH2MHILL**

**2001 FALL SURVEY**

**Casmalia Waste Management Facility  
Biological Species and Habitat Survey Fall 2001  
Amphibians and Reptiles Survey**

**Table B**

Common Name	Scientific Name	Federal/State Regulatory Status	Observations
Pacific Chorus Frog	<i>Pseudacris regilla</i>	None	11/19/2001 Detected one individual (age class unknown) singing during amphibian and reptile presence/absence survey of Casmalia Creek. This common species is presumed to be present around most water bodies on and off-site (1600).
Southern Alligator Lizard	<i>Elgaria multivariatus</i>	None	11/19/2001 Detected two juveniles during amphibian and reptile presence/absence survey of Casmalia Creek. This ubiquitous species is presumed to be present throughout the site and on adjacent lands (1600).
California red-legged frog (CRF)	<i>Rana aurora draytonii</i>	Threatened/ Species of Concern	11/20/2001 Detected one adult and one sub-adult CRF during amphibian and reptile presence/absence survey of Casmalia Creek. Positive visual identification made without handling frogs. Three "splash" or auditory detections heard in same vicinity of Casmalia Creek were also thought to be CRF, although no positive visual ID was made to confirm (0900). 11/20/2001 Heard five "splash" or auditory detections thought to be CRF during amphibian and reptile presence/absence survey of "Pond 13" on-site, however, no positive visual ID was made to confirm (1300). Auditory detections at both locations made in areas that contained thick, emergent wetland vegetation and contained relatively deep water that together supply suitable components of CRF habitat.

**Table B**  
**Casmalia Waste Management Facility**  
**Biological Species and Habitat Survey**  
**Spring 2002 Amphibians and Reptiles Survey**

Common Name	Scientific Name	Federal/State Regulatory Status	Observations
Pacific Chorus Frog	<i>Pseudacris regilla</i>	None	3/14/02 Detected two individuals (age class unknown) singing during amphibian and reptile presence/absence survey of Pond A-5 and at Pond 13. This common species is presumed to be present around most water bodies on and off-site.
Southern Alligator Lizard	<i>Elgaria multivirgatus</i>	None	3/11-3/14/02 Detected several individuals (>5) during amphibian and reptile presence/absence survey of the facility. This ubiquitous species is presumed to be present throughout the site and on adjacent lands.
Western Aquatic Garter Snake (Sub-species: Two lined garter Snake)	<i>Thamnophis couchi</i> ssp. <i>hammondi</i>	California Species of Concern	3/14/02 Detected one sub-adult during amphibian and reptile presence/absence survey of Pond A-5.
Western Rattlesnake	<i>Crotalus viridis</i> ssp. <i>helleri</i>	None	3/12/02 Detected one individual (sub-adult) during amphibian and reptile presence/absence survey of Pesticide Solvents Landfill. This common species is presumed to be present around most water bodies on and off-site.
Pacific Gopher Snake	<i>Pituophis melanoleucus</i> ssp. <i>catenifer</i>	None	3/12/02, 3/14/02 Detected two individuals (age classes unknown) during amphibian and reptile presence/absence survey of Ravine West of PCB Landfill and A-Series Pond. This common species is presumed to be widespread throughout areas containing suitable habitat features on and off-site.

**2002 CTS SURVEY**

**Lawrence E. Hunt  
Consulting Biologist**

Corey Bertelsen  
CBC, Inc.  
868 Greystone Place  
San Luis Obispo, CA 93401

3 June 2002

**Re: Results of Spring 2002 Aquatic Habitat Surveys for California Tiger Salamanders (*Ambystoma californiense*) at Casmalia Landfill Facility, Santa Barbara County, California**

**Introduction.** Aquatic surveys for the California tiger salamander (CTS), were conducted in surface runoff ponds located within the Casmalia Hazardous Materials Landfill. The U.S. Fish and Wildlife Service listed the Santa Barbara County populations of CTS as Endangered in January 2000. The nearest known locality for CTS is approximately 1.2-1.5 air miles northeast of the Landfill.

**Methods.** The survey period covered the following dates: 9-10 May, 13 May, 16-17 May, 20 May, 23-24 May, and 28-29 May 2002. Minnow traps with a ¼-inch mesh size were used to sample on-site aquatic habitats for CTS larvae. A total of 60 traps were placed in the five surface runoff ponds over the survey period and left in place for 12 hours on the sampling dates noted above. The traps were checked every four hours, as per U.S. Fish and Wildlife Service permit requirements because of the known presence of subadult and adult California red-legged frogs (*Rana aurora draytonii*) (CRLF), also a listed species, in these water bodies. Ten to 25 traps were placed in each pond between 0800 hours and approximately 2000 hrs (daytime). Two partial day/night surveys were conducted on 10 May and 28 May 2002, when the traps were left in the ponds between 1200 hrs and 2400 hrs. Traps were moved to different locations around the ponds between each survey period. Each pond was sampled at least three times during the 9-29 May survey period. The traps were placed five to 40 feet offshore in water varying from two to 20 feet in depth and tied to stationary objects on the shore. Surface water temperatures (at one inch) varied between 55 F and 60 F. When not in use the traps were left on the shoreline. Daytime air temperatures varied between 52 F and 89 F and nighttime temperatures (sunset to 2400 hrs) varied between 45 F and 55 F. Winds were generally westerly, light to moderate (0-10 mph); however, west winds gusting up to 50 mph were experienced on 10 May 2002. The weather during the survey period was generally clear to partly cloudy with occasional morning and evening low clouds and fog. This survey work was conducted under U.S. Fish and Wildlife Service Section 10(a)1(a) Handling Permits (Nos. TE023892-1 and TE023892-2), issued to Lawrence E. Hunt.

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Biological Consulting Services  
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California vole (*Microtus californicus*) – N corner A-Series Pond (1 adult male); S end Pond 13 (2 adult males-20 May 2002).

Unid. cricetid (*Peromyscus* sp.) – NW corner A-Series Pond (2 subadults-16 May 2002); E end RCF Pond (1 subadult-20 May 2002).

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Unless found dead in the trap, all of these individuals were released at the point of capture. Dead individuals were salvaged, as noted, and deposited in the Vertebrate Zoology collection of the Santa Barbara Museum of Natural History.

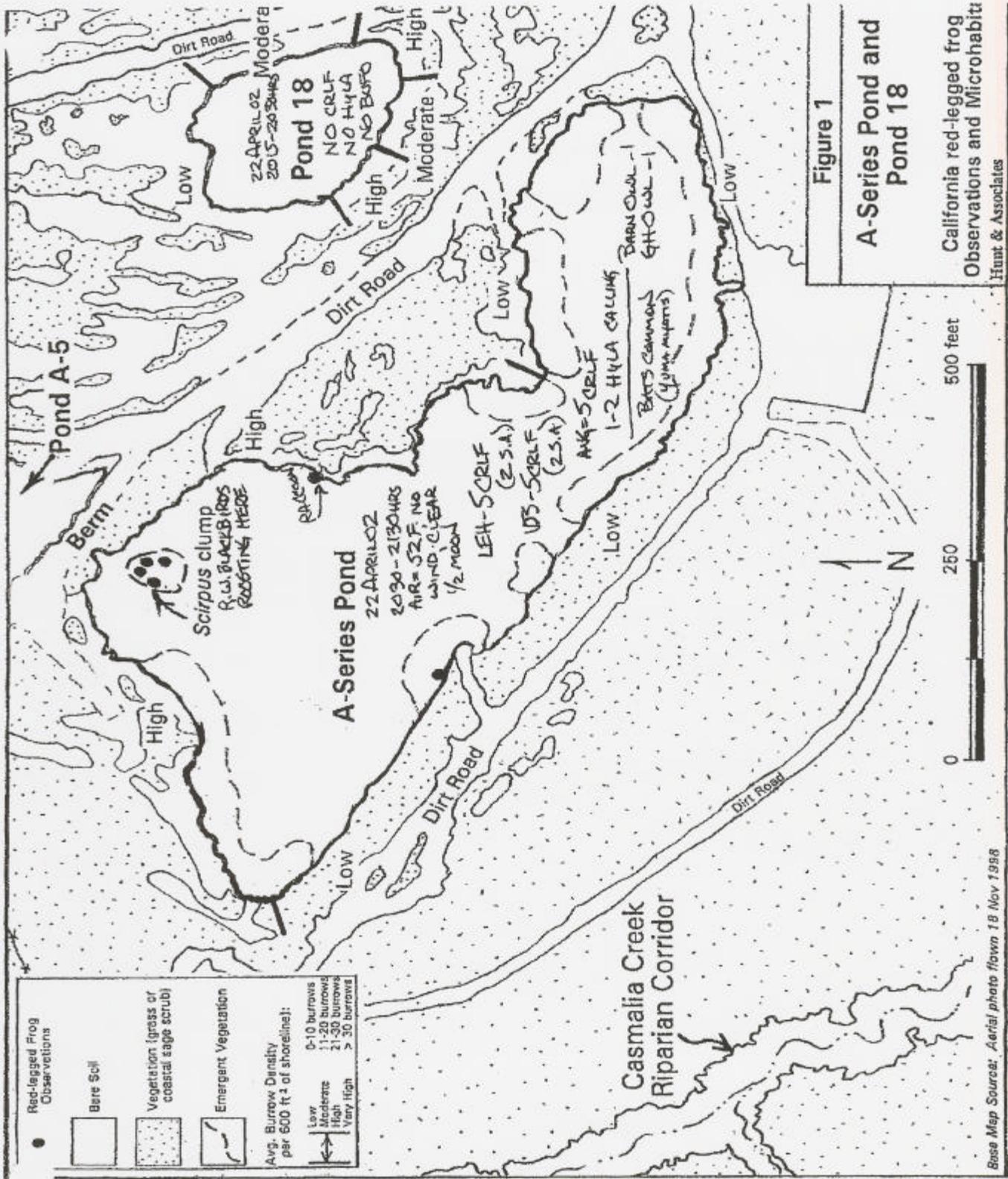
Lawrence E. Hunt

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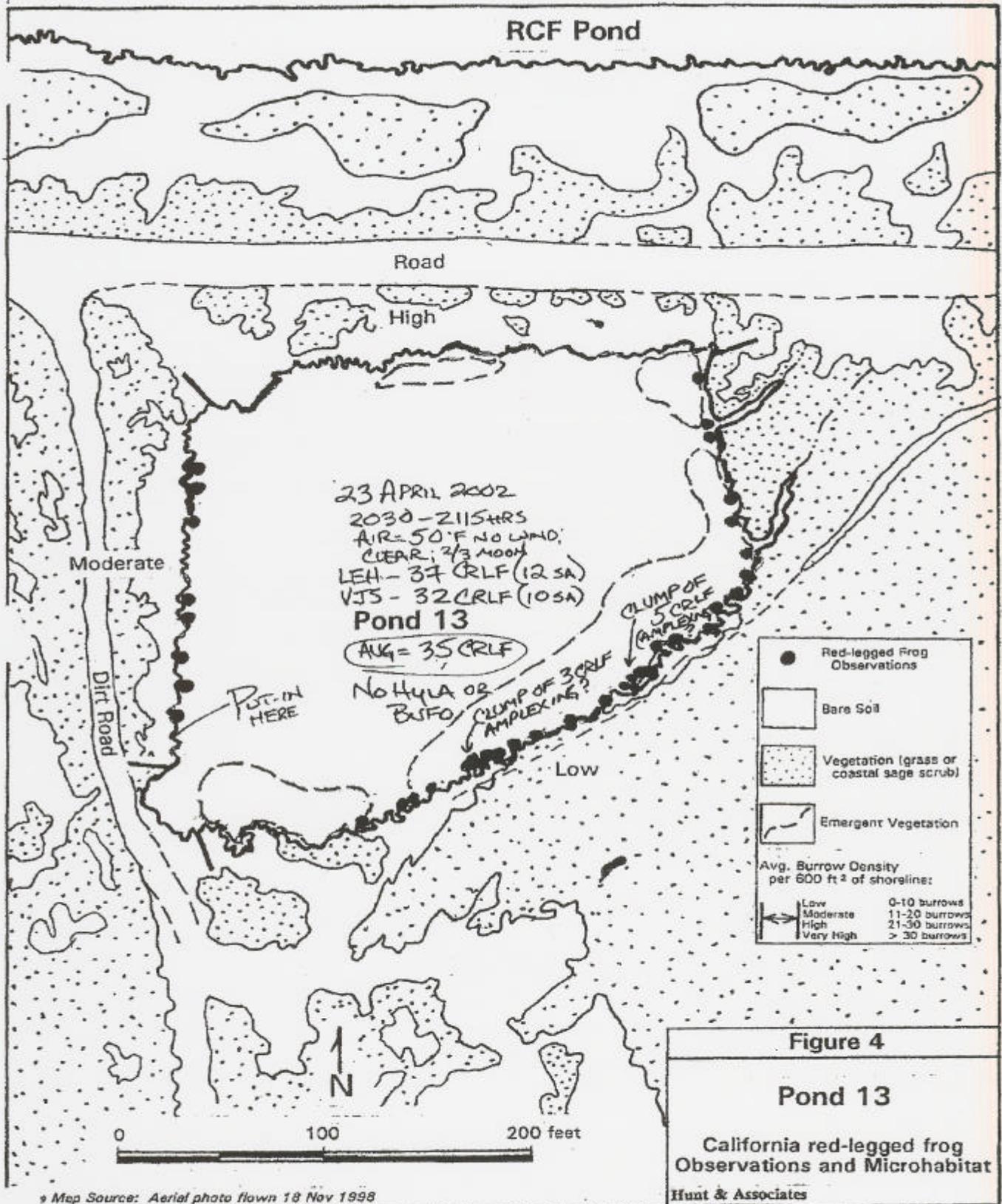
**2002 CRLF SURVEY**



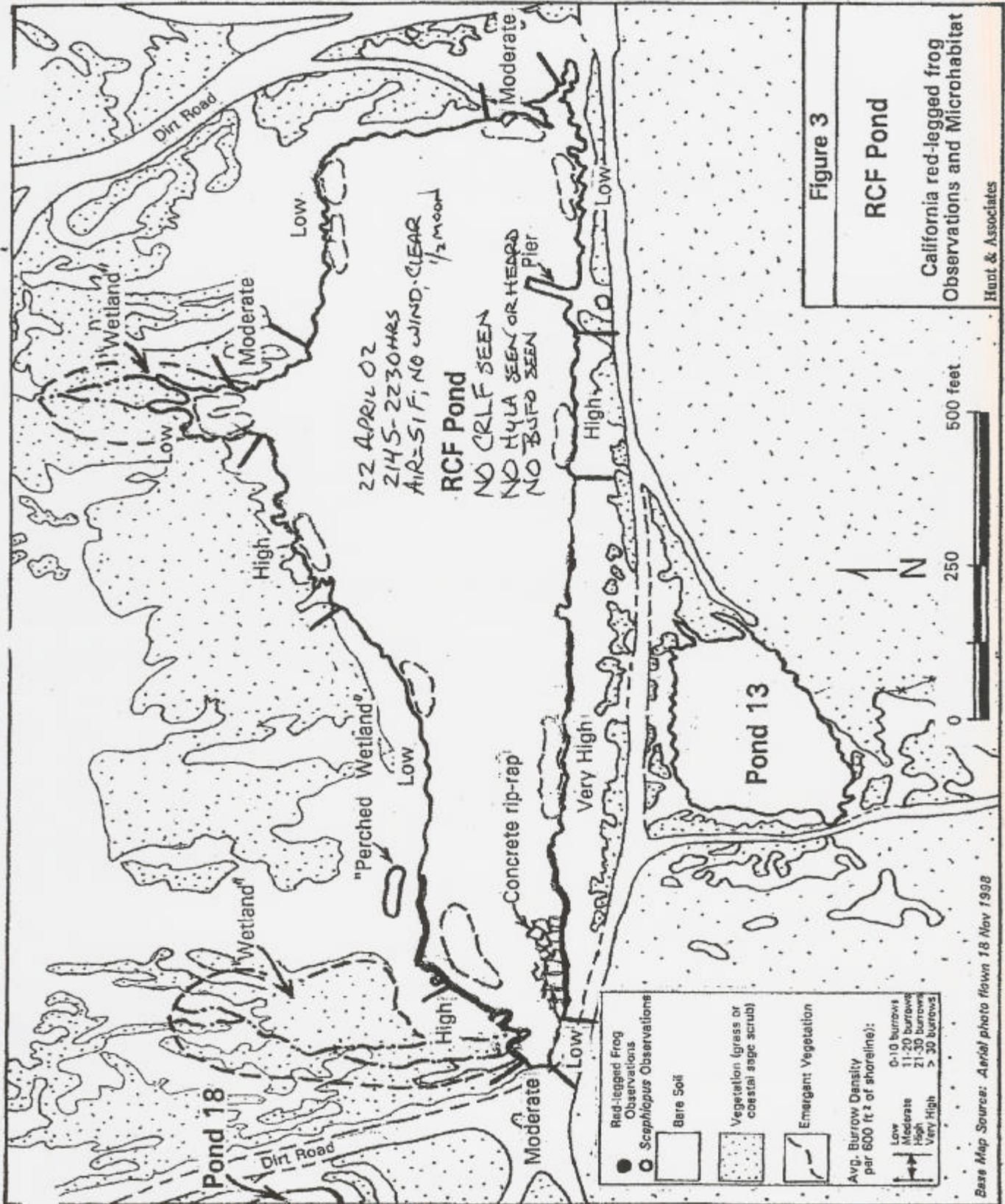
**Figure 1**  
**A-Series Pond and Pond 18**

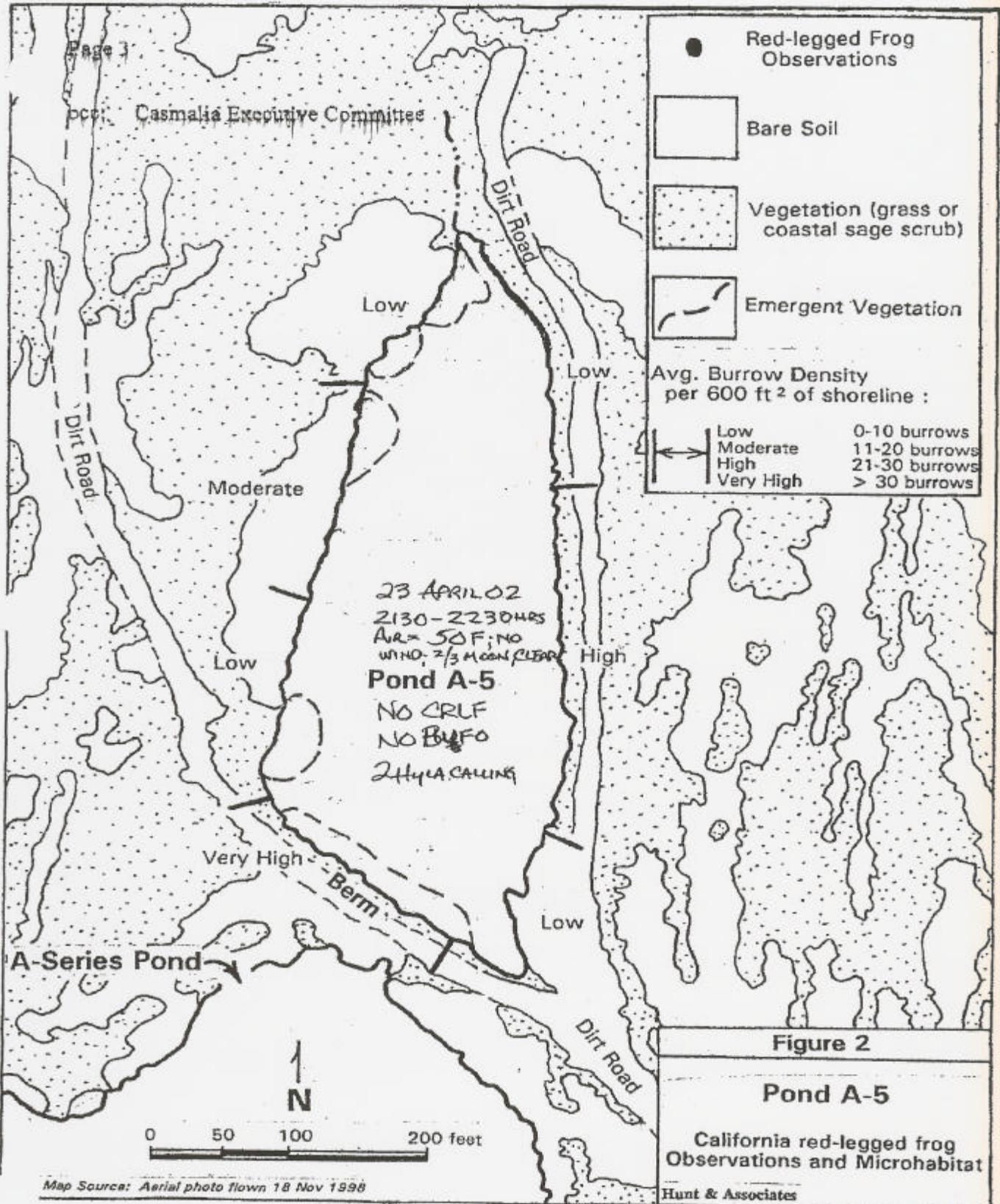
California red-legged frog  
 Observations and Microhabitat  
 Hunt & Associates

Base Map Source: Aerial photo flown 18 Nov 1988



COYOTES - 3 PACKS - CALLING  
 BARN OWL - 3  
 GHOUL - 1





Attention: Mary Blevins EPA  
 P.1

# FAX COVER SHEET

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<b>Send to:</b> Corey Bertelsen	<b>From:</b> Lawrence E. Hunt
<b>Attention:</b>	<b>Date:</b> 17 April 2002
<b>Office Location:</b> San Luis Obispo, CA	<b>Office Location:</b> Santa Barbara
<b>Fax Number:</b> (805) 783-2621	<b>Phone Number:</b> (805) 967-8512

- Urgent
- Reply ASAP
- Please comment
- Please review
- For your information

**Total pages, including cover:** 5 pages

**Comments:**

Corey,

**These are the field maps I use when doing surveys. I record the location and other information right on the map. Crude, but effective. I will summarize my observations and conclusions in a memo after the next round of surveys next week.**

Larry

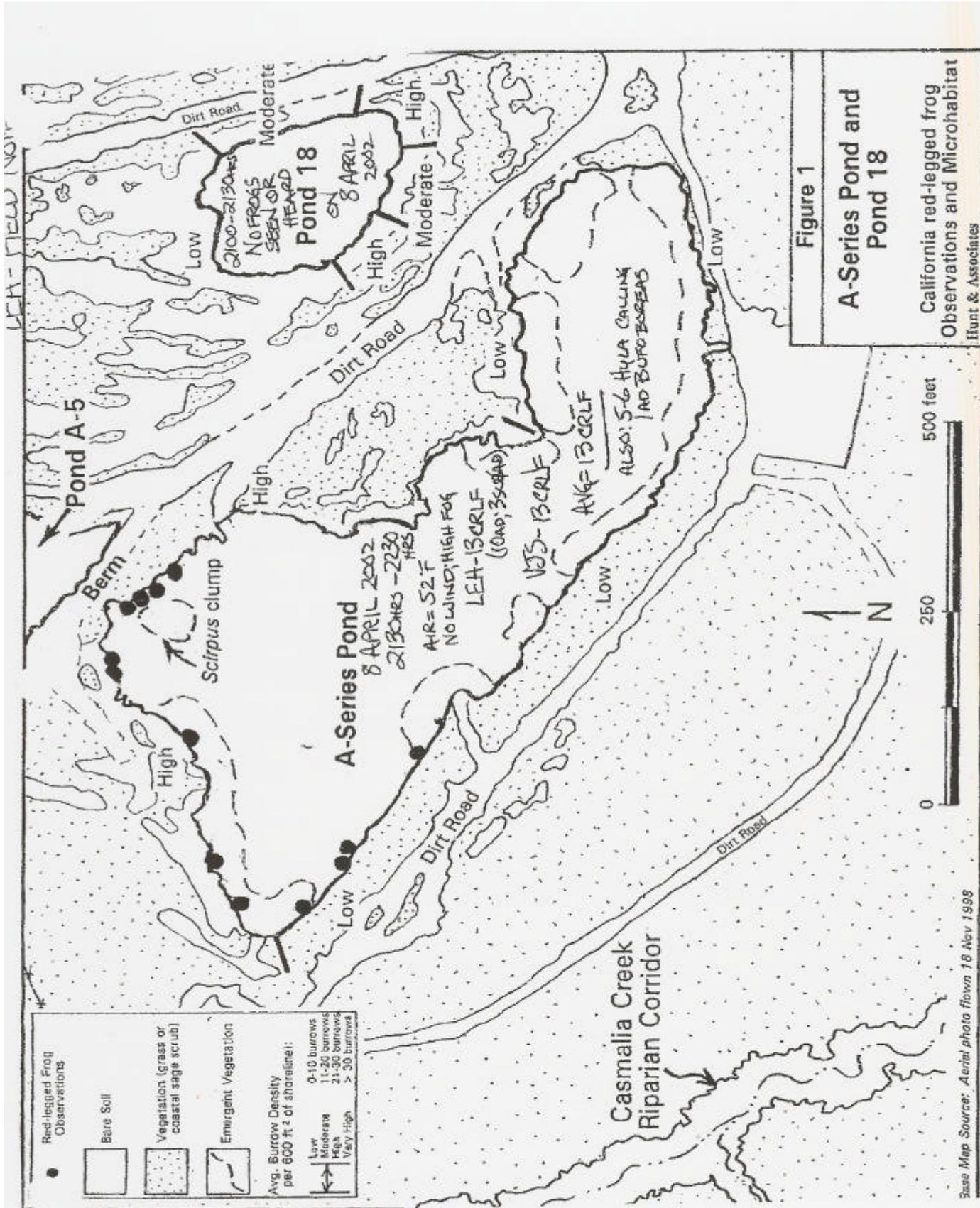


Figure 1

A-Series Pond and Pond 18

California red-legged frog Observations and Microhabitat Hunt & Associates

Red-legged Frog Observations

- 

Bare Soil

Vegetation (grass or coastal sage scrub)

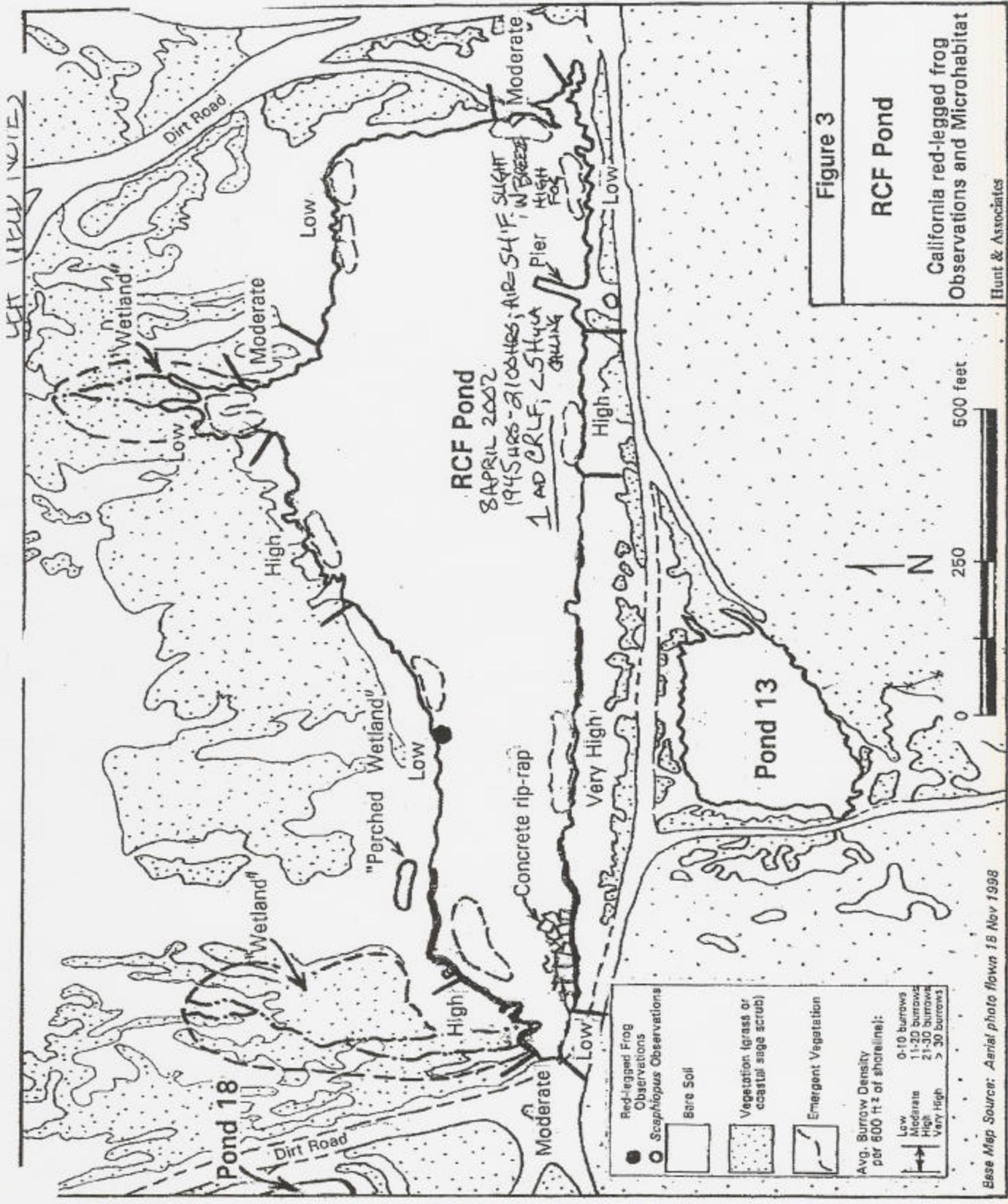
Emergent Vegetation

Avg. Burrow Density per 600 ft<sup>2</sup> of shoreline:

Low	0-10 burrows
Moderate	11-20 burrows
High	21-30 burrows
Vary High	> 30 burrows



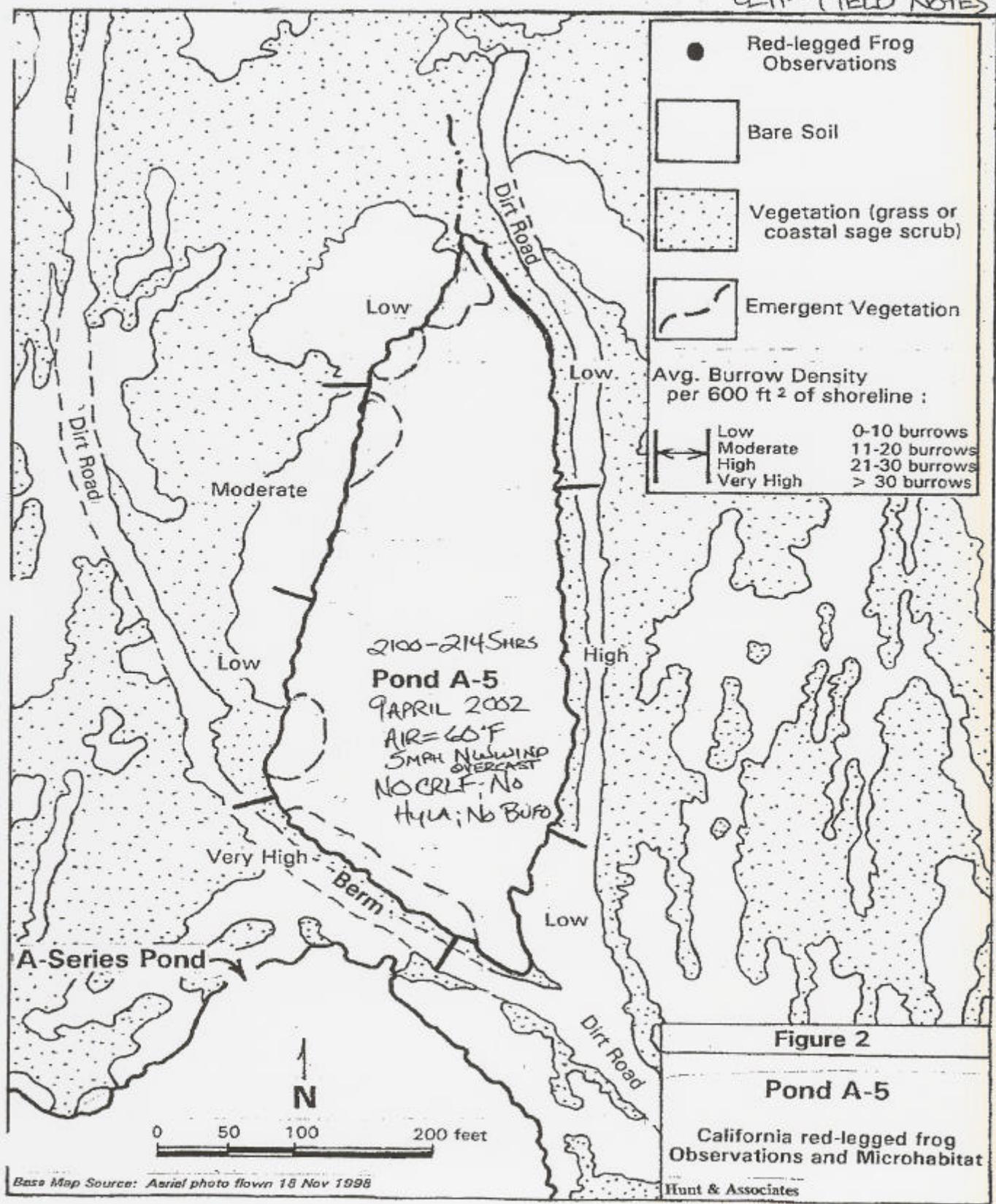
Base Map Source: Aerial photo flown 18 Nov 1998



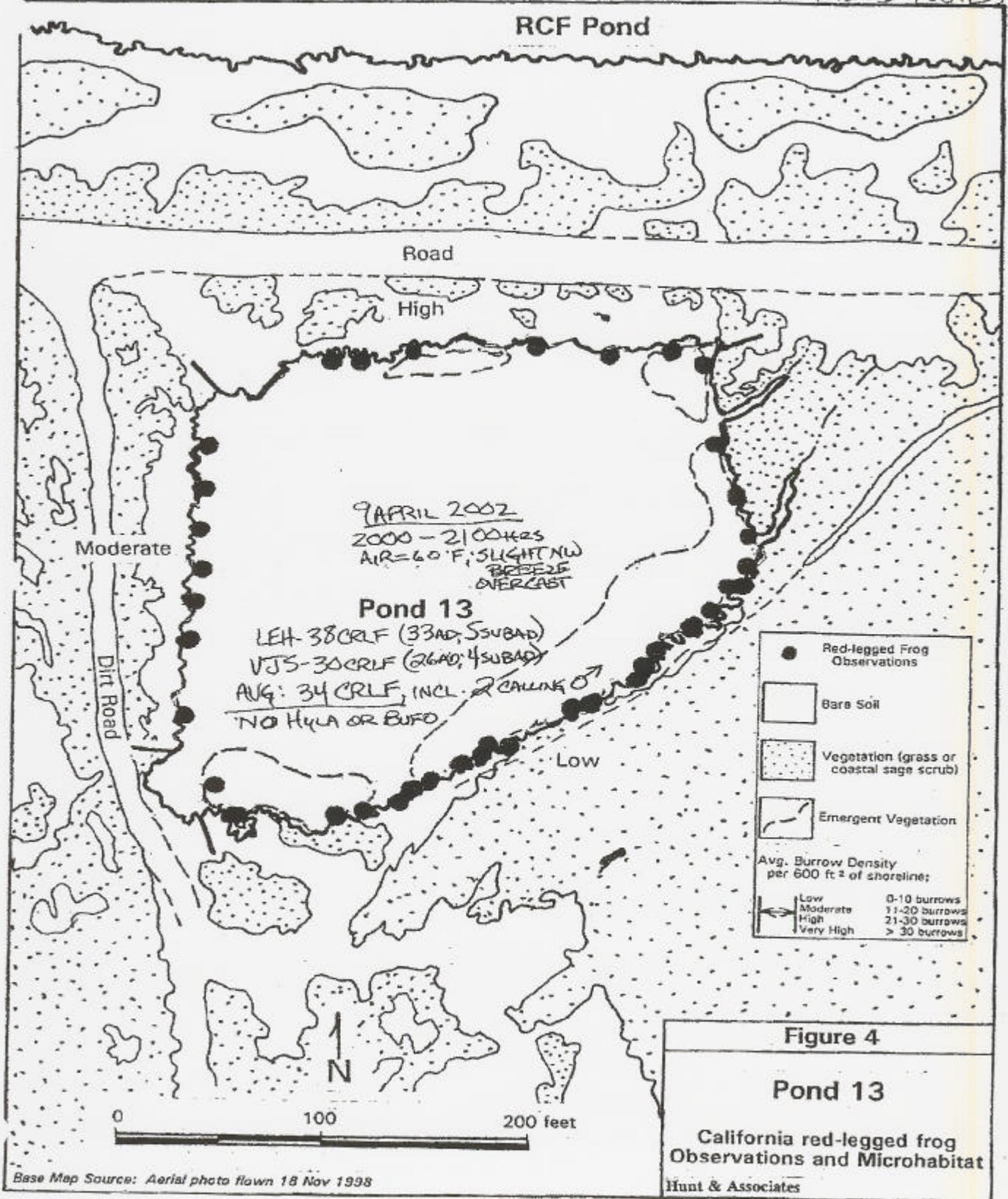
Esse Map Source: Aerial photo flown 18 May 1998

LEFT (UP) INCHES

LEH- FIELD NOTES



Base Map Source: Aerial photo flown 18 Nov 1998



**2003 CTS & CRLF SURVEYS**

Lawrence E. Hunt  
Consulting Biologist

MEMORANDUM

**To:** Corey Bertelsen, Casmalia Steering Committee

**Re:** Results of Surveys for California Tiger Salamander and California Red-legged Frog in Casmalia Landfill Ponds

**Date:** 29 May 2003

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**California Tiger Salamander (CTS).** *Methods.* Surveys for CTS were conducted in Pond 13, RCF Pond, A-Series Pond, and Pond A-5 on 26-29 March 2003, 22-25 April 2003, and 14-17 May 2003. Pond 18 was only sampled during the March session because of shallow water and poor water quality conditions. The goal was to have a minimum of three days and three nights of trap effort for CTS during each of three trap sessions using standard minnow traps to sample nearshore environments at various locations around each pond. The following locations and trap densities were used to survey for CTS and larval CRLF during the March through May trap sessions:

Location	Date	Number of Traps
RCF Pond – NW side	26-29 March 2003	14
RCF Pond – E side	22-25 April 2003	15
RCF Pond – SW side	14-17 May 2003	17
A-Series Pond – NW side	26-29 March 2003	14
A-Series Pond – SE side	22-25 April 2003	15
A-Series Pond – NE side	14-17 May 2003	17
Pond A-5 – 60% pond edge	26-29 March 2003	9
Pond A-5 – 60% pond edge	22-25 April 2003	10
Pond A-5 – 60% pond edge	14-17 May 2003	10
Pond 13 – 90% pond edge	26-29 March 2003	14
Pond 13 – 80% pond edge	22-25 April 2003	10
Pond 13 – 80% pond edge	14-17 May 2003	10
Pond 18 – 80% pond edge	26-29 March 2003	8

The traps were generally spaced approximately 30 feet apart and typically placed in shallow water so that the top of the trap projected above the surface of the water. However, approximately 20% of the traps at each location were thrown farther offshore to sample water up to 6 feet deep. Each trap was tied to vegetation or rocks along the shoreline to prevent it from drifting into deeper water.

**Results.** No CTS were found in any of the traps during the March-May 2003 trap session. Aquatic insect densities, specifically odonates, crustaceans (amphipods and

ostracods), and notonectids, were noticeably lower than during the previous CTS trap session in Spring of 2002. Water levels in all of the ponds were lower than last year at this time due to below-normal seasonal precipitation.

**California Red-legged Frog (CRLF).** *Methods.* California red-legged frogs were surveyed using standard protocol-level methodology: two daytime and two nighttime surveys conducted at least one week apart. This is the same survey protocol used during previous years' surveys. The daytime surveys were conducted concurrently with checking the CTS minnow traps around the RCF and A-Series ponds, Pond A-5, and Pond 13. The shoreline of Pond 18 was walked during the daytime, but was not surveyed at night during this survey session because of water quality conditions and the fact that CRLF have never been sighted in or around this water body in previous years. Larval surveys were conducted using minnow traps in all ponds except Pond 18 after the March 2003 session, concurrent with surveys for CTS (see table for trap dates and locations).

Nighttime (eyeshine) surveys for CRLF were conducted on 19 May 2003 and 5 June 2003 in the RCF and A-Series ponds, Pond A-5, and Pond 13, using kayaks. Two persons conducted the surveys in each pond at the same time, but traveled in different directions around the shoreline of the pond.

*Results.* No larval or adult CRLF were observed in any of the surveyed ponds during this session.

**Other Wildlife Observations.** The following wildlife species were observed on the Casmalia Landfill site during the Spring, 2003 CTS and/or CRLF surveys (please note that these are observations and not qualified presence/absence surveys):

#### **AMPHIBIANS**

Pacific treefrog ✓  
Western toad ✓

#### **REPTILES**

Southern alligator lizard  
Western fence lizard  
Common garter snake  
Gopher snake ✓

#### **BIRDS**

American coot  
Pied-billed grebe  
Eared grebe  
Turkey vulture  
Red-tailed hawk  
Red-shouldered hawk

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Pond 13 (2225-2250 hrs): no CRLF observed; no other anurans calling or observed; salinity = 19 ppt

Pond 18 (2250-2310 hrs): no CRLF observed; 3 Pacific treefrogs calling from patches of brass buttons (*Cotula coronopifolia*) along northwestern shoreline above water; none in water; salinity = 14.0 ppt.

**26 April 2004:** Weather clear, no wind; air temperatures 59-63F during surveys.

RCF Pond (2030-2130 hrs): no CRLF found; two Pacific treefrogs (*Hyla regilla*) calling from weeds above shoreline at east end of pond, none in water.

A-Series Pond (2145-2240 hrs): no CRLF observed; two Pacific treefrog calling from weeds above shoreline at northwest and northeast portions of pond, none in water.

Pond A-5 (2245-2300 hrs): no CRLF observed, no other anurans calling or observed.

Pond 13 (2305-2320 hrs): no CRLF observed; no other anurans calling or observed.

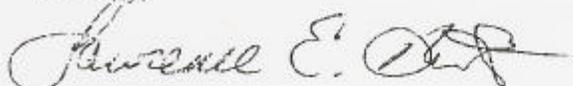
Pond 18 (2330-2350 hrs): no CRLF observed; two Pacific treefrogs calling from patches of brass buttons (*Cotula coronopifolia*) along northwestern shoreline, above water; none in water.

**Additional Observations.** The water in both the RCF and A-Series ponds seemed unusually clear and lacked the huge numbers of crustaceans (mainly ostracods) observed the past two years in these and the other water bodies during both survey events. Increasing salinity may be limiting factor on species presence and population densities. Notonectids were common in all water bodies, but were abundant in these water bodies last year. Ponds 13, 18, and A-5 contained masses of an unidentified filamentous vascular plant along much of their shorelines, despite elevated salinities.

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Please call me if you have any questions.

Sincerely,



Lawrence E. Hunt

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