



LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

**PROTOCOL-LEVEL DRY SEASON BRANCHIOPOD SURVEY RESULTS
90-DAY REPORT
PANOCH VALLEY SOLAR FARM
SAN BENITO COUNTY, CALIFORNIA
(Tracking Number 81440-2010-CPA-0023)**

Prepared by:

LIVE OAK ASSOCIATES, INC.

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Geoffrey Cline, M.S., Staff Ecologist

Prepared for:

SOLARGEN ENERGY

Solargen Energy, Inc.

Eric Cherniss

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20400 Stevens Creek Boulevard, Suite 700

Cupertino, CA 95014

January 14, 2010

PN 1297-06b

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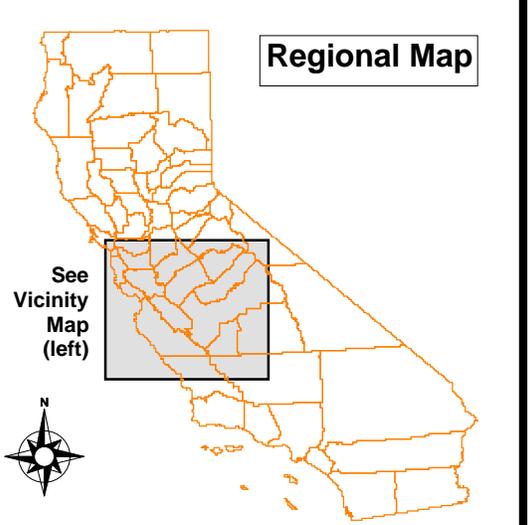
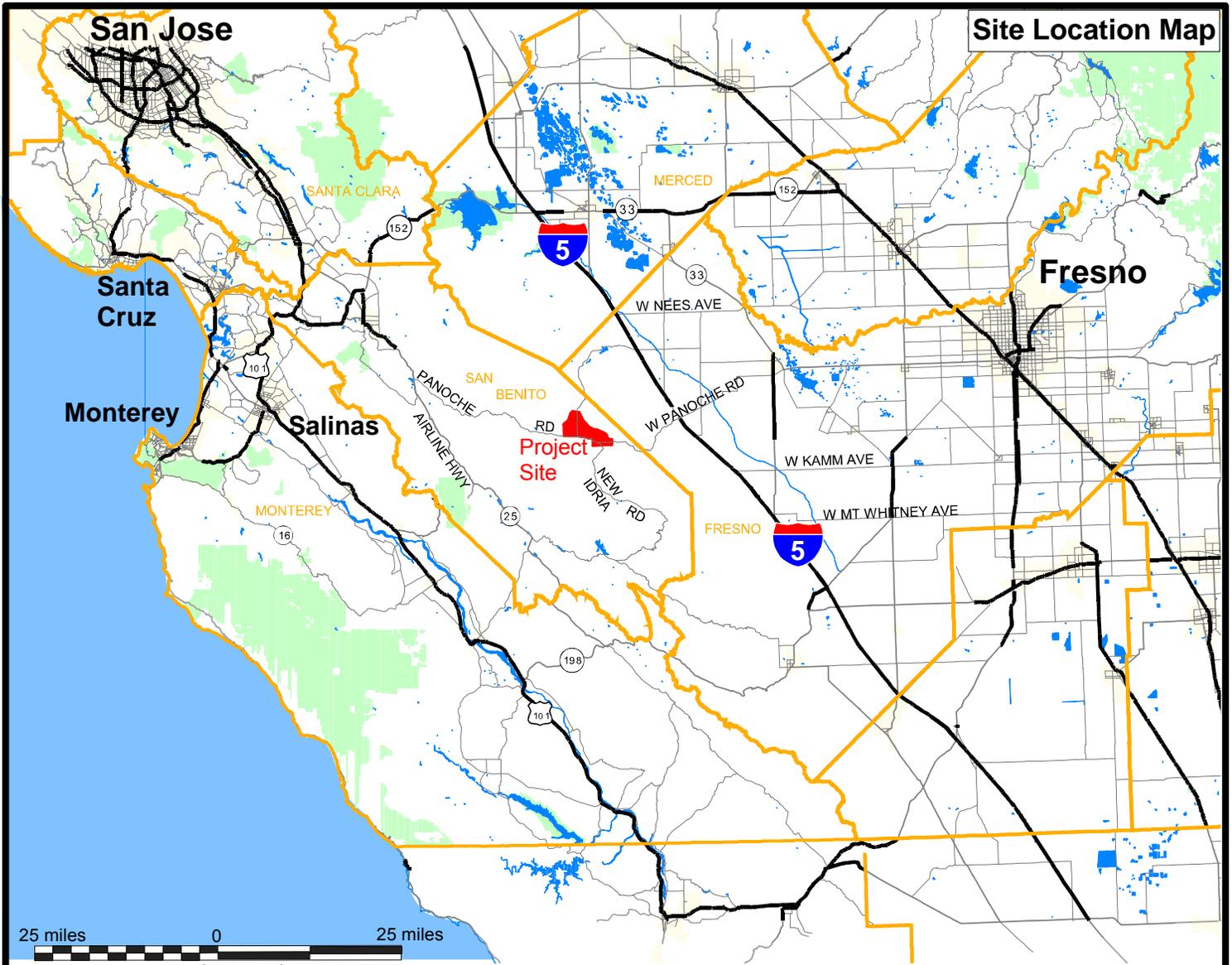
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1.0 INTRODUCTION AND SITE DESCRIPTION

Protocol-level wet-season and dry season branchiopod surveys were conducted by Live Oak Associates, Inc. (LOA) on the Panoche Valley Solar Farm (PVSF) project site in San Benito County, California. Surveys consisted of protocol level wet season sampling in 2009/2010, the results of which were reported to the U.S. Fish and Wildlife Service (USFWS) Ventura office in a report titled *Protocol-Level Dry Season Branchiopod Survey Results 90-Day Report, Panoche Valley Solar Farm, San Benito County, California* (LOA 2010) and protocol level dry season sampling in 2010. The following report serves as the 90-day Report of the dry season surveys.

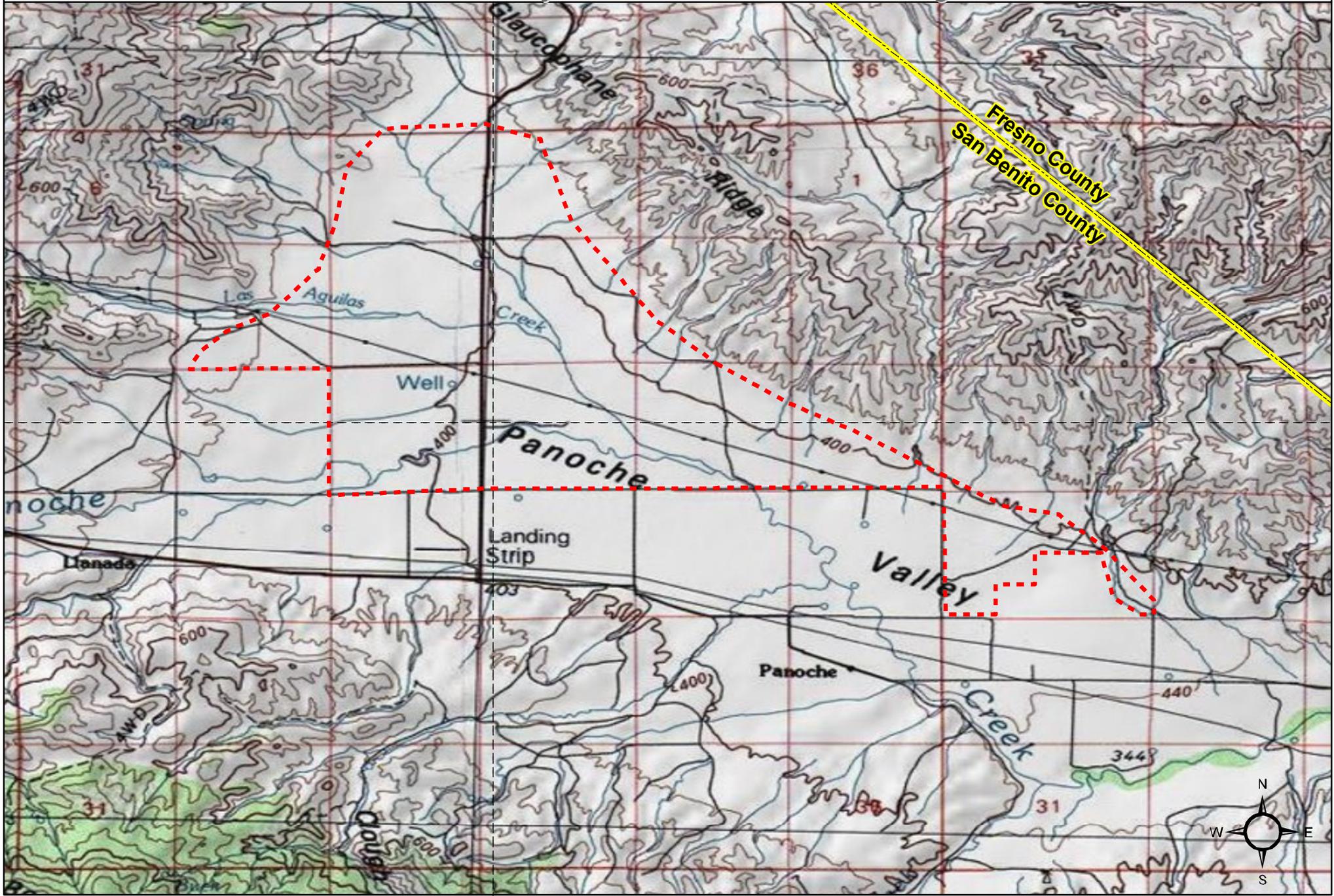
The site or study area consists of approximately 4,885-acres, located in Panoche Valley approximately 15 miles west of Interstate 5 and six miles south of Mercey Hot Springs near the intersection of Panoche Road and Little Panoche Road (Figure 1). The site can be found on the Cerro Colorado, Mercey Hot Springs, Llanada, and Panoche, California U.S.G.S quadrangles, in Sections 3-4, 8-11, and 13-16, Township 15 South, Range 10 East and Section 19, Township 15 South, Range 11 East (Figure 2). All the parcels within the study area are used for cattle grazing. The site is surrounded by rangeland and bordered to the west by the Gabilan Range and to the east by the Panoche Hills. A number of drainages and creeks are present in the area including the Panoche and Las Aguilas Creeks. The portion of the Valley associated with the proposed project ranges in elevation from approximately 1200 feet National Geodetic Vertical Datum (NGVD) to approximately 1490 feet NGVD.

Thirteen soil types from nine soil series were identified on the project site. The Riverwash soil type is the only soil considered hydric. This soil type is considered hydric due to frequent flooding for long durations or very long durations during the growing season. Riverwash consists of mixed water-washed sand and gravel, occurs along streams or rivers and is often flooded during storm events. Within the study area, Riverwash soils are associated with Panoche Creek and portions of Las Aguilas Creek. The Panoche Creek channel was not considered potential habitat for fairy shrimp or tadpole shrimp due to high flows that periodically scour the creek channel. Pondered areas that were sampled consisted primarily of two types; 1) Hard-packed depressions associated with ranch roads and cattle troughs which were extremely ruderal in nature and were repeatedly disturbed by vehicle traffic and/or cattle, and 2) Natural and artificial

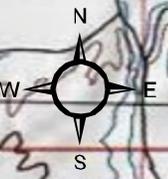
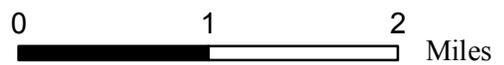


 Live Oak Associates, Inc.		
Panoche Valley Solar Farm Vicinity Map		
Date	Project #	Figure #
11/11/09	1297-04	1

Not to scale



- - - - County Boundary
 - - - - Study Area Boundary
 USGS Quads: Cerro Colorado, Mercey Hot Springs, Panoche, Llanada



depressions within natural swales. Annual precipitation in the general vicinity of the site is highly variable from year to year. Annual rainfall ranges between 9 and 13 inches, almost 85% of which falls between October and March. During drought years, precipitation totals may only reach 5 inches per year. Storm-water infiltrates the soils of the site, but when field capacity has been reached, gravitational water flows into the creeks and drainages.

2.0 METHODS

In order to determine the presence or absence of shrimp species on the PVSF project site, LOA conducted protocol level wet season branchiopod surveys in the winter and spring of 2009/2010 and dry season surveys on September 27 – 30, 2010. All surveys were conducted in accordance with the *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (USFWS 1996). LOA was authorized to initiate dry season branchiopod surveys by David Pereksta with the USFWS on September 14, 2010 (Appendix A).

2.1 Soil Collection

On September 27 – 30, 2010, Jeff Gurule (TE-168924-0) with the assistance of Geoffrey Cline (an un-permitted LOA biologist) conducted the dry season soil collection. Soil samples were collected by Mr. Gurule and data was recorded in the field by Mr. Cline on USFWS approved dry season data sheets. The completed dry season data sheets are presented in Appendix D.

Prior to the onset of the 2010/2011 rainy season, soils from 117 seasonal pools, stock ponds, and puddles were collected. Approximately one liter volume of the top one to three centimeters of sediment was collected from ten sampling locations within each pond. Upon completion of the soil collection, soil was properly stored and transferred to Christopher Rogers of Kansas Biological Survey for cyst analysis.

2.2 Soil Analysis

The soil analysis methods and results were prepared in a separate report authored by Mr. Rogers. This report is presented in Appendix B.

2.3 USFWS Reporting and Voucher Specimen

The USFWS requires that a 90-day report be submitted to the appropriate field office (Sacramento USFWS in this case) following the completion of protocol-level branchiopod surveys. Additionally, the USFWS requires that a “Notice of Presence” be submitted upon identifying a federally listed branchiopod species from the project site authorized for sampling

within ten working days of the finding. It is also required that a California Natural Diversity Data Base (CNDDDB) field survey form be submitted to CDFG for listed species observed on site.

Any federally listed branchiopods collected during the protocol-level surveys must be submitted as voucher specimens to the California Academy of Sciences (CAS) or the Natural Museum of Los Angeles County (LACM). All specimens have to be preserved and submitted according to the CAS or LACM strict standards.

3.0 RESULTS

3.1 Dry Season Sampling

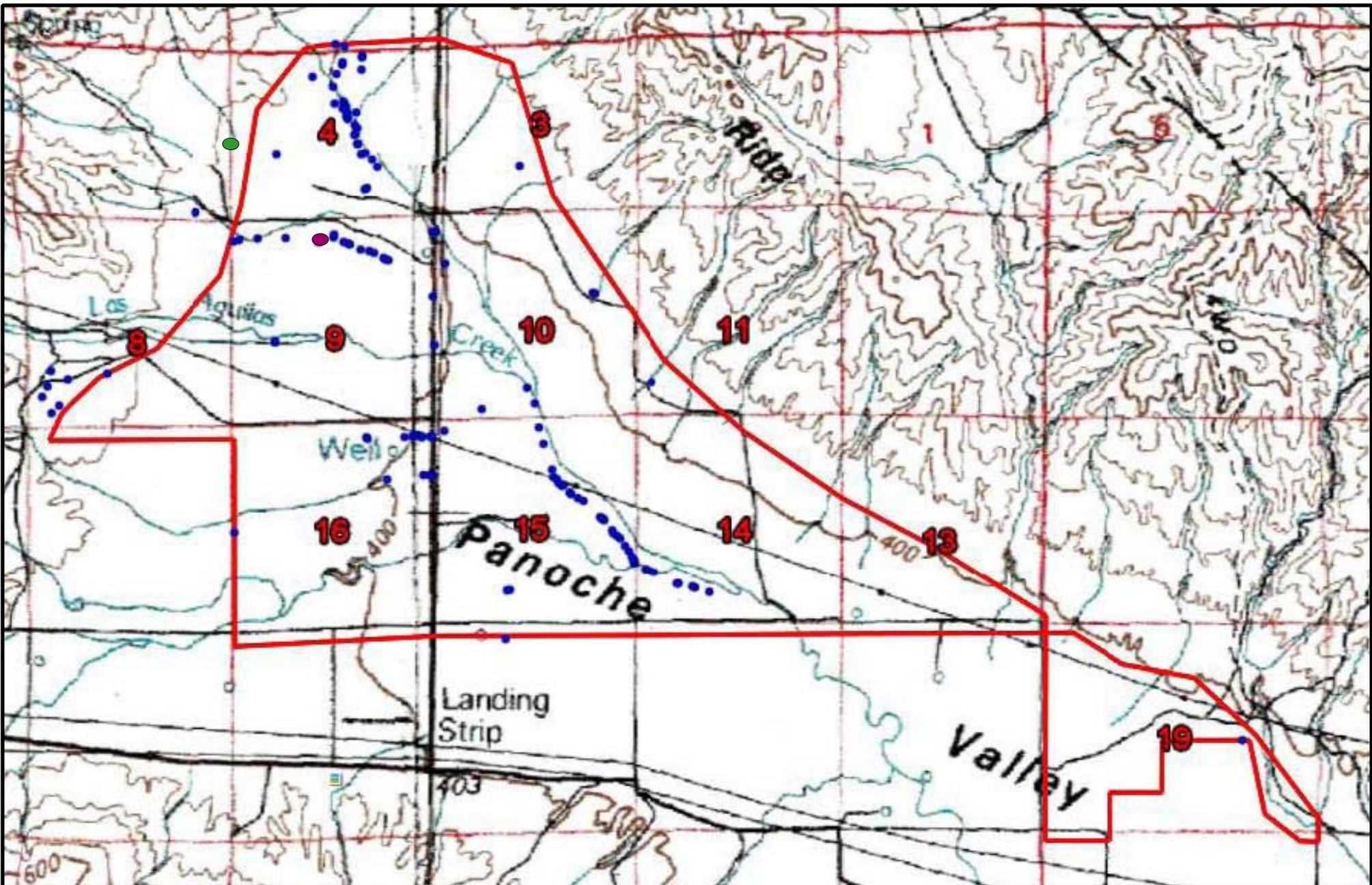
A total of 128 pools met the criteria for inundation in 2009/2010 and were sampled during the wet season for branchiopod species (Figure 3). Of the 128 pools sampled during the wet season 117 pools were sampled during the dry season survey. The discrepancy in the sampling numbers is due to separate pools becoming hydrologically connected as the wet season advanced, pools associated with cattle water troughs remaining wet throughout the year due to perennial runoff, and one pool associated with a cattle trough buried by ranchers in order to berm up the deepening depression around the cattle trough to allow cattle easy access to the water. As previously reported, the wet season survey found only one pool (Pool 12) experiencing an Anostracan hatch; with only one Anostracan species, the Federally Threatened vernal pool fairy shrimp (*Branchinecta lynchi*), detected. The dry season sampling effort found *Branchinecta* cysts in Pool 12 and Pool 13, which lies immediately down gradient from Pool 12. Therefore, it is assumed that the *Branchinecta* cysts were of the species *Branchinecta lynchi* since this species was the only Anostracan species identified during the wet season surveys and the proximity of Pool 13 and Pool 12.

Tadpole shrimp (*lepiduris packerdi*) cysts were not detected in any of the soil samples. Pool coordinates are presented in Appendix C and photographs of the site, with photo specific information, are located in Appendix D.

3.2 USFWS Reporting and Voucher Specimen

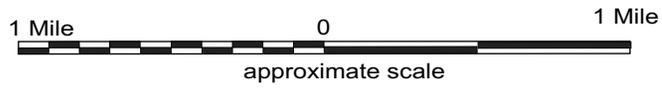
This report serves as the dry season branchiopod 90-day report for the PVSF project site. Notification of the presence of the Federally Threatened *Branchinecta lynchi* was sent to Christopher Diel at the Ventura, CA Branch of the USFWS via an email on March 24, 2010 during the wet season survey.

As required by the USFWS, a CNDDDB form was submitted to CDFG in order to document the presence of *Branchinecta lynchi* found during the 2009/2010 wet season surveys.



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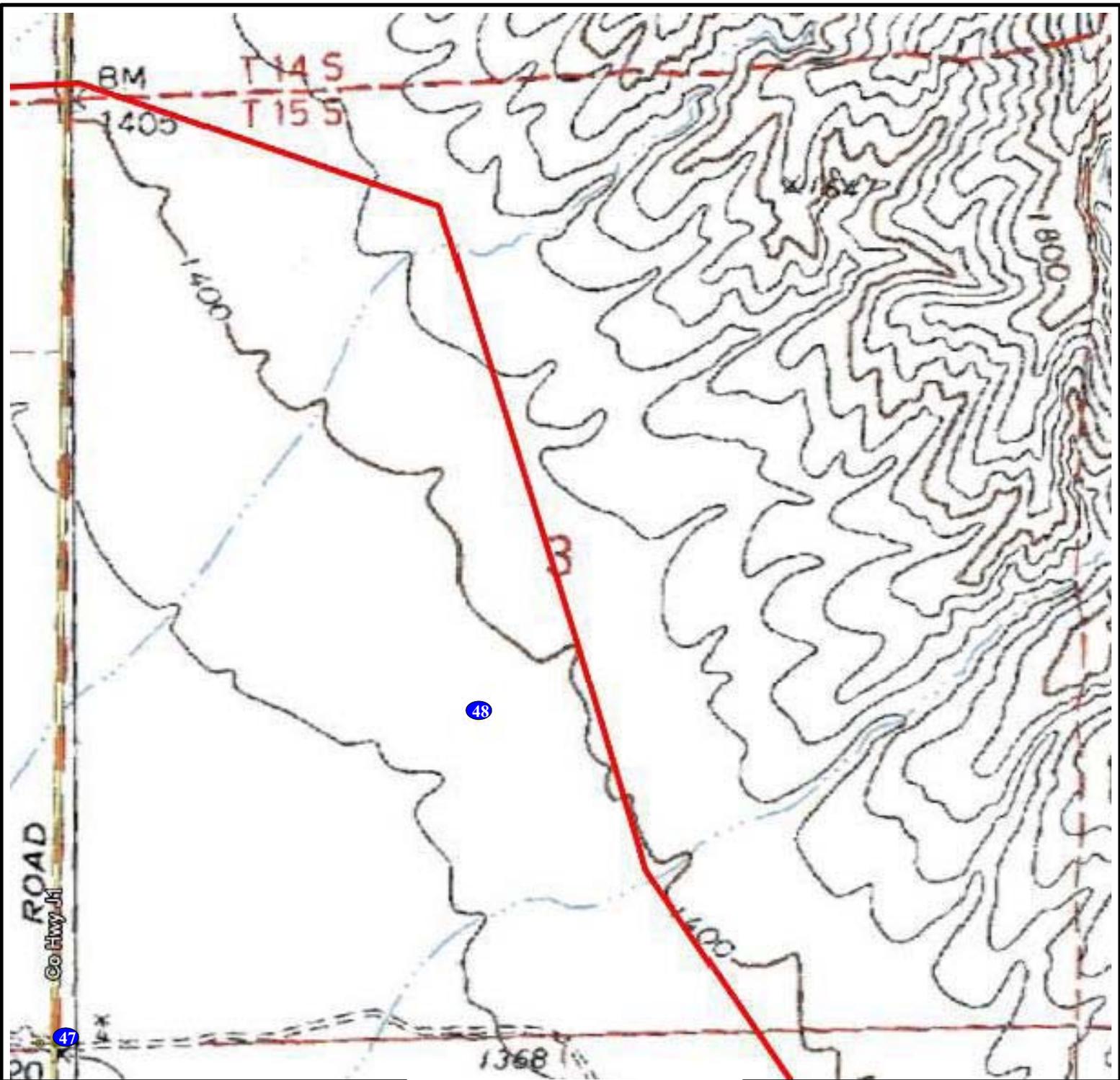
- Sampled Pools
- *Branchinecta lynchi*
- *Ambystoma californiense*
- Approximate Project Boundary



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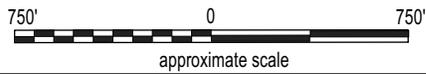
**Pool Locations
Panoche Valley Solar Farm
Overview Map**

Date	Project #	Figure #
7/8/10	1297-06	3 - Overview

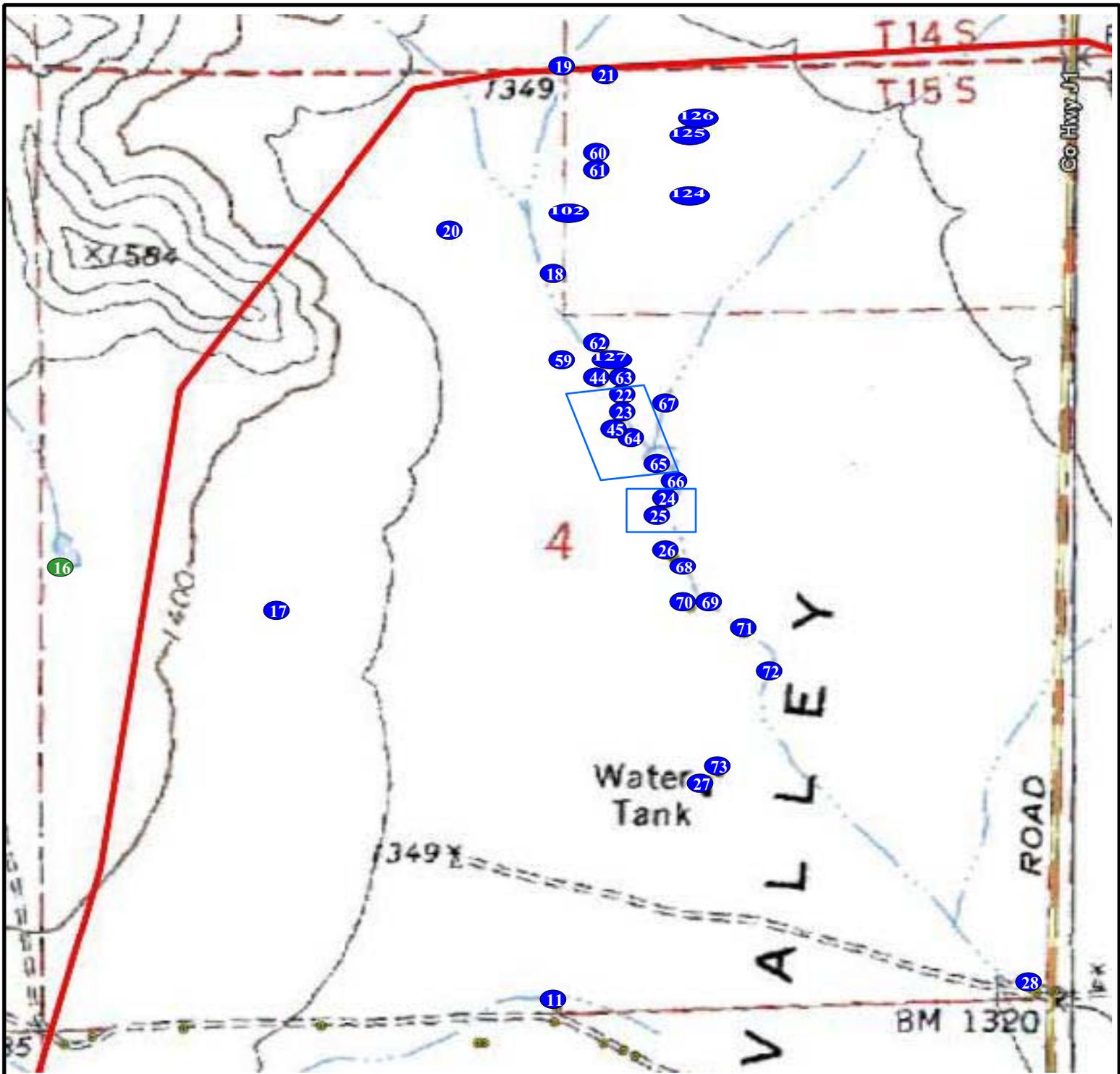


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-  Sampled Pool
-  *Branchinecta lynchi*
-  *Ambystoma californiense*
-  Pools Converged Into One Pool
-  Approximate Project Boundary

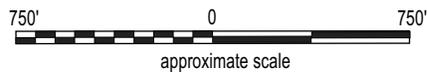


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	Pool Locations Panoche Valley Solar Farm Section 3		
Date	Project #	Figure #	
7/8/10	1297-06	3 - Section 3	



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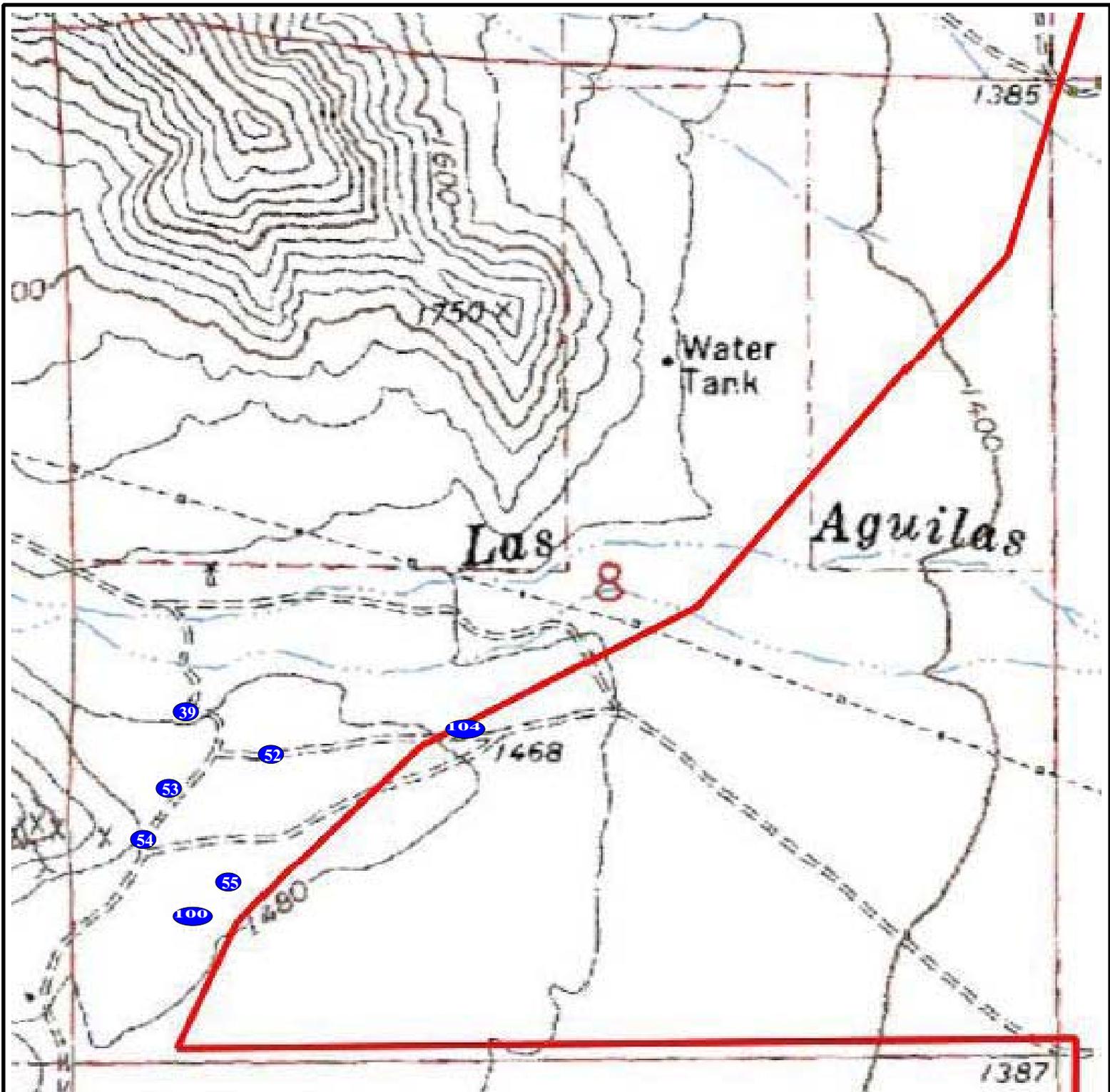
- 68 Sampled Pools
- 68 *Branchinecta lynchi*
- 68 *Ambystoma californiense*
- Pools Converged Into One Pool
- ~ Approximate Project Boundary



Live Oak Associates, Inc.

**Pool Locations
Panoche Valley Solar Farm
Section 4**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 4



LEGEND

- 68 Sampled Pools
- 68 *Branchinecta lynchi*
- 68 *Ambystoma californiense*



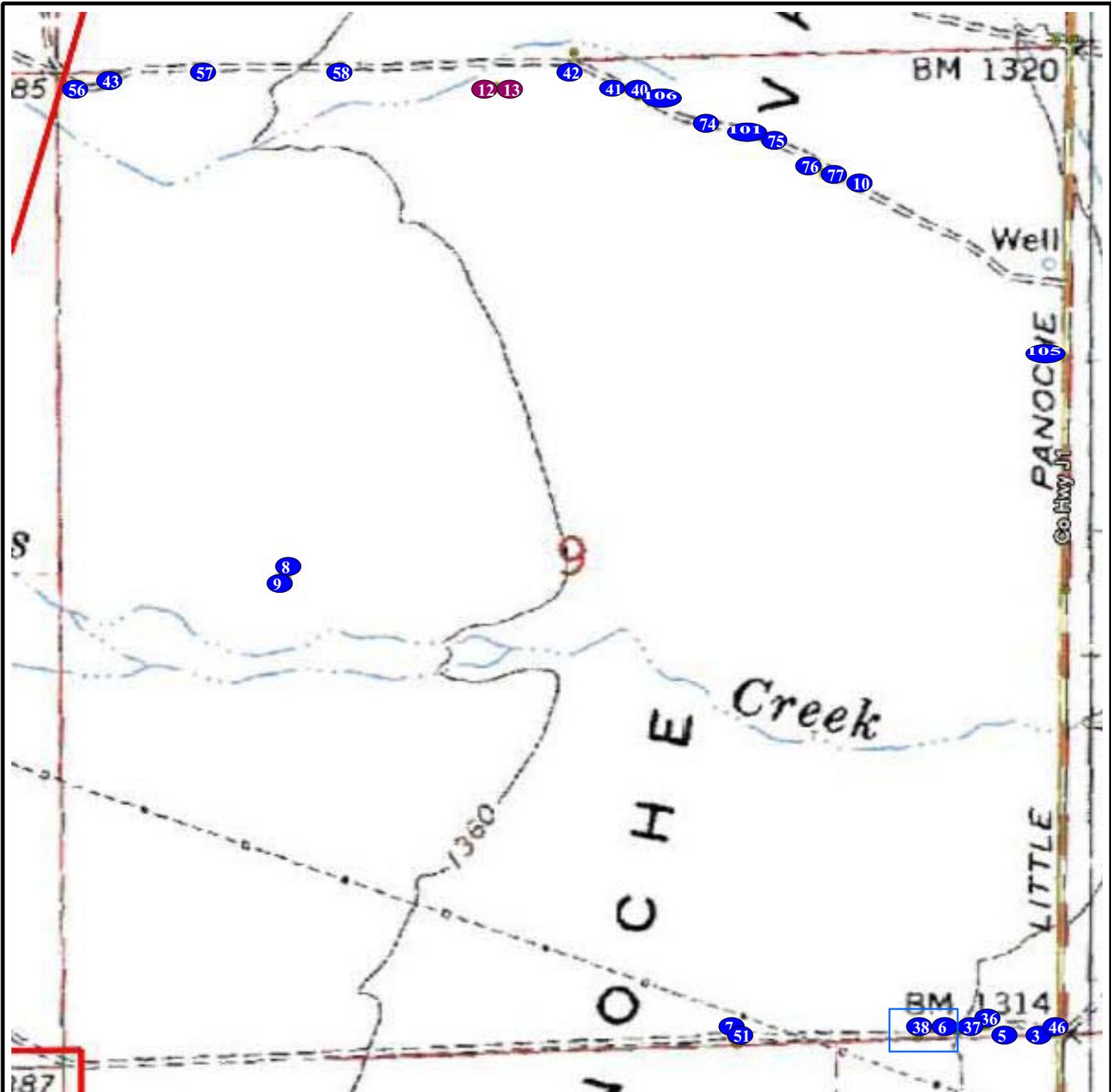
- Pools Converged Into One Pool
- Approximate Project Boundary



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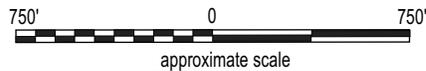
**Pool Locations
Panoche Valley Solar Farm
Section 8**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 8



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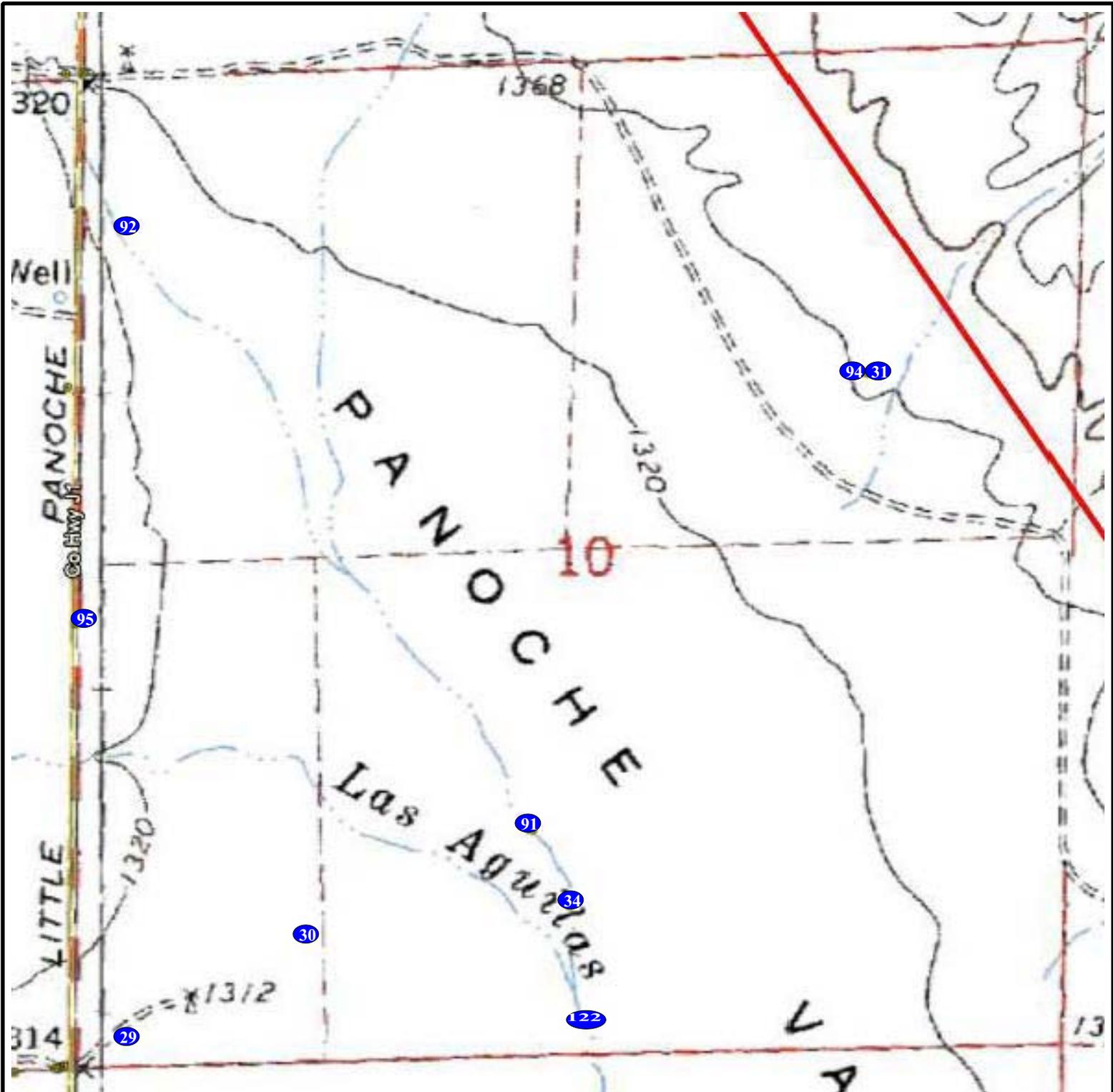
- 68 Sampled Pools
- 68 *Branchinecta lynchi*
- 68 *Ambystoma californiense*
- Pools Converged Into One Pool
- ∟ Approximate Project Boundary



Live Oak Associates, Inc.

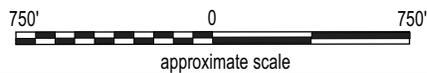
**Pool Locations
Panoche Valley Solar Farm
Section 9**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 9



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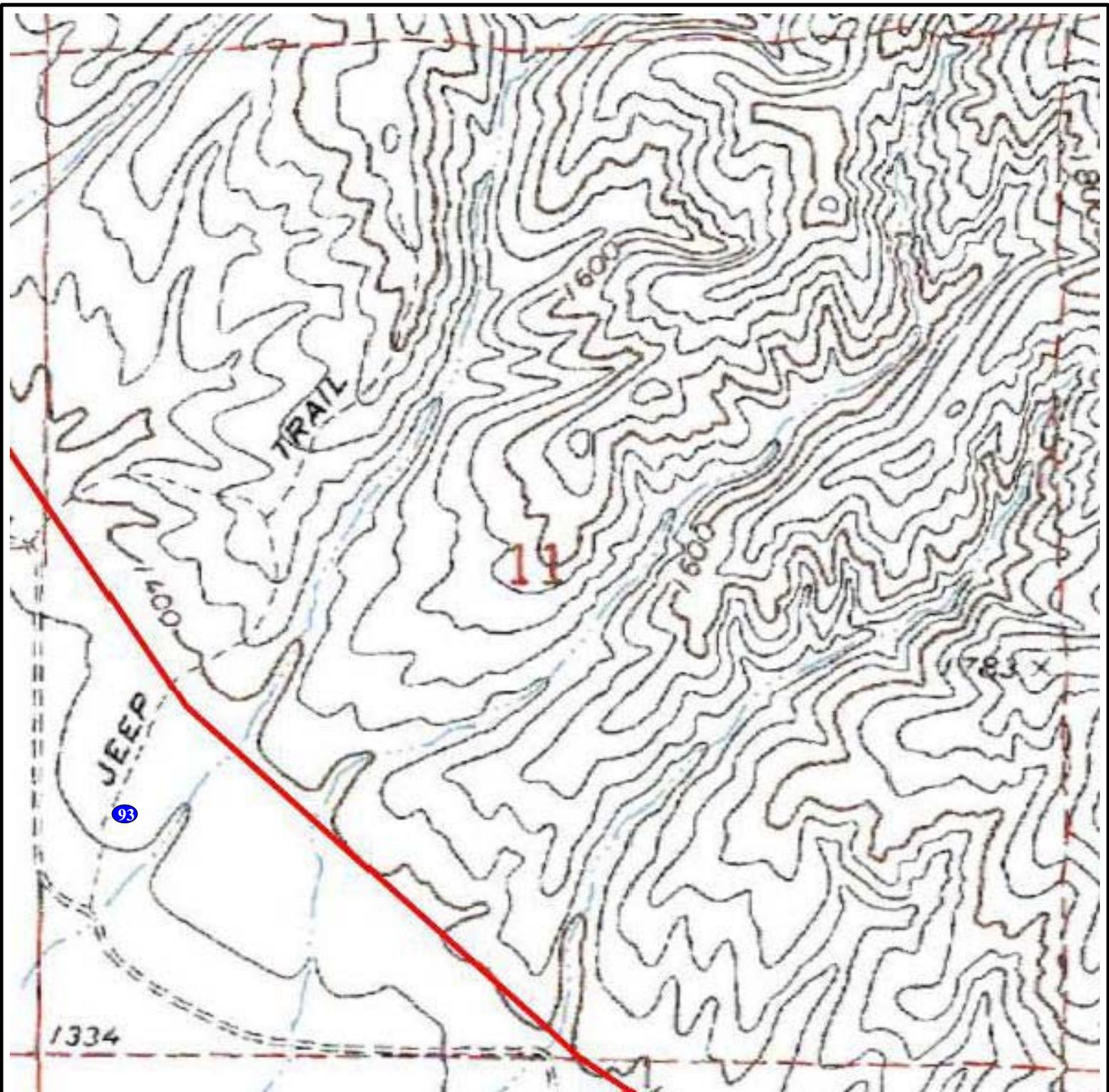
- 68 Sampled Pools
- 68 *Branchinecta lynchi*
- 68 *Ambystoma californiense*
- Pools Converged Into One Pool
- Approximate Project Boundary



Live Oak Associates, Inc.

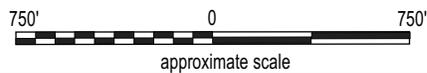
**Pool Locations
Panoche Valley Solar Farm
Section 10**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 10



LEGEND

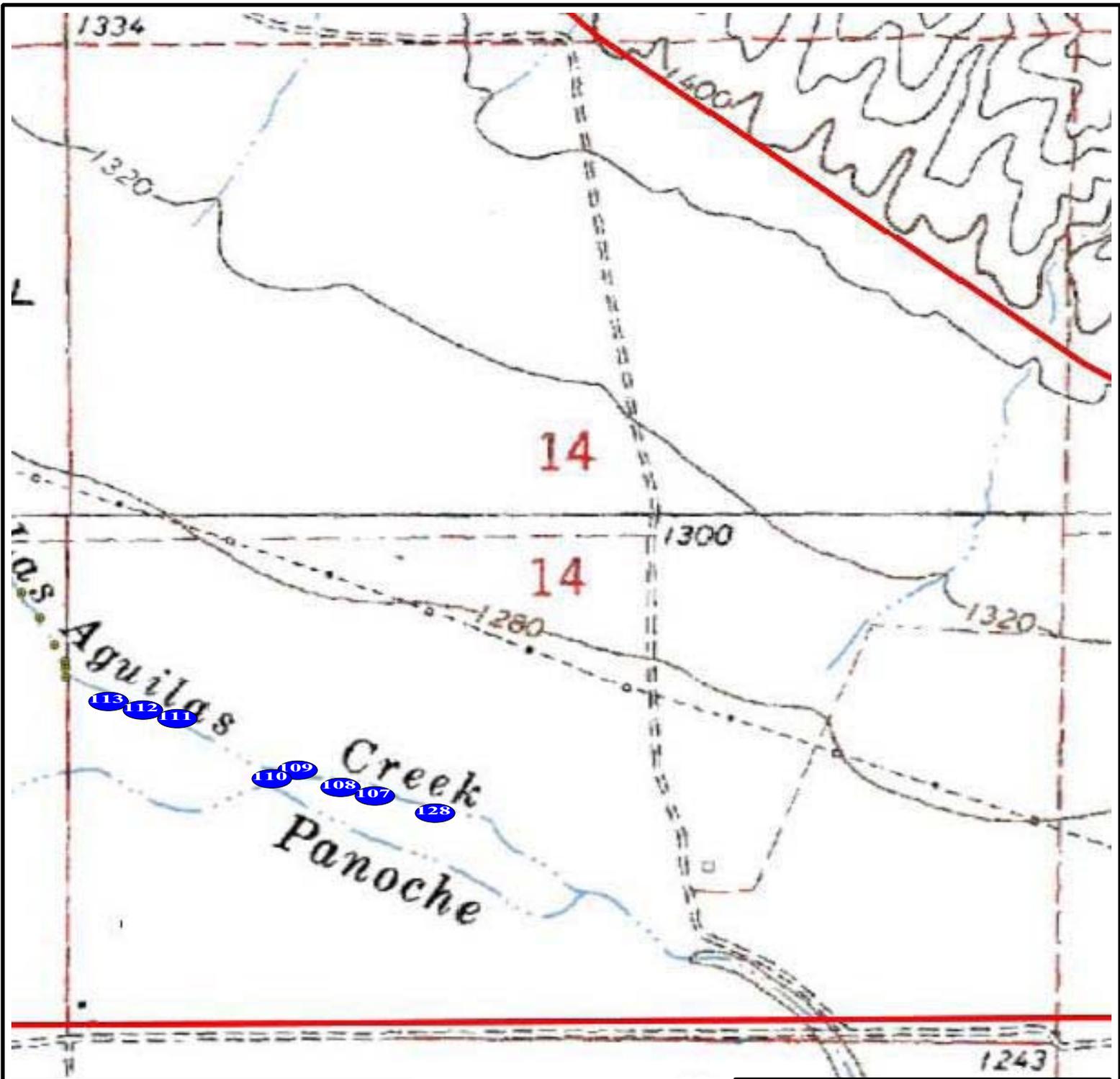
-  Sampled Pool
-  *Branchinecta lynchi*
-  *Ambystoma californiense*
-  Pools Converged Into One Pool
-  Approximate Project Boundary



Live Oak Associates, Inc.

**Pool Locations
Panoche Valley Solar Farm
Section 11**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 11

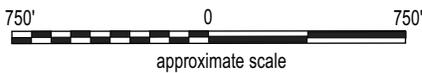


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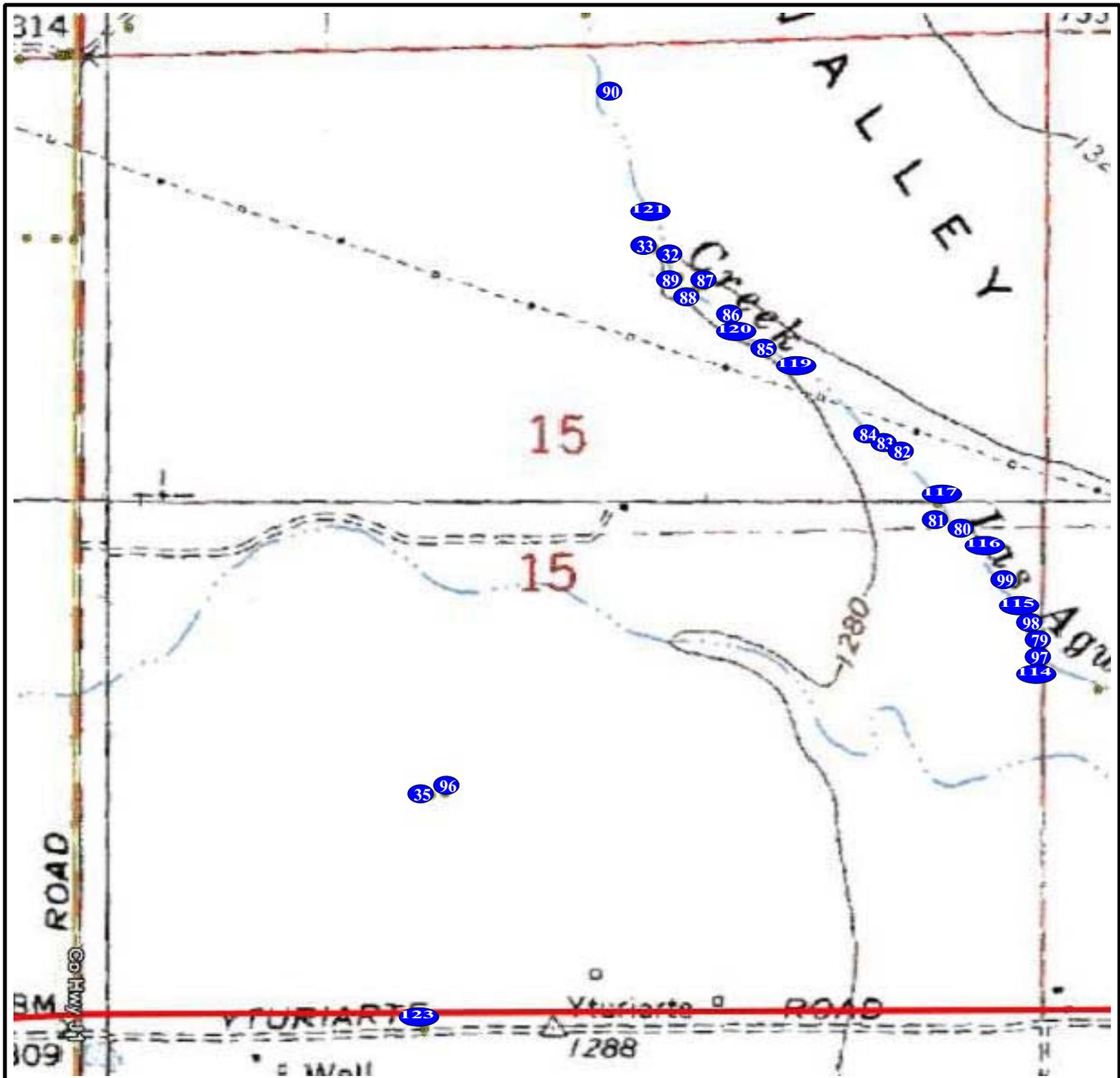
- 68 Sampled Pool
- 68 *Branchinecta lynchi*
- 68 *Ambystoma californiense*



- Pools Converged Into One Pool
- Approximate Project Boundary

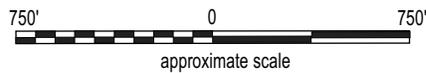


	Live Oak Associates, Inc.	
	Pool Locations Panoche Valley Solar Farm Section 14	
Date	Project #	Figure #
7/8/10	1297-06	3 - Section 14



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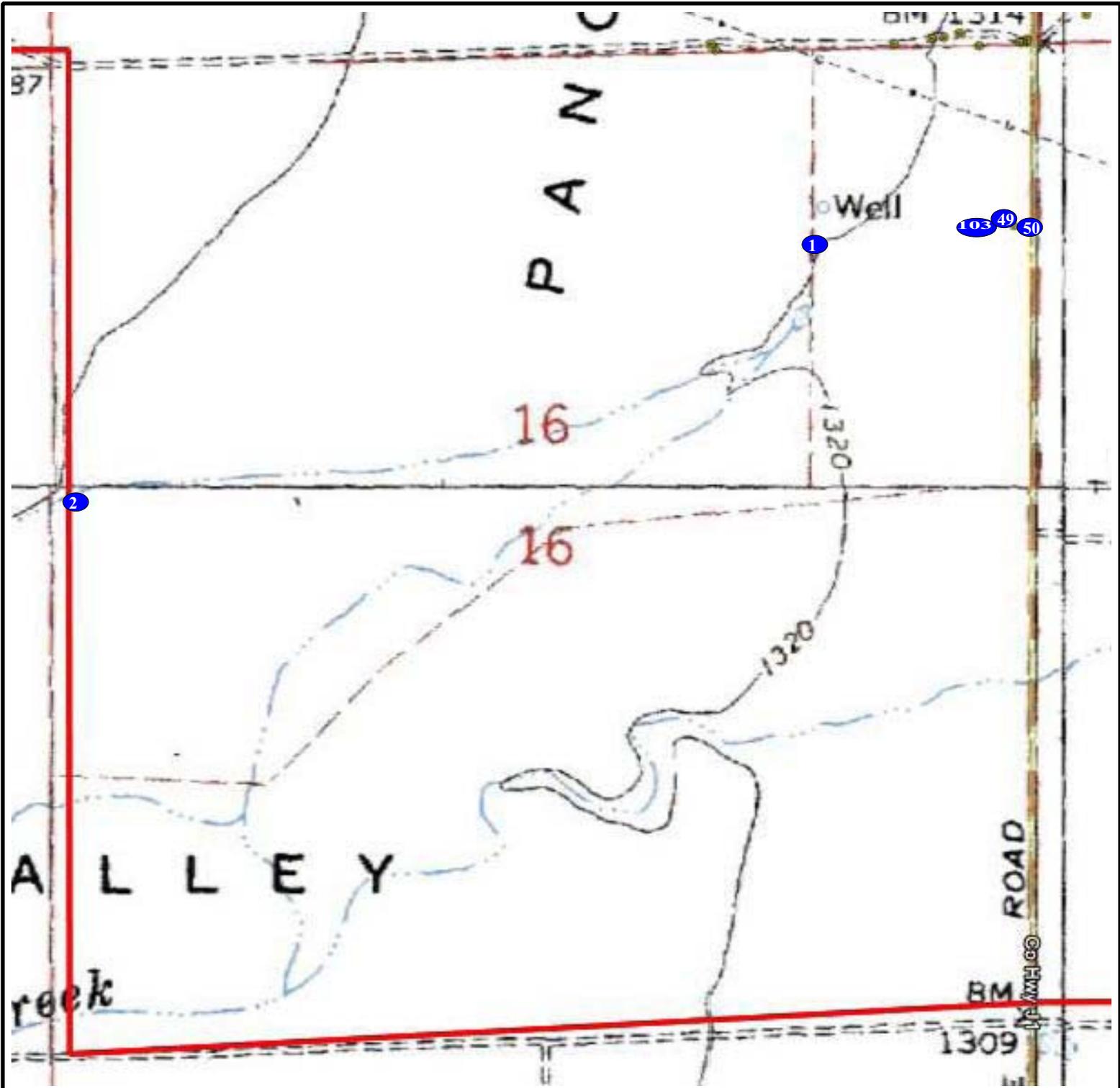
- 68 Sampled Pools
- 68 *Branchinecta lynchi*
- 68 *Ambystoma californiense*
- Pools Converged Into One Pool
- Approximate Project Boundary



Live Oak Associates, Inc.

**Pool Locations
Panoche Valley Solar Farm
Section 15**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 15

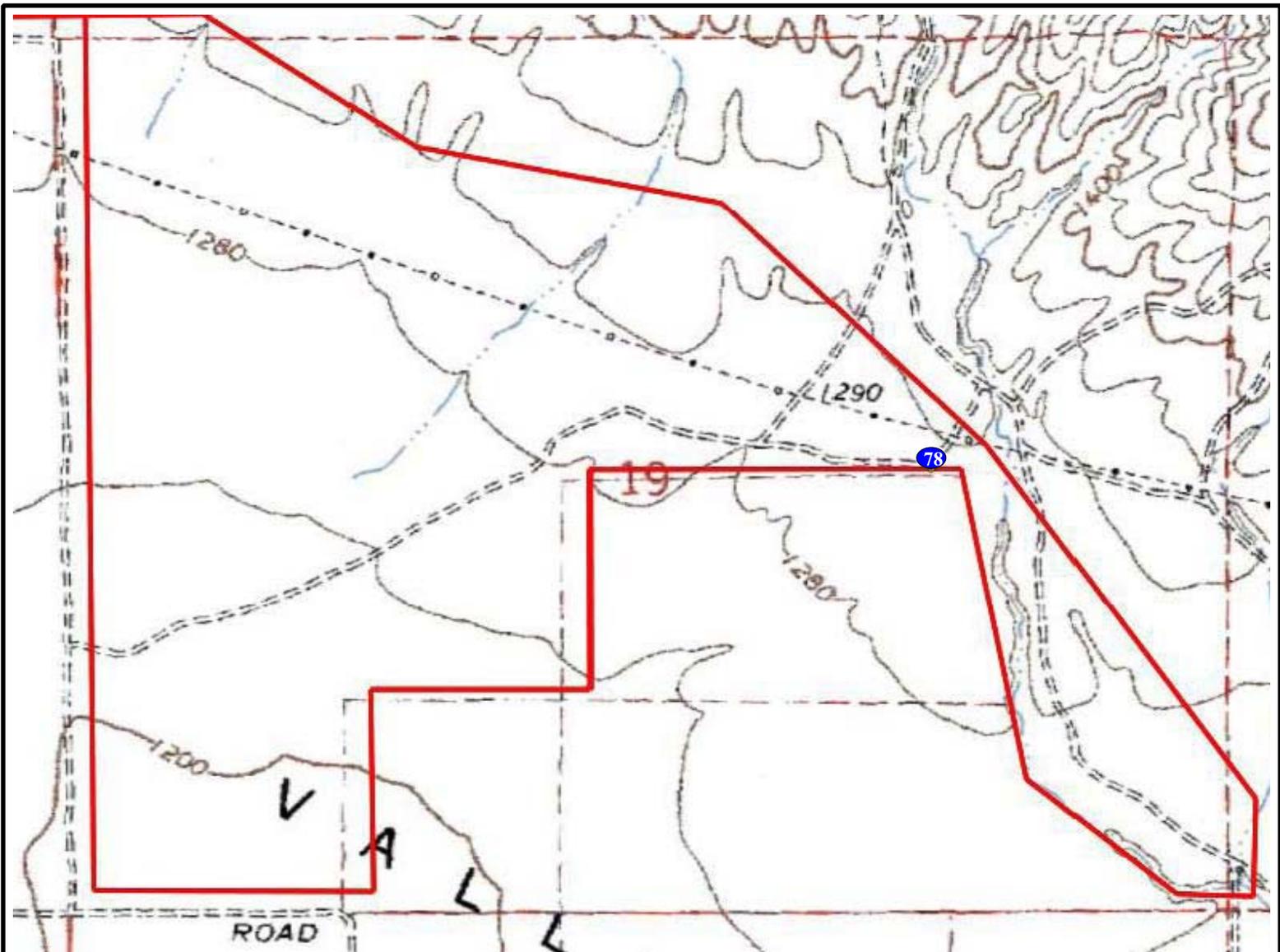


LEGEND

-  Sampled Pools
-  *Branchinecta lynchi*
-  *Ambystoma californiense*
-  Pools Converged Into One Pool
-  Approximate Project Boundary

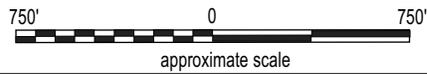


 Live Oak Associates, Inc.			
			Pool Locations Panoche Valley Solar Farm Section 16
Date	Project #	Figure #	
7/8/10	1297-06	3 - Section 16	



LEGEND

-  Sampled Pools
-  *Branchinecta lynchi*
-  *Ambystoma californiense*
-  Pools Converged Into One Pool
-  Approximate Project Boundary



Live Oak Associates, Inc.

**Pool Locations
Panoche Valley Solar Farm
Section 19**

Date	Project #	Figure #
7/8/10	1297-06	3 - Section 19

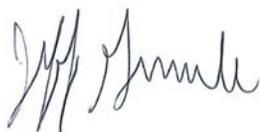
Voucher specimens collected during the wet season survey were submitted in accordance with the *Interim Survey Guidelines* (USFWS 1996) to the CAS by Geoff Cline of LOA on November 8, 2010. Live Oak Associates understands that Kansas Biological Survey will submit a representative sample of each cyst type recovered from the soil samples to either the CAS or LACM, as required by the USFWS guidelines for a protocol level survey.

3.3 Conclusion

Based on the results of the 2009/2010 protocol wet season surveys and 2010 dry season survey, it has been determined that the Federally Threatened vernal pool fairy shrimp (*Branchinecta lynchi*) is present in two adjacent pools, Pool 12 and Pool 13, on the PVSF project site. Pool 12 is a seasonal stock pond constructed from scraped earth bermed up across a shallow swale. Pool 13 is a depression immediately down gradient from Pool 12 presumably formed from the scraping of soil from this area to create the bermed dam of Pool 12. Other habitat sampled during the surveys contained no branchiopods and consisted primarily of ruderal pools associated with compacted depressions in dirt ranch roads or cattle troughs, as well as a few seasonal stock ponds and a number of natural pools forming in swales or drainages. Incidental findings of California tiger salamander occurred in Pool 16 (a seasonal stock pond) during the wet season surveys. Given the above average rainfall during the 2009/2010 rainy season it is doubtful any onsite branchiopod habitat was missed by the protocol survey effort.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Jeff Gurule

Signature: . Date: January 14, 2011.

Permit # TE-168924-0

**APPENDIX A:
DRY SEASON AUTHORIZATION LETTER**



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
81440-2010-CPA-0180

September 14, 2010

Michele Korpos
Senior Project Manager
Live Oak Associates, Inc.
6840 Via Del Oro, Suite 220
San Jose, California 95119

Subject: Authorization to Commence Dry-Season Surveys for Vernal Pool Branchiopods at the Proposed Panoche Valley Solar Farm, San Benito County, California

Dear Ms. Korpos:

We have reviewed your request, dated July 29, 2010, and received by our office by electronic mail on July 30, 2010, to conduct dry-season surveys for federally listed vernal pool branchiopods, including the federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*), for the proposed Panoche Valley Solar Project, San Benito County, California. You are requesting permission to conduct dry-season sampling at 128 pool locations identified during the wet-season surveys performed during the 2009/2010 wet season. The 90-day report for the protocol-level wet-season branchiopod surveys dated August 13, 2010, was received by our office by electronic mail on August 19, 2010. The results of the wet-season surveys identified one pool occupied by vernal pool fairy shrimp. The methods and findings included in the 90-day report for the wet-season surveys for the subject project are currently under review.

You request that the soil collection portion of the sampling be conducted by Davianna Ohlson, Melissa Denena, Jeff Gurule, and/or Austin Pearson under the terms and conditions of their recovery permits (TE1670750-0, TE108681-0, TE168924-0, TE108683-0 respectively) and performed in accordance with the methods described in the U.S. Fish and Wildlife Service's April 1996 *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (Guidelines). In your request, you also request that Christopher Rogers (TE-796284-3) conduct the soil analysis and possible culture of any cysts collected.

The permits identified for Ms. Ohlson, Ms. Denena, and Mr. Pearson expired in December 2009. We do not authorize Davianna Ohlson, Melissa Denena, or Austin Pearson to conduct the proposed dry-season surveys. Christopher Roger's current recovery permit, TE-796284-5, does not authorize the culturing of cysts. We do not authorize Christopher Rogers to culture any cysts identified in the soil samples collected during the dry-season surveys.

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IN AMERICA 

Michele Korpos

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We hereby authorize Jeff Gurule to conduct the dry-season surveys and Christopher Rogers to conduct the soil sieving and examination and cyst identification to genus. Per section V.h of the Guidelines, each fairy shrimp or tadpole shrimp cyst shall be identified to genus by a qualified biologist and the Service may require an independent review by a crustacean biologist of any vernal pool branchiopod or cyst identification. Further, section V.h states that, for each feature surveyed, if branchiopod cyst identification is made to genus, there are two options: 1) surveys may be suspended if it is agreed that one or more listed species are present or 2) a subsequent complete wet-season sampling survey shall be conducted. Surveys may continue at the remaining features on the project site; however, if all surveys are suspended, it must be assumed that all features are occupied by the listed entity.

We remind Mr. Gurule and Mr. Rogers of their responsibilities in reporting survey results to us, regardless of findings, and suggest that they review the permit for any special conditions that must be met. We request use of the dry-season data sheet available on our website (<http://www.fws.gov/ventura/>) during the dry-season surveys and that copies of the data sheets be included in future reports on the survey findings. If you have any questions, please contact Christopher Diel of my staff at (805) 644-1766, extension 305.

Sincerely,



Douglass M. Cooper
Deputy Assistant Field Supervisor

**APPENDIX B:
DRY SEASON SOIL ANALYSIS REPORT**

The University of Kansas

Kansas Biological Survey

8 December 2010

Eric Cherniss
Solargen Energy, Inc.
20400 Stevens Creek Blvd., Suite 740
Cupertino, CA 95014

SUBJECT: Results of Analyses of Soil Samples Collected from the Proposed Panoche Valley Project Site, San Benito County, California.

Dear Mr. Cherniss,

Live Oak Associates conducted a dry season survey of potential special status shrimp habitats at the proposed Panoche Valley project site, located in San Benito County, California. Soil samples were collected from 117 previously identified habitats judged to be suitable for special status shrimp species, and these samples were shipped to Kansas Biological Survey for processing and analyses. Special status shrimp eggs were collected from the soil samples analyzed from two features.

Kansas Biological Survey understands that Live Oak Associates will submit this report and all other pertinent materials and information to the US Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (DFG), as required by the USFWS guidelines for a protocol level survey.

Definitions

For the purpose of this report, special status shrimp are defined to include shrimp species listed as threatened or endangered under the federal Endangered Species Act (ESA) (50 CFR 17.11 for listed animals and various Federal Register notices for proposed species). One special status tadpole shrimp (*Lepidurus packardii*) and two special status fairy shrimp species (*Branchinecta lynchi* and *Branchinecta longiantenna*) have the potential to occur at the proposed project site. In addition, two non-listed fairy shrimp species (*Branchinecta lindahli* and *Linderiella occidentalis*) is known from the proposed project vicinity.

Species Accounts

Lepidurus packardii Simon, 1886

Lepidurus packardii, the Vernal Pool Tadpole Shrimp, is federally listed as an endangered species. This tadpole shrimp species is found in vernal pools throughout the Sacramento Valley, to the east side of San Francisco Bay (Rogers, 2001). Typically *Lepidurus packardii* is green in color, but may be mottled with brown in highly turbid water. *Lepidurus packardii* is omnivorous and generally forages on the bottoms of pools in dense vegetation. Tadpole shrimp tend to be

The University of Kansas

slow growing and are usually collected after the vernal pool has been ponded for 30 days (Rogers, 2001).

Branchinecta lynchi Eng, Belk & Eriksen, 1990

Branchinecta lynchi, the Vernal Pool Fairy Shrimp, is federally listed as a threatened species. This shrimp species is found in vernal pools throughout the Central Valley and western Riverside County in California, and near Medford, Oregon (Eriksen & Belk, 1999). This fairy shrimp species occurs in neutral to slightly alkaline vernal pools throughout the California Central Valley, and in rock outcrop pools along the Interior Coast Ranges, south of the Sacramento River Delta.

Branchinecta longiantenna Eng, Belk, & Eriksen, 1990

Branchinecta longiantenna, or the Longhorn Fairy Shrimp, is federally listed as an endangered species. This species is reported from small, shallow rock outcrop vernal pools, and grassy-bottomed vernal pools. This species of fairy shrimp has an extremely disjunct distribution, and is known only from three locations: a sandstone outcrop vernal pools along the Contra Costa/Alameda County line, a couple of grassy bottomed vernal pools at the Pixley National Wildlife Refuge in Merced County in the San Joaquin Valley, and from a couple of grassy bottomed vernal pools and roadside scrapes on the Carrizo Plain in San Luis Obispo County (Eriksen & Belk, 1999; Rogers, in prep).

Branchinecta lindahli Packard, 1883

This taxon is a common fairy shrimp with no legal status. This fairy shrimp is common in alkaline habitats throughout the western United States and northern Mexico. It typically occurs in pools that are turbid, alkaline or slightly saline, and often ringed with salt grass (*Distichilis* sp.).

Branchinecta lindahli may be opportunistic, as it is common in a wide variety of artificial habitats, such as bulldozer scrapes, roadside ditches and railroad toe-drains (Eriksen & Belk, 1999; Rogers & Lang, in prep).

Linderiella occidentalis (Dodds, 1923)

The first species recorded from California, the California Linderiella is a common fairy shrimp from vernal pools throughout the California Central Valley and Coast Ranges of California.

Linderiella occidentalis is typically white and green with red markings. *Linderiella occidentalis* tends to mature later than the *Branchinecta* species and is typical of vernal pools that are inundated for at least 20 days. *Linderiella occidentalis* was originally proposed for listing under the Endangered Species Act and was withdrawn from the proposal in 1995.

Methods

Live Oak Associates collected soil samples from 117 potential special status shrimp habitats at the proposed project site. Each soil sample was placed in a bag, labeled with the locality number, and shipped to the Kansas Biological Survey laboratory for analysis. All potential habitats were identified according to the numbers assigned to them in the field.

The University of Kansas

Laboratory Analysis

Soil samples were prepared for examination in the laboratory by dissolving the clumps of soil in water and sieving the material through 300- and 150- μm pore size screens. The small size of these screens ensures that the eggs from the shrimp species will be retained. The portion of each sample retained in the screens was dissolved in a brine solution to separate the organic material from the inorganic material. The organic fraction was then examined under a microscope.

Results

Potential special status shrimp eggs were recovered from the soil samples taken from features 12 and 13. The eggs present belong to the genus *Branchinecta* and are most likely *Branchinecta lynchi* as this species was previously identified from feature 12 and we are given to understand that feature 13 is adjacent to this habitat. These analyses are insufficient by themselves to determine that special status shrimp are absent from the other habitat on this site. The results of this survey must be combined with a protocol wet season survey, and concurrence must be sought from the USFWS before any additional determinations can be made.

If you have any questions please call me.

Sincerely,

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References

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Rogers, D.C. 2001. Revision of the Nearctic *Lepidurus* (Notostraca). *Journal of Crustacean Biology* 21: 991 – 1006.

United States Fish and Wildlife Service. September 19, 1994. Federal Register Final Rule; determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp.

**APPENDIX C:
POOL COORDINATES**

Panoche Solar Farm Pool Locations

Grid: UTM Datum: NAD83 Zone: 10S

Pool #	Easting	Northing	Altitude
1	689496	4055757	1305 ft
2	688302	4055313	1342 ft
3	689829	4056101	1324 ft
4	689834	4056100	1319 ft
5	689763	4056093	1314 ft
6	689688	4056103	1316 ft
7	689326	4056083	1320 ft
8	688589	4056816	1372 ft
9	688595	4056815	1374 ft
10	689470	4057479	1342 ft
11	689036	4057670	1333 ft
12	688911	4057611	1335 ft
13	688921	4057611	1338 ft
14	687939	4057814	1379 ft
15	687945	4057818	1382 ft
16	688234	4058362	1380 ft
17	688572	4058300	1402 ft
18	689004	4058842	1332 ft
19	689014	4059176	1357 ft
20	688840	4058916	1356 ft
21	689086	4059160	1354 ft
22	689119	4058641	1330 ft
23	689120	4058634	1320 ft
24	689187	4058476	1331 ft
25	689181	4058467	1316 ft
26	689204	4058399	1318 ft
27	689270	4058041	1318 ft
28	689811	4057710	1306 ft
29	689938	4056148	1308 ft
30	690230	4056326	1294 ft
31	691090	4057257	1358 ft
32	690834	4055790	1271 ft
33	690806	4055805	1279 ft
34	690648	4056380	1286 ft
35	690460	4054895	1314 ft
36	689732	4056112	1308 ft
37	689708	4056105	1337 ft
38	689626	4056092	1327 ft
39	686835	4056546	1454 ft
40	689145	4057604	1309 ft
41	689113	4057614	1327 ft
42	689033	4057647	1329 ft
43	688292	4057609	1362 ft
44	689083	4058673	1320 ft

Pool #	Easting	Northing	Altitude
45	689115	4058610	1320 ft
46	689842	4056105	1301 ft
47	689839	4057712	1311 ft
48	690492	4058250	1374 ft
49	689828	4055797	1296 ft
50	689855	4055796	1294 ft
51	689333	4056074	1312 ft
52	686969	4056483	1469 ft
53	686814	4056424	1484 ft
54	686776	4056341	1486 ft
55	686907	4056277	1476 ft
56	688248	4057597	1378 ft
57	688437	4057625	1361 ft
58	688657	4057633	1351 ft
59	689019	4058710	1344 ft
60	689075	4059037	1331 ft
61	689072	4059015	1337 ft
62	689086	4058729	1325 ft
63	689107	4058687	1338 ft
64	689125	4058590	1320 ft
65	689181	4058543	1312 ft
66	689199	4058519	1310 ft
67	689190	4058645	1305 ft
68	689208	4058395	1332 ft
69	689269	4058326	1309 ft
70	689236	4058317	1301 ft
71	689323	4058278	1305 ft
72	689366	4058222	1305 ft
73	689288	4058054	1312 ft
74	689248	4057557	1329 ft
75	689355	4057533	1338 ft
76	689431	4057496	1320 ft
77	689443	4057485	1316 ft
78	696325	4053843	1330 ft
79	691459	4055163	1264 ft
80	691320	4055354	1257 ft
81	691291	4055371	1245 ft
82	691217	4055474	1270 ft
83	691196	4055487	1260 ft
84	691183	4055498	1279 ft
85	691004	4055643	1256 ft
86	690938	4055687	1267 ft
87	690890	4055745	1274 ft
88	690875	4055737	1275 ft

Pool #	Easting	Northing	Altitude
89	690848	4055758	1285 ft
90	690724	4056063	1285 ft
91	690585	4056501	1294 ft
92	689917	4057463	1316 ft
93	691576	4056566	1361 ft
94	691108	4057252	1362 ft
95	689847	4056821	1301 ft
96	690484	4054899	1289 ft
97	691460	4055152	1241 ft
98	691441	4055189	1236 ft
99	691385	4055274	1236 ft
100	686848	4056217	1490 ft
101	689315	4057548	1331 ft
102	689029	4058943	1312 ft
103	689781	4055798	1307 ft
104	687276	4056536	1469 ft
105	689824	4057202	1308 ft
106	689163	4057595	1323 ft
107	691959	4054950	1247 ft
108	691936	4054959	1252 ft
109	691827	4054980	1234 ft
110	691813	4054979	1246 ft
111	691629	4055068	1256 ft
112	691593	4055078	1253 ft
113	691552	4055092	1249 ft
114	691461	4055137	1258 ft
115	691417	4055233	1251 ft
116	691346	4055332	1252 ft
117	691281	4055396	1256 ft
118	691206	4055485	1269 ft
119	691049	4055621	1263 ft
120	690950	4055672	1264 ft
121	690796	4055862	1268 ft
122	690685	4056192	1292 ft
123	690458	4054510	1277 ft
124	689225	4058981	1329 ft
125	689226	4059076	1346 ft
126	689230	4059090	1336 ft
127	689092	4058711	1338 ft
128	692072	4054918	1258 ft

**APPENDIX D:
PHOTOS**



Photo 1: Looking SW at Pool #12 - a stock pond. Vernal pool fairy shrimp (*Branchinecta lynchi*) were observed in this pool on 3/16/10. The pool to the left, Pool #13, as well as Pool #12 were found to contain *Branchinecta* cysts during dry season surveys. It is assumed the *Branchinecta* cysts are *Branchinecta lynchi*.



Photo 2: Looking SE at Pool #5, a natural vernal pool at the toe of a swale. No shrimp were found in this pool during the 2009/2010 wet season survey or 2010 dry season survey.



Photo 3: LOA Biologist Mr. Jeff Gurule (TE-168924) sampling Pool #50 at the intersection of a ranch road and Little Panoche Road looking east. This pool is an example of the many ruderal pools associated with the ranch roads on the site. No shrimp were found in this pool during the 2009/2010 wet season survey and 2010 dry season survey.



Photo 4: Incidental California tiger salamander observation from Pool #16 on May 11th, 2010.



Photo 5: Looking south across the study area.



Photo 6: Looking north across the study area.

**APPENDIX D:
SEPTEMBER 2010 DRY SEASON SURVEY DATA**

**APPENDIX D:
SEPTEMBER 2010 DRY SEASON SURVEY DATA**