

APPENDIX G-5

2007 and 2010 Wet Season Large Branchiopod Survey Reports

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90-DAY SURVEY REPORT

2007 WET SEASON LARGE BRANCHIOPOD SURVEYS

HERCULES FERRY INTERMODAL TERMINAL PROJECT

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1.0 INTRODUCTION

This is a '90-day' survey report presenting the methods and results of wet season large branchiopod surveys conducted by Vollmar Consulting during the 2006/2007 winter-spring season on the proposed Hercules Ferry Intermodal Terminal project site. The purpose of the surveys was to assist in determining the presence or presumed absence of federally-listed large branchiopods (fairy and tadpole shrimp) in seasonal water features occurring within and adjacent to the boundaries of the proposed project.

The U.S. Fish and Wildlife Service (USFWS) survey protocol requires either two years of wet season surveys or one year of wet season surveys and one dry season survey (soil analysis) to determine presence or presumed absence of federally-listed large branchiopods from a study site (USFWS 1996). The surveys summarized in this report represent one year of wet season surveys. Dry season sampling will be conducted this year by Vollmar Consulting.

2.0 BACKGROUND INFORMATION

2.1. Project Location and General Environmental Setting

The project site is located in the City of Hercules, in western Contra Costa County on the Mare Island USGS 7.5' quadrangle map (**Figure 1**). The project site is located adjacent to San Pablo Bay and includes associated tidal marsh wetlands along the bayward edges of the site. Much of the remainder of the site was historically industrial and now consists of rubble, concrete pads and other debris remaining from the demolished structures. Vegetated upland areas are dominated by invasive grasses and forbs. The site is bisected by the Southern Pacific railroad right-of-way which is generally devoid of vegetation and consists of compacted dirt and gravel. Elevations on the site range from approximately sea level to 10 feet above sea level. Representative photographs of the project site are included in **Appendix A**.

2.2. Description of Survey Area

The survey area included a total of 20 freshwater seasonal pools considered to provide potentially suitable habitat for fairy/tadpole shrimp. Specifically, the water features surveyed included 19 un-vegetated puddles within the compacted dirt of the railroad right-of-way and one large seasonal pool approximately 100 feet east of the right-of-way, along the edge of a construction zone. All of the pools are presumed to be of anthropogenic origin. The location of the water features surveyed is shown in **Figure 2**.

Seasonal wetlands occur within a drainage ditch adjacent to the railroad right-of-way. These areas were choked with bristly ox-tongue (*Picris echioides*) and poison hemlock (*Conium maculatum*) to the degree that sampling with a dip net was not feasible. Additional seasonal wetlands occurred along the edge of a constructed berm. All of these wetlands were flashy and contained standing water for no longer than several days following large storm events. Given the above, these seasonal wetlands did not provide suitable habitat for federally-listed branchiopods and were not included in the survey area.

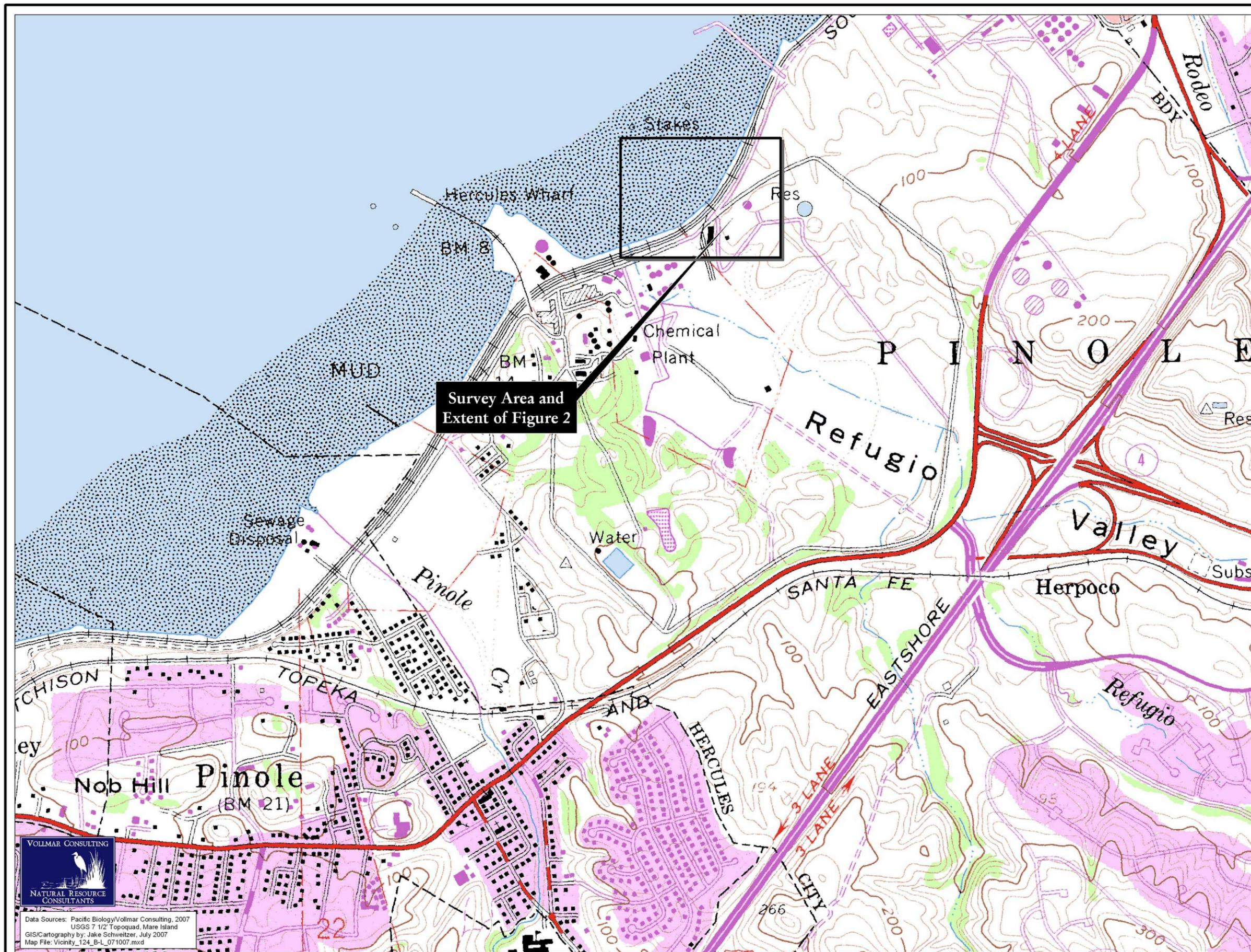
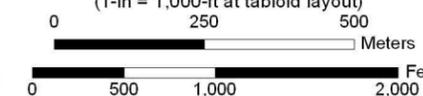


FIGURE 1
Regional Vicinity Map
 Hercules Ferry Terminal
 Contra Costa County, California



1:12,000
 (1-in = 1,000-ft at tabloid layout)



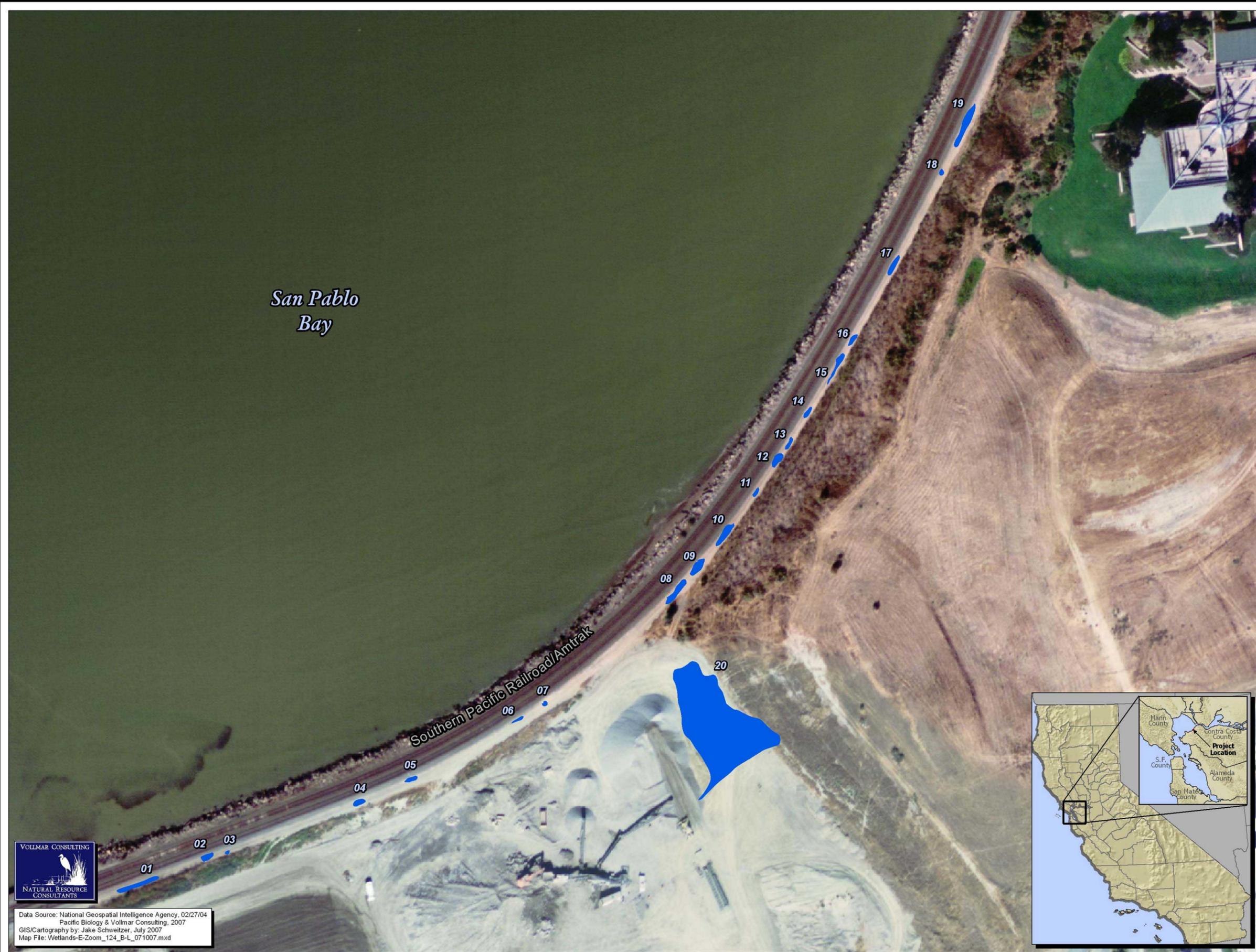
Data Sources: Pacific Biology/Vollmar Consulting, 2007
 USGS 7 1/2" Topoquad, Mare Island
 GIS/ Cartography by: Jake Schweitzer, July 2007
 Map File: Vicinity_124_B-L_071007.mxd

FIGURE 2
Surveyed Pools
Large Branchiopod Surveys
2006 - 2007 Wet Season

Hercules Ferry Terminal
Contra Costa County, California

Legend

 Surveyed Seasonal Pool (0.335 ac.)

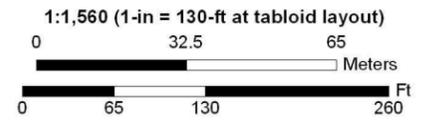


San Pablo Bay

Southern Pacific Railroad/Amtrak



Data Source: National Geospatial Intelligence Agency, 02/27/04
Pacific Biology & Vollmar Consulting, 2007
GIS/Cartography by: Jake Schweitzer, July 2007
Map File: Wetlands-E-Zoom_124_B-L_071007.mxd



2.3. Other Branchiopod Surveys Conducted in Adjacent Areas

Wet season surveys for federally-listed large branchiopods were conducted in 2003-2004 immediately to the southwest of the current survey area by Condor Country Consulting. No federally-listed branchiopods were found during the surveys. The 90-Day Survey Report was submitted to the USFWS and is included as **Appendix C**.

2.4. Documented Occurrences of Federally-Listed Branchiopods in the Project Area

Federally-listed vernal pool branchiopods have not been documented in the project area. Based on a review of the California Natural Diversity Data Base (CNDDDB), the closest occurrence of a federally-listed vernal pool branchiopod species (i.e., vernal pool fairy shrimp) is from approximately 12 miles north of the project site.

2.5. Project Personnel

Josh Phillips served as the senior biologist for the project, conducting background reviews and field surveys and preparing the survey report. Mr. Phillips holds a Section 10(a)(1)(A) recovery permit for conducting surveys of federally-listed large branchiopods (Permit Number TE-086595-0). Jake Schweitzer of Vollmar Consulting assisted with most field surveys, reviewed the report and managed all GIS data and map preparation. John Vollmar of Vollmar Consulting provided final review of the survey report.

3.0 METHODS

Mr. Phillips contacted the USFWS to request authorization to conduct protocol surveys for federally-listed large branchiopods. Mr. Mike Thomas of the USFWS provided authorization to conduct the surveys via email on November 28, 2006.

The project site was monitored to determine when the pools had filled. Surveys were initiated on December 19, 2006; this was approximately two weeks after the pools had filled to a depth greater than 3 cm. During the first survey, all pools identified as potential habitat for large branchiopods were assigned a number and the boundaries were mapped using a professional GPS unit with sub-meter accuracy (Trimble GeoXT). Surveys were conducted every two weeks thereafter until March 28, 2007 when all pools were dry. Intermediate surveys were conducted on January 2, 17, and 30, February 13 and 28, and March 14. Data from each survey were collected on data sheets which are included in **Appendix B**.

All surveys were conducted according to 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). Individual pools were surveyed for large branchiopods by first visually inspecting the pool and then by dip netting. The dip nets had a 12-inch round diameter with a mesh size no greater than one-eighth inch. After the completion of each sample sweep, the contents of the net were examined for large branchiopods and macroscopic aquatic invertebrates. Temperature and depth data was recorded for each pool.

4.0 RESULTS

No federally-listed or rare branchiopods were found during the 2006/2007 wet season surveys. **Table 1** provides summary data on the 20 surveyed pools including feature number, habitat type, maximum ponding area, ponding duration, and associated macroinvertebrates. Of the 20 aquatic features surveyed, 19 are located within the railroad right-of-way. These pools occur within depressions in compacted dirt and gravel areas and are generally devoid of vascular vegetation. These pools reached a maximum depth of six inches, with most pools not exceeding three inches in depth. Standing water persisted for a relatively short duration and all of the pools dried at least once during the survey period (see **Appendix B**). The absence of aquatic invertebrates and amphibians from these pools is likely attributable to their shallow depth, short duration of ponding, and lack of vegetation.

Pool # 20 is located approximately 100 feet to the east of the right-of-way. This pool is relatively large (11,575 sq ft), deep (maximum depth of 11 inches), and holds water for a relatively long duration (standing water was present from December 19, 2006, through March 14, 2007). Cladocera (daphnia) and corixidae (backswimmers) were regularly observed in the pool.

One common species of fairy shrimp, the versatile fairy shrimp (*Branchinecta lindahli*), was observed during the surveys in low numbers within two pools (#1 and #12). Versatile fairy shrimp is found in a variety of seasonal aquatic habitats in elevations ranging from just above sea level to over 1,600 meters. The species is tolerant of varied water chemistry and its range extends throughout California from Lassen County to San Diego County (Eriksen & Belk 1999).

Table 1. Summary data for wet season vernal pool large branchiopod surveys conducted during the 2006/2007 field season on Hercules Ferry Intermodal Transit Project Site.

Pool Number	Habitat Type ¹	Max Ponding Area (sq. ft.)	Max Ponding Depth (in.)	Ponding Duration ²	Large Branchiopods					Ostracods	Copep			Cladocera	Coleop		Hemip		Diptera			Lymnaeidae	Microturbularia	Trichoptera	Hyla regilla
					<i>Lepidurus packardii</i>	<i>Branchinecta lynchi</i>	<i>Branchinecta conservatio</i>	<i>Branchinecta lindhali</i>	<i>Lindertiella occidentalis</i>		Calanoida	Cyclopoda	Dytiscidae		Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae						
1	P	326.7	3	M				X																	
2	P	125.7	1	S																					
3	P	25.2	2	S																					
4	P	115.6	4	S																					
5	P	90.9	4	S																					
6	P	55.8	2	S																					
7	P	41.1	3	S																					
8	P	302.0	2	S																					
9	P	242.7	5	S																					
10	P	279.5	2	S																					
11	P	59.4	2	S																					
12	P	177.1	4	S				X																	
13	P	82.5	3	S																					
14	P	85.0	5	S																					
15	P	201.8	6	S																					
16	P	95.0	4	S																					
17	P	177.5	3	S																					
18	P	45.1	4	S																					
19	P	473.4	5	S																					
20	P	11,575.2	11	L								X					X								

Notes:
 1. Habitat types: P = puddle
 2. Ponding duration: S = short, M = moderate, L = long.

5.0 CONCLUSIONS

No federally-listed vernal pool branchiopods were observed during the 2006/2007 wet season surveys. Potentially suitable habitat on the site is limited to artificially created depressions within and adjacent to the railroad right-of-way. This habitat lacks many characteristics of natural vernal pools such as vernal pool-associated vegetation, aquatic vertebrates, and invertebrate diversity.

Versatile fairy shrimp, a common and widespread species tolerant of various habitat conditions, was observed in two puddles on the project site. The versatile fairy shrimp is well adapted to the relatively short-lived shallow pools on the project site because it develops quickly and can cycle through several generations in one wet season. This species was also observed during the surveys conducted in 2003/2004 adjacent to the southwest of the project site. Versatile fairy shrimp is not state- or federally-listed as Threatened or Endangered or otherwise considered to be rare.

The 2006-2007 surveys were conducted during a period of below average rainfall. Nonetheless, it is considered unlikely that more abundant rainfall would have altered the survey findings for the following reasons: (1) available habitat for federally-listed vernal pool branchiopods is marginal given that the pools lack characteristics of natural vernal pools; (2) the closest known occurrence of a federally-listed vernal pool branchiopod is located approximately 12 miles north of the project site; (3) the survey findings are consistent with the findings of the surveys conducted adjacent to the site in 2003-2004 (which were conducted during an average rainfall year); (4) there was sufficient rain in the project region such that most sampled pools remained continuously ponded for at least three weeks during the sampling period; and (5) versatile fairy shrimp are tolerant of varied water chemistry and ponding duration and often occur in areas not suitable for other fairy or tadpole shrimp species.

5.0 REFERENCES

- California Natural Diversity Data Base (CNDDB). 2007. Rare species occurrence records in the vicinity of the Hercules Ferry Intermodal Terminal project site. California Department of Fish and Game, Sacramento, CA.
- Condor Country Consulting. 2004. 2003-2004 Wet Season Branchiopod Survey Report, Hercules Train Station, Contra Costa County, California.
- Eriksen and Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Eureka, CA.
- USFWS. 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.

APPENDIX A – REPRESENTATIVE SITE PHOTOS

(Photo 1: south facing, after heavy rains)



(Photo 2: south facing)



(Photo 3: north facing)



(Photo 4: Pool 20, south facing)



APPENDIX B – DATA SHEET

Hercules Ferry Intermodal Terminal Project: Suvery #7

Pool No.	Date: 3/14/07	Surveyors ¹ JP/JS	Temp C	SpC (mS/cm)	DO (mg/L)	pH (units)	Salinity (ppt)	DO% Saturation (%)	Turbidity (NTU)	Max Depth (in)	B. lindahli	Large Branchiopods ³							Ostracods	Copep		Cladocera	Coleop		Hemip		Diptera		Lymnaeidae	Microturbellaria				Amph ⁴			
												LEPA	BRLY	BRCO	BRMA	LIOC	CYCA	BRSP		Calanoida	Cyclopoda		Dytiscidae	Hydrophilidae	Notonectidae	Corixidae	Culicidae	Chironomidae						PSRE			
1										0																											
2										0																											
3										0																											
4										0																											
5										0																											
6										0																											
7			16							2																											
8										0																											
9										0																											
10										0																											
11			17							1																											
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15										0																											
16										0																											
17										0																											
18										0																											
19										0																											
20			15							8													C														

1. Surveyors:

JP Josh Phillips
 JS Jake Schweitzer
 CP Cassie Pinnel

2. Habitat Type/Modifiers:

P = Puddle
 SW = Seasonal Wetland

3. Large Branch/Amphib Acronyms:

LEPA = *Lepidurus packardii*
 BRLY = *Branchinecta lynchi*
 BRCO = *Branchinecta conservatio*
 BRMA = *Branchinecta mackini*
 LIOC = *Lindieriella occidentalis*
 CYCA = *Cyzicus californicus*
 BRSP = *Branchinecta* sp.
 PSRE = *Pseudacris regilla*

Abundance Ratings:

R = Rare (< 2 Individuals)
 NC = Not Common (3-10 Individuals)
 C = Common (11-50 Individuals)
 VC = Very Common (50 - 100 Individuals)
 A = Abundant (> 100 Individuals)
 X = Present but not observed in 1 meter sample.
 CA = Carapace only for LEPA
 P = Present; observed during non-quantitative sampling

APPENDIX C – 2003/2004 Wet Season Survey Report of Adjacent Area

Ninety-Day Findings Report
USFWS Permit # TE-016591-3

2003-2004 Wet Season Branchiopod Survey Report

Hercules Train Station Contra Costa County, California

October 15, 2004

Prepared for:
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Prepared by:
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INTRODUCTION

The Hercules Train Station project, located in western Contra Costa County on the Mare Island USGS 7.5' topographic quadrangle map, proposes to build a new Amtrak commuter train station adjacent to the existing Union Pacific rail line. Impact Sciences Inc., environmental consultants for the City of Hercules, requested that Condor Country Consulting perform a wet season survey for federally listed vernal pool branchiopods after branchinectid fairy shrimp were observed at the site during a habitat assessment. Determining the presence or absence of listed branchiopods is necessary to meet the requirements of CEQA.

Wendy Weber of Condor Country Consulting conducted surveys to determine the species and distribution of vernal pool branchiopods within the proposed project boundaries. Josh Philips of Impact Sciences, working under my direct supervision, and Jeff Alvarez of The Wildlife Project, working independently under his own permit, assisted with the survey effort.

Verbal approval to conduct the surveys was received from the U.S. Fish and Wildlife Service on December 17, 2003. Written authorization was received via email on July 9, 2004 (Appendix A).

The following wet season report is submitted in accordance with the conditions of U.S. Fish and Wildlife Service Permit TE-016591-3 (Appendix A). The format of the report follows the format outlined in 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"(Guidelines) (USFWS 1996).

METHODOLOGY

Prior to commencing surveys, a habitat assessment was performed. Suitable habitat was identified during the prior wet season. Any additional ponds observed during the 2003-2004 wet season were included in the survey. A total of 27 pools were identified and surveyed in the 2003-2004 wet season (Figure 1).

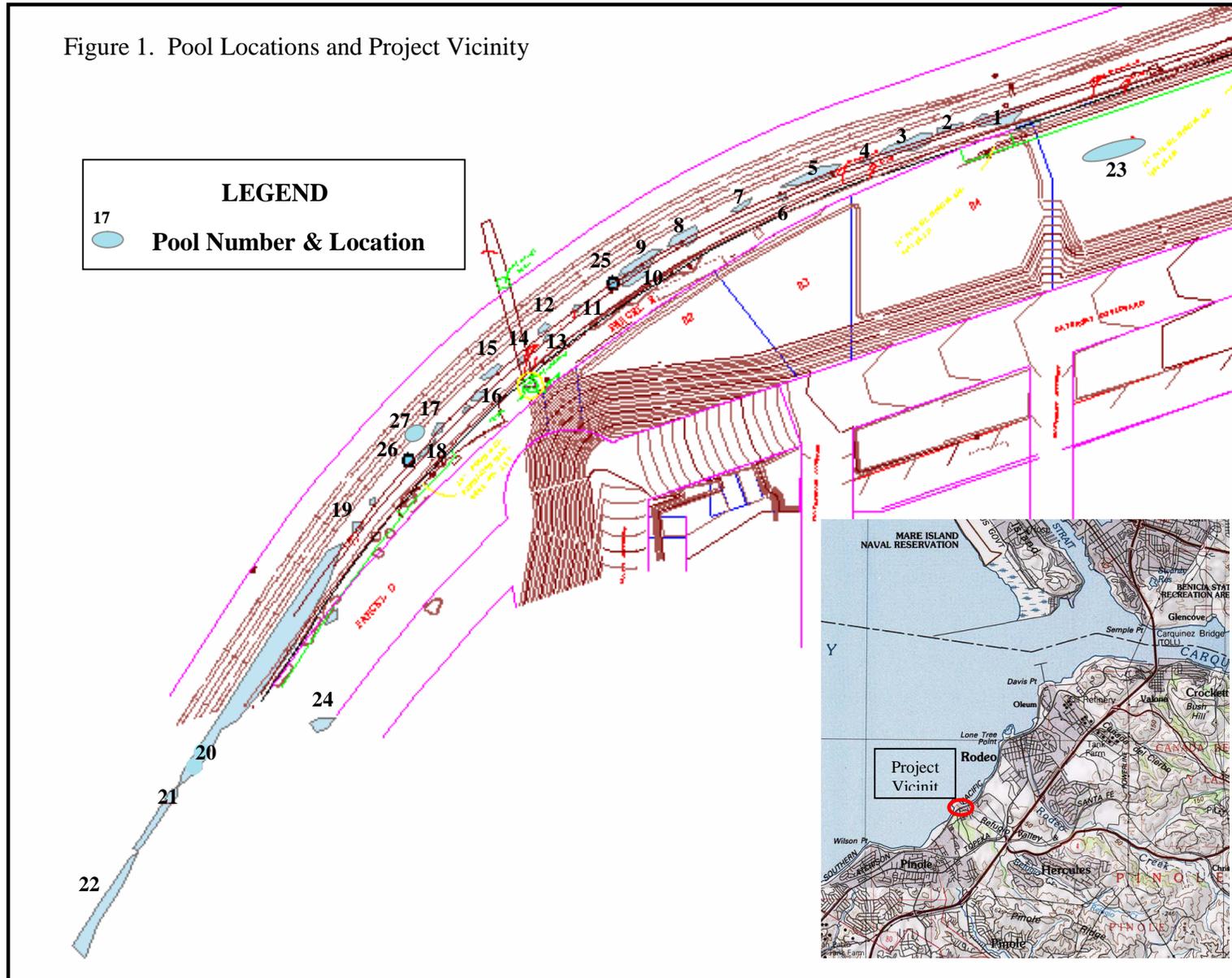
Populations of listed vernal pool branchiopods are not known from the area. The nearest population of a listed branchiopod, vernal pool fairy shrimp (*Branchinecta lynchi*), is 13 miles north of the site, across San Pablo Bay (CNDDDB 2004).

Surveys were conducted according to the methods described in the Guidelines (USFWS 1996). Surveys were initiated on December 18 and 19, 2003; approximately two weeks after some pools on the site had filled to a depth greater than 3 cm. Surveys were conducted every two weeks thereafter until March 31, 2004 when all pools were either dry or had been inundated for at least 120 consecutive days. Intermediate surveys were

Hercules Train Station 2003-2004 Wet Season Branchiopod Survey Report

conducted on January 7 and 21, February 4 and 20, and March 3 and 17. Each day's survey data were collected on data sheets (Appendix B).

Figure 1. Pool Locations and Project Vicinity



SURVEY RESULTS

No listed vernal pool branchiopods were detected during the 2003-2004 wet season survey effort. The distribution of all invertebrates identified during these surveys is described in this section. A habitat description of the site is also included. Data collected during each field visit, including air temperature, water temperature, and pool dimensions are included on the data sheets in Appendix B.

The locations of the sampled pools are shown in Figure 1. Each pool's dimensions, depth, habitat type, location, and faunal composition identified during surveys are shown in Table 1. Twenty-five of the twenty-seven pools are puddles formed in the rail access road roadbed, a road that is somewhat heavily traveled by autos, dirt bikes, and pedestrians. The remaining two puddles are to the east and uphill of the rail access road in areas where previous construction activities have compacted the soil and created depressions.

Because the project area is limited to the railroad right-of-way, there is little upland vegetation on the site. The right-of-way is primarily comprised of ballast rock and barren soil. Adjacent properties to the south-east are predominantly non-native annual grassland and eucalyptus forest. To the north-west is the San Pablo Bay, less than 100 meters from the train tracks. This area contained no upland habitat, but abundant estuarian vegetation in sheltered areas with mud flats. Within the right-of-way aquatic vegetation, other than algae, was absent in all twenty-five of the pools in the road. Pools 23 and 24 also contained curly dock (*Rumex* sp.) and upland grass species (e.g. *Avena* sp.) that eventually perished from continuous inundation.

The one species of vernal pool branchiopod occurring on the site is described in detail below and the aquatic and semi-aquatic invertebrates that were identified during sampling are listed. The distribution of these species among the pools sampled is shown in Table 1 and on the data sheets in Appendix B. No listed fairy shrimp (Anostraca) or tadpole shrimp (Notostraca) were observed on the site.

Versatile Fairy Shrimp

As alluded to by its name, versatile fairy shrimp (*Branchinecta lindahli*), is found in a variety of vernal habitats with elevations ranging from just above sea level to over 1,600 meters, and ranging widely throughout California from Lassen to San Diego Counties (Eriksen & Belk 1999). Even versatile in its tolerance for varied water chemistry, its only observed preference is for pools in arid environments. Within the study area this species has been identified from all but four of the pools. Individuals were observed to be in a reproductive state as early as the first field visit. Numbers of individuals per pool for this species ranged from less than ten to several hundred, but generally numbered in the hundreds in most pools.

Hercules Train Station 2003-2004 Wet Season Branchiopod Survey Report

Table 1. Hercules Train Station Pool Attributes

Pool #	Dimensions (meters)*	Depth (cm)*	Habitat Type	<i>B. lindahli</i>	Immature F.S.	Chironomidae	Cladocera	Copepoda	Corixidae	Culicidae	Dytiscidae	Ostracoda
1	3X10	9	Puddle	X		X	X	X				X
2	1X5	9	Puddle	X		X		X	X	X		X
3	7X20	15	Puddle	X		X	X		X			X
4	2X10	3	Puddle	X			X	X		X		X
5	3X15	11	Puddle	X					X	X		X
6	1X2	8	Puddle	X		X				X		X
7	1X4	4	Puddle		X		X					
8	4X10	10	Puddle	X		X	X		X	X		X
9	3X15	8	Puddle	X		X	X					X
10	4X15	7	Puddle	X			X				X	X
11	1.5X2	11	Puddle	X		X	X			X	X	
12	1X8	2	Puddle	X		X						
13	0.5X3	5	Puddle	X		X						
14	2X4	13	Puddle	X		X						X
15	2X8	3	Puddle	X		X	X					
16	4X9	9	Puddle	X		X		X				X
17	4X6	6	Puddle	X			X					
18	1X6	5	Puddle	X								
19	3X3	5	Puddle	X		X	X	X				X
20	8X150	20	Puddle	X		X	X	X	X	X	X	X
21	2X23	12	Puddle	X		X	X	X		X		X
22	2X14	15	Puddle	X			X	X	X		X	X
23	10X15	20	Puddle			X	X	X	X	X	X	
24	3X8	12	Puddle					X				X
25	1X1.5	4	Puddle	X		X	X	X				X
26	0.5X1	5	Puddle									
27	2X6	4	Puddle									

*Maximum measured during entire survey period.

No vertebrates were identified using the pools within the project area although Pacific treefrogs (*Hyla regilla*) were heard in close proximity to the pools at the south end of the site. Many invertebrates were identified during sampling, including Copepods, Corixids (water boatmen), Dyticids (diving beetle larvae), Cladocerans (water fleas or daphnia), Culicids (mosquito larvae), Ostracods (seed shrimp), and Chironomids (midge larvae). All of these invertebrates are typical of the fauna associated with astatic aquatic habitats.

Hercules Train Station 2003-2004 Wet Season Branchiopod Survey Report

Pools 1 thru 25 filled within the first two survey rounds. Of these, all but seven pools held water through the first six rounds of surveys. Pools 26 and 27 only filled on fourth round of surveys and only held water for one and two more surveys, respectively. All pools that were not filled for 120 consecutive days were dry within the week following the last survey and remained so through the remainder of the season.

CONCLUSIONS

Listed species of branchiopods are not known from the area. Habitat on the site is poor, artificially created by soil compaction due to previous construction activities and/or heavy vehicle use along the dirt right-of-way. As a result the habitat lacks many characteristics of natural vernal pools such as diverse and highly specialize vernal pool vegetation, aquatic vertebrates, and some of the diversity of invertebrates typical of vernal pools. However, railroad rights-of-way in California often provide habitat for branchiopods, especially *B. lynchi*, and this right-of-way is no exception.

Although no evidence of listed branchiopods was found during the wet season survey, another branchinectid, *B. lindahli* was abundant on the site. Characteristic of this quickly developing shrimp that can cycle through several generations in one wet season, it took advantage of the shallow pools that dried and refilled several times throughout the wet season, as well as those that remained inundated. As such, it is well suited to the habitat present along the railroad right-of-way in Hercules.

Ultimately, because no listed branchiopods were observed during this wet season survey, a dry season survey will be performed this year to complete the requirements of the Guidelines and to assist in determining whether listed branchiopods are present on the proposed Hercules Train Station site.

REFERENCES

- CNDDDB. 2004. Large branchiopod occurrence records for the Mare Island 7.5 minute USGS quadrangle and many surrounding quads. California Natural Diversity Data Base, Department of Fish and Game, Sacramento, CA
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- Smith, D. G. 2001. Pennak's freshwater invertebrates of the United States (4th ed.). John Wiley & Son, Inc., New York, NY. 638p.
- U.S. Fish and Wildlife Service (USFWS). 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. USFWS Sacramento Field Office, Sacramento, CA.

July 30, 2010

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Subject: Report of Findings from Wet Season Surveys for Federally-Listed Vernal Pool Branchiopods for the Hercules Intermodal Transit Project

INTRODUCTION

On behalf of the City of Hercules, HDR Engineering, Inc. (HDR) has conducted wet season vernal pool branchiopod surveys for the Hercules Intermodal Transit Project site (proposed project/project site) located in Contra Costa County, CA. The purpose of the survey was to determine presence/absence of Federally-listed vernal pool branchiopods on the project site. The surveys were conducted by Section 10(a) permitted biologists LaTisha Burnaugh, M.S. and Stephen Stringer, M.S., with assistance from Sean Marquis and Cristina Ramirez, under the authority of Federal Fish and Wildlife Permit No. TE-198922-0 held by Ms. Burnaugh and Federal Fish and Wildlife Permit No. TE-141359-0 held by Mr. Stringer.

The surveys were conducted according to protocols outlined in 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* (Guidelines).” Due to site access restrictions, modifications to the timing of the surveys were made in consultation with USFWS. These modifications are discussed below. This document is the 90-Day Report of Findings required by Item VII of the Guidelines, which summarizes the results of the surveys. Ryan Olah, USFWS Coast Branch Chief, authorized wet season surveys for the project site via email on November 18, 2009.

The project site is located in the City of Hercules, in western Contra Costa County within Township 2 North, Range 4 West, in an unsectioned portion of the Mare Island USGS 7.5’ quadrangle (**Attachment 1; Figures 1 and 2**). The project site is located adjacent to San Pablo Bay and is bisected by the Southern Pacific railroad right-of-way. Elevations on the site range from approximately sea level to 10 feet above sea level. Vegetation communities within the site are classified as California cordgrass tidal marsh, pickleweed tidal marsh, intertidal mudflat, brackish stream, pickleweed brackish marsh, willow riparian forest, freshwater wetland swale, cattail marsh, seasonal wetland, freshwater intermittent drainage, and unvegetated ponded depressions.

METHODOLOGY

Due to site access restrictions, wet season surveys could not be initiated within two weeks of the first inundating rainfall event. HDR contacted USFWS to discuss beginning the surveys as soon as possible once access permission was granted. On December 7, 2009, HDR was given verbal authorization from USFWS to commence the surveys once access permission was granted (phone conversation between Serge Stanich (HDR) and Ben Solvesky (USFWS)). HDR was granted access permission on February 11, 2010 to survey portions of the project site outside of the railroad right-of-way (ROW) and commenced surveys in those areas of the project site on February 16, 2010. HDR was granted access permission to the railroad ROW February 23, 2010 and commenced surveys of the entire project site on March 2 and 3, 2010. Surveys were discontinued after May 6, 2010 as HDR received correspondence from Stephanie Jentsch, USFWS biologist, on May 14, 2010 allowing discontinuation of the surveys.

A total of seven surveys were conducted on the following dates: February 16, March 2 and 3, March 16 and 17, March 31 and April 1, April 12 and 14, April 23, and May 6. Survey methodology followed “wet season sampling” protocols outlined in the Guidelines. All potential vernal pools within the survey area boundaries were visited during each of the survey events, except for the February 16 survey. As discussed above, only the pools outside of the railroad ROW were surveyed during the February 16 survey due to restricted access on that date. A total of 54 pools were surveyed within the site (Attachment 1; **Figure 3**). The feature marked as 33 on **Figure 3** was removed from the surveys as it did not display inundation during any of the surveys. All of the pools were visually inspected during each survey event and all inundated wetlands were dip netted. Each pool was flagged with its corresponding number for identification. Required data were collected and documented on the attached U.S. Fish and Wildlife Service Vernal Pool Data Sheets for Wet Season Surveys (**Attachment 2**). Photos of representative vernal pools on the site were taken and are included as **Figures 4a** and **b**. As required by the special terms and conditions of the Permit, a signed statement certifying the accuracy of this report is included.

DESCRIPTION OF VERNAL POOLS SAMPLED

Forty-seven unvegetated ponded depressions, or “puddles”, occur within the railroad ROW. The puddles occur within depressions in compacted dirt and gravel. They are generally devoid of vascular vegetation. The puddles reach a maximum depth of six inches in the winter, with most pools not exceeding three inches in depth. Seven pools (pools 4,5,6,7,8,10,15, 39, and 42) occur outside of the railroad ROW in disturbed upland areas. The seven pools outside of the railroad ROW had limited hydrophytic vegetation.

RESULTS

No federally-listed vernal pool branchiopods were observed within the site. Although not all of the vernal pools in the site were inundated continuously for 120 days, many were inundated for a sufficient length of time for vernal pool branchiopods to hatch and complete a life cycle if they were present. This is evidenced by the fact that the wetland features onsite contained a high diversity of aquatic invertebrates, including versatile fairy shrimp (*Branchinecta lindahli*). Other invertebrates observed within the pools included: Corixidae (water boatmen), Cladocerans (water fleas), Ostracods (seed shrimp), Dytiscidae (predaceous diving beetle), flat worms, fly larvae, mosquito larvae, and caddisfly larvae. These species were observed in orders of magnitude ranging from the 10's to the 10,000's. Pacific chorus frog tadpoles and mallard ducks were also observed in some of the pools.

SUMMARY

This report documents completion of a “wet season” survey for federally-listed vernal pool branchiopods for the Hercules Intermodal Transit site. No federally-listed vernal pool branchiopods were found on the project site. This report also fulfills the 90-day reporting requirements stated in Item VII of the Guidelines for Federal Fish and Wildlife Permit No. TE-198922-0 held by LaTisha Burnaugh and Permit No. TE-141359-0 held by Stephen Stringer.

Sincerely,

LaTisha Burnaugh

Attachments:

Attachment 1: Project Figures

Attachment 2: Wet Season Survey Datasheets

Copy:

Ryan Olah, Coast Branch Chief, U.S. Fish and Wildlife Service

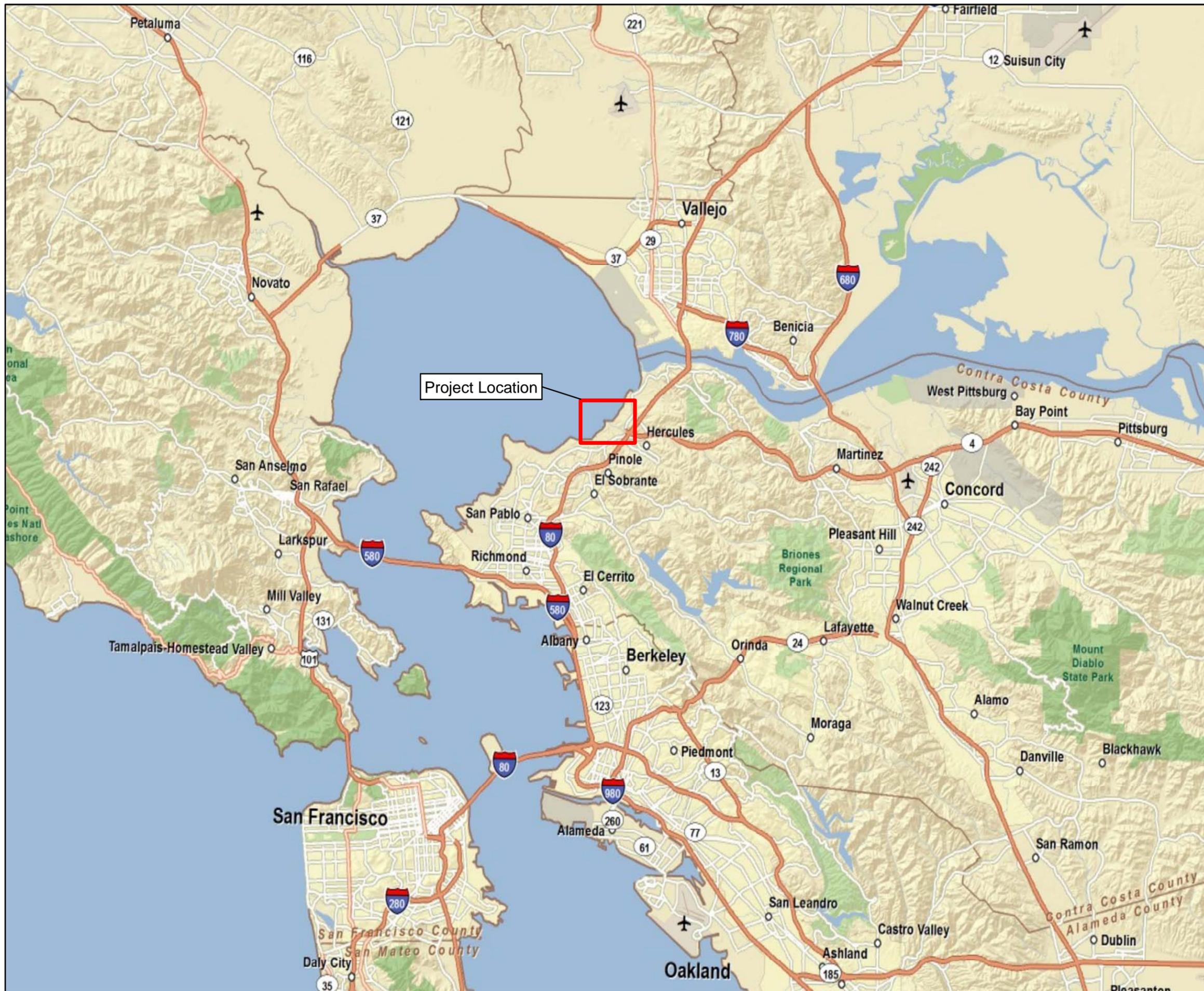
Signature Page

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

 Stephen Stringer (Permit No. TE-141359-0)

 LaTisha Burnaugh (Permit No. TE-198922-0)

APPENDIX A
Figures



**Preliminary
Subject to Change**

1 in = 500 ft (at tabloid layout)

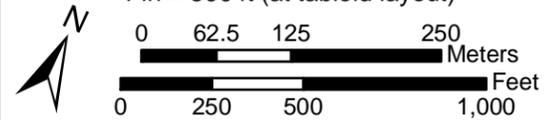


Figure 1: Regional Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.

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Legend

— EIR/EIS Boundary

**Preliminary
Subject to Change**

1 in = 2,500 ft (at tabloid layout)

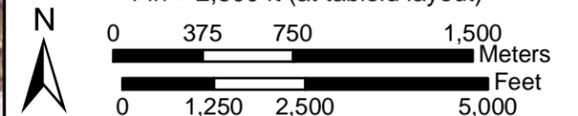


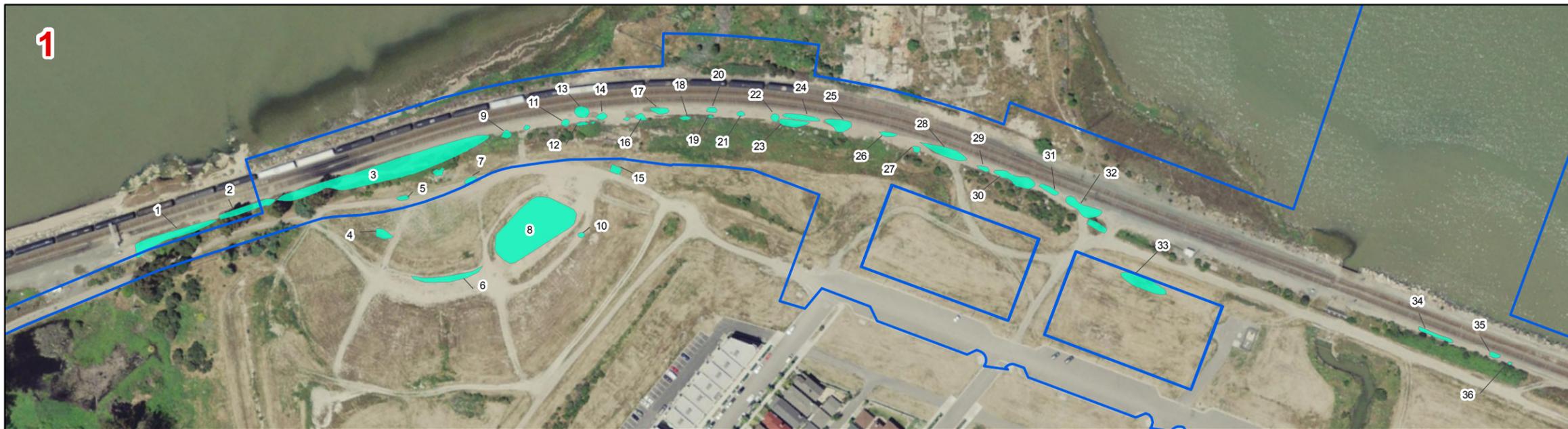
Figure 2: Site and Vicinity Map

City of Hercules
Hercules Intermodal Transit Center
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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Legend

- Project Boundary
- Fairy Shrimp Habitat Delineation

Preliminary
Subject to Change

1 in = 200 ft (at tabloid layout)

0 25 50 100

Meters

0 100 200 400

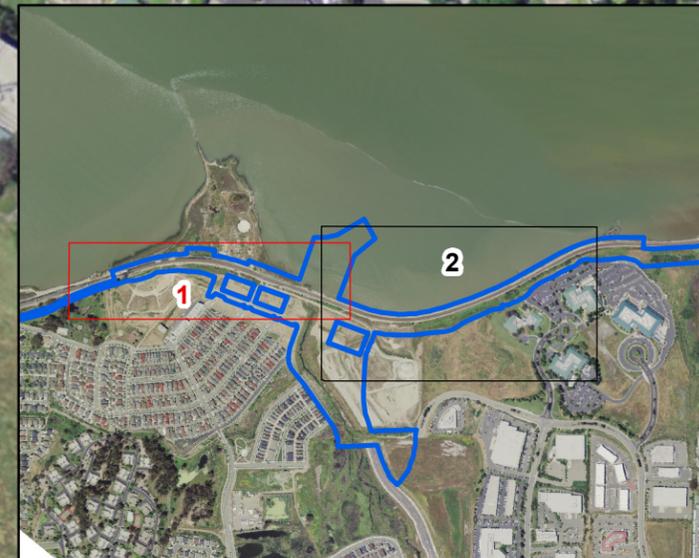
Feet

Figure 3: Fairy Shrimp Habitat Map

City of Hercules
Hercules Intermodal Transit Facility
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.

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FIGURE 4A: SITE PHOTOGRAPHS



Photo 1. Pool 8, taken looking east.



Photo 2. Pool 23, representative photo of a dry vernal pool within the railroad right-of-way (ROW).



Photo 3. Pool 42, taken looking west.



Photo 4. Pool 43, taken looking west. Representative photo of an inundated vernal pool in the ROW.



Photo 5. Pool 15, taken looking east.



Photo 6. Pool 5, taken looking south.

FIGURE 4B: SITE PHOTOGRAPHS



Photo 7. Pool 4, taken looking east.



Photo 8. Pool 6, taken looking east.



Photo 9. Pools 17 and 18, taken looking north. Representative photo of dry vernal pools in the ROW.



Photo 10. Pool 3, taken looking south. Representative photo of a dry vernal pool in the ROW.



Photo 11. Pool 13 and 14, taken looking northwest. Representative photo of dry vernal pools in the ROW.



Photo 12. Pool 1, taken looking southwest. Representative photo of dry vernal pool in the ROW.

APPENDIX B
Wet Season Data Sheets

Data Sheets are Available upon Request