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September 29, 2009

Mr. Mark Fugler  
Regulatory Division  
U.S. Army Corps of Engineers, Sacramento District  
1325 J Street  
Sacramento, CA 95814

Subject: Mariposa Energy Project (File # SPK-2009-01261), Request for Waters of the U.S.  
Jurisdictional Determination

Dear Mr. Fugler:

Please find enclosed one (1) copy of the formal Wetland Delineation Report for the Mariposa Energy Project (MEP). On behalf of my client, Mariposa Energy, I request a waters of the U.S. Jurisdictional Determination at your earliest convenience. Either I and/or our wetlands specialist will attend your site visit to help familiarize you to the project area and answer any questions. In the event that the U.S. Army Corps of Engineers takes jurisdiction over any of the onsite wetlands and waters, I anticipate a federal nexus for MEP for formal consultation under Section 7 of the Endangered Species Act.

The MEP is a proposed natural gas fired, peaking facility with a generating capacity of 200-megawatts. The proposed project site is in northeastern Alameda County, in an unincorporated area located approximately 7 miles northwest of Tracy, 7 miles east of Livermore, 6 miles south of Byron, and approximately 2.5 miles west of the community of Mountain House in San Joaquin County. The facility would be located southeast of the intersection of Bruns Road and Kelso Road on a 10-acre portion of a 158-acre parcel immediately south of the Pacific Gas and Electric Company (PG&E) Bethany Compressor Station and 230-kilovolt (kV) Kelso Substation. A complete description of MEP is provided in the California Energy Commission Application for Certification available online at: <http://www.energy.ca.gov/sitingcases/mariposa/documents/index.html>

Please feel free to contact either Doug Urry (CH2M HILL Project Manager) at (916) 286-0348 or me at (408) 839-2402 or todd.ellwood@ch2m.com with any questions. We look forward to meeting you at the project site.

Sincerely,

CH2M HILL

A handwritten signature in cursive script that reads "Todd Ellwood". The signature is written in black ink on a white background.

Todd Ellwood  
Project Biologist

Enclosure

cc: Doug Urry, CH2MHILL  
Russell Huddleston, CH2M HILL  
Bo Buchynsky, Mariposa Energy, LLC

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*Draft Report*

# **USACE Delineation of Wetlands and Other Waters for the Mariposa Energy Project**

Prepared for  
**Mariposa Energy, LLC**

July 2009

**CH2MHILL**

155 Grand Avenue  
Suite 1000  
Oakland, CA 94612



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# Acronyms and Abbreviations

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BBID	Byron Bethany Irrigation District
BIOS	Biogeographic Information and Observation System
CFR	Code of Federal Regulations
cmp	corrugated metal pipe
CWA	Clean Water Act
FAC	facultative plant species
FACW	facultative wetland plant species
GPS	Global Positioning System
HUC	Hydrologic Unit Code
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	obligate wetland plant species
PEMF	Palustrine Emergent Semi-Permanently Flooded
PEMH	Palustrine Emergent Permanently Flooded
PG&E	Pacific Gas and Electric Company
USACE	United States Army Corps of Engineers
WRCC	Western Region Climate Center





## SECTION 1.0

# Introduction

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Mariposa Energy, LLC proposes to construct, own, and operate an electrical generating plant in unincorporated Alameda County, California. The Mariposa Energy Project (Project) will be a natural gas-fired, simple-cycle electrical generating facility rated at a nominal generating capacity of 200 megawatts.

Wetlands and other waters are ecological habitats that are protected under the Federal Clean Water Act (CWA). Activities that have the potential to discharge fill materials into “waters of the United States,” including wetlands, must be authorized by the U. S. Army Corps of Engineers (USACE). This report presents the results of a wetland delineation conducted for the proposed Mariposa Energy Project. The results presented in this report are preliminary, pending verification by USACE. Information on the Project location as well as a general description of the environmental setting follows. Study methods and results are provided in the following sections.

## 1.1 Project Location

The Project study area is in northeastern Alameda County, approximately 10 miles northwest of the City of Tracy, 12 miles northeast of Livermore, and 12 miles southeast of Brentwood (Figure 1-1). The Project study area is located in the northwest 1/4 of Section 1, Township 2S, Range 3E (Mount Diablo Base and Meridian). The facility will be located southeast of the intersection of Bruns Road and Kelso Road on a 10-acre portion of a 158-acre parcel (known as the Lee Property) immediately south of the Pacific Gas and Electric Company (PG&E) Bethany Compressor Station and 230-kV Kelso Substation (Figure 1-2). The Assessor’s parcel number is 099B-7050-001-10. The Project study area is located at 37° 47' 23.86" north latitude and 121° 36' 06.35" west longitude.

Linear features associated with the Project include a transmission line, natural gas pipeline, and service water line (Figure 1-2). The Project will interconnect to the Kelso Substation via a new 0.7-mile, 230-kV transmission line that will run north on the Lee Property, then across Kelso Road and into the existing substation. The natural gas pipeline will consist of approximately 580 feet of new 4-inch-diameter pipe that will run directly northeast from the Project study area to interconnect with PG&E’s high-pressure natural gas pipeline (Line 2), which is located on the Lee Property. A new gas metering station will be constructed on the Project study area. Service water will be provided from a new connection to the Byron Bethany Irrigation District (BBID) via a new pump station and a 6-inch-diameter, 1.8-mile-long pipeline placed in or along the east side of Bruns Road, from Canal 45 south to the Project study area.

## 1.2 Environmental Setting

The Project is located at the northeastern edge of the Eastern Hills subsection of the Central Valley Coast Range Ecological subregion (Miles and Goudey, 1998), immediately bordering the alluvial plain of the San Joaquin Valley to the east. Regionally, the landscape is characterized by low foothills along the northeastern edge of the Diablo Range. In the vicinity of the Project study area, this area is characterized by a series of gently rolling hills to the south and west with low terraces to the north and east. Elevation in the Project area ranges from approximately 75 to 175 feet above mean sea level with slopes ranging from approximately 2 to 12.5 percent. Drainage is generally to the east and north. The following sections provide a description of the terrestrial habitats, climate, regional hydrology, and soils.

### 1.2.1 Terrestrial Habitats and Land Use

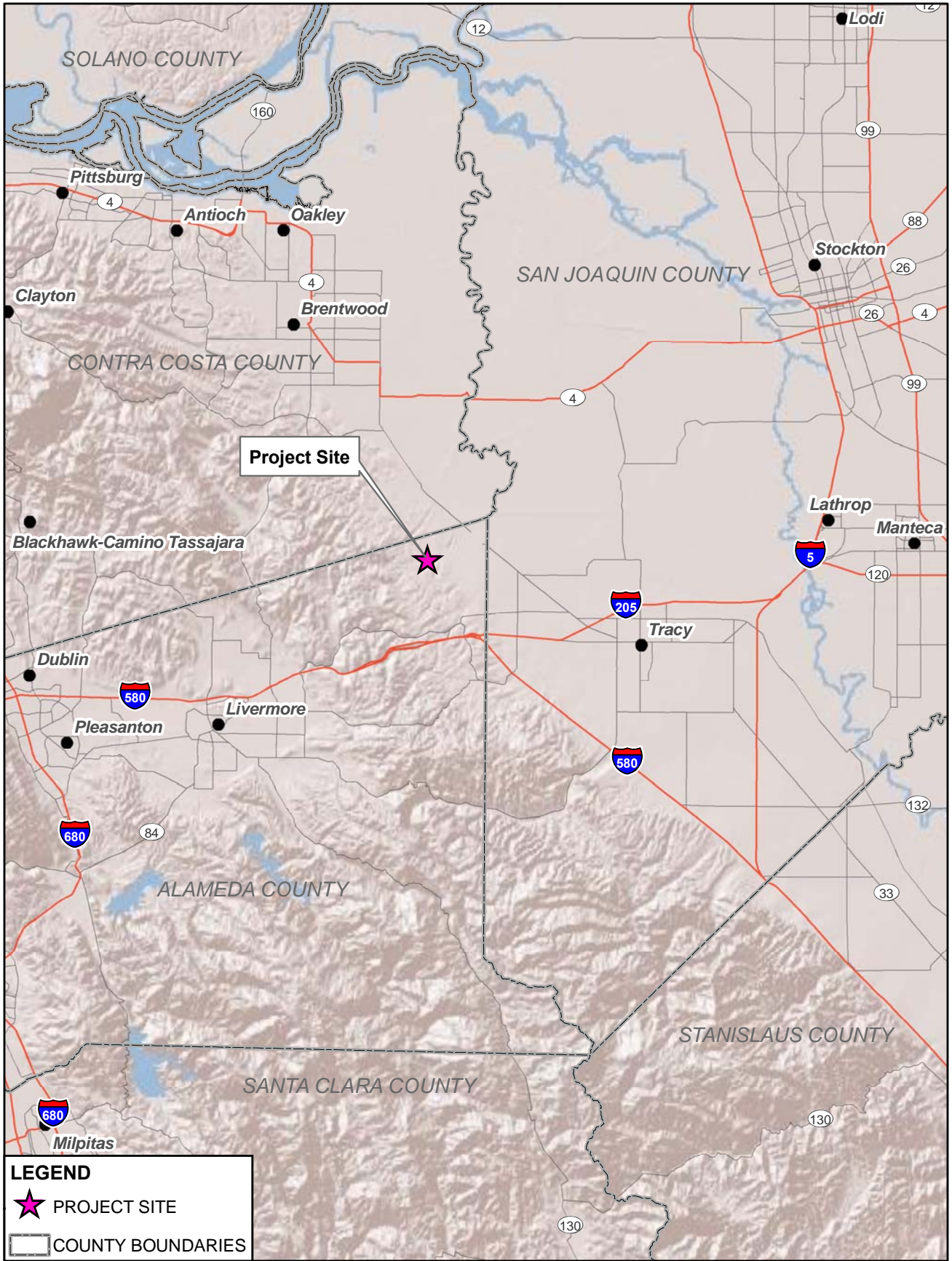
California annual grassland is the predominant natural community found throughout the Project area. Characteristic species include non-native grasses such as foxtail barley (*Hordeum murinum* ssp. *leporinum*), soft chess (*Bromus hordeaceus*), and wild oat (*Avena barbata*). Common forbs include bur clover (*Medicago polymorpha*), filaree (*Erodium moschatum*), black mustard (*Brassica nigra*), and gumweed (*Grindelia camporum*). The grassland habitat on the 158-acre Lee property is currently used for cattle grazing. Portions of the Project study area (including the proposed laydown area) were previously developed for wind energy. The windmill towers have been removed, but some remnants of the cement tower bases and miscellaneous debris remain scattered throughout the area.

Developed and agricultural areas in the vicinity of the Project area include the Byron Power Cogen Plant, located in the center of the Lee Property, PG&E's Bethany Compressor Station and Kelso Substation located north of Kelso Road, and the BBID headquarters facilities located along Bruns Road. Agricultural lands are limited to field crops (wheat and alfalfa) immediately north and south of the BBID facilities on the east side of Bruns Road.



### 1.2.2 Climate and Hydrology

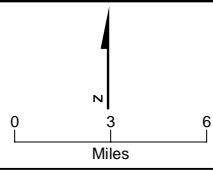
The regional climate is characterized by cool, wet winters and hot, dry summers. Average temperatures range from a low of 36°F in January to a high of 90°F in July (Western Regional Climate Center [WRCC], 2009). According to the Natural Resources Conservation Service (NRCS) Climate Analysis for Wetlands (NRCS, 2002) the growing season (based on data from Livermore, California, and defined as temperatures above 28°F with a probability of 50 percent) extends from January 9 through December 29 for a total of 355 days (Appendix A). The average annual rainfall recorded at the Livermore weather station (044997) is 14.5 inches, with the majority (82 percent) of the annual precipitation occurring between November and March (WRCC, 2009).

The wetland delineation was conducted during a slightly below-average rainfall year. Based on daily climate data recorded at the Livermore weather station, located approximately 12 miles southeast of the Project study area, rainfall between November 1, 2008, and March 31, 2009 was 7.1 inches, or approximately 80 percent of the average rainfall for this period (University of California Integrated Pest Management, 2009). The lower-than-normal rainfall was due to below-average precipitation from November through January; precipitation was slightly above average in February and March (Figure 1-3).



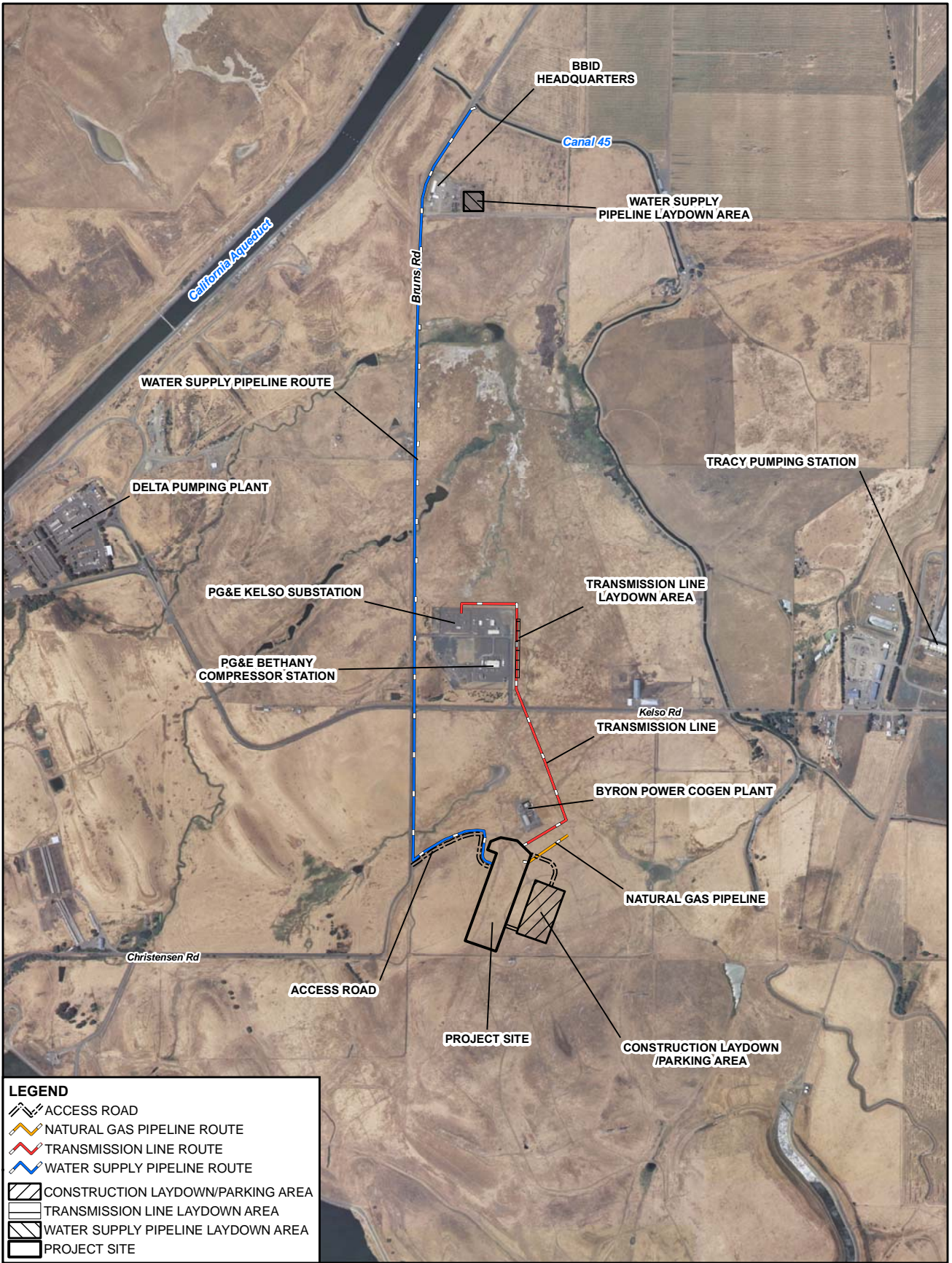
**LEGEND**

-  PROJECT SITE
-  COUNTY BOUNDARIES

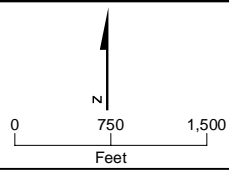


**FIGURE 1-1**  
**PROJECT VICINITY**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA



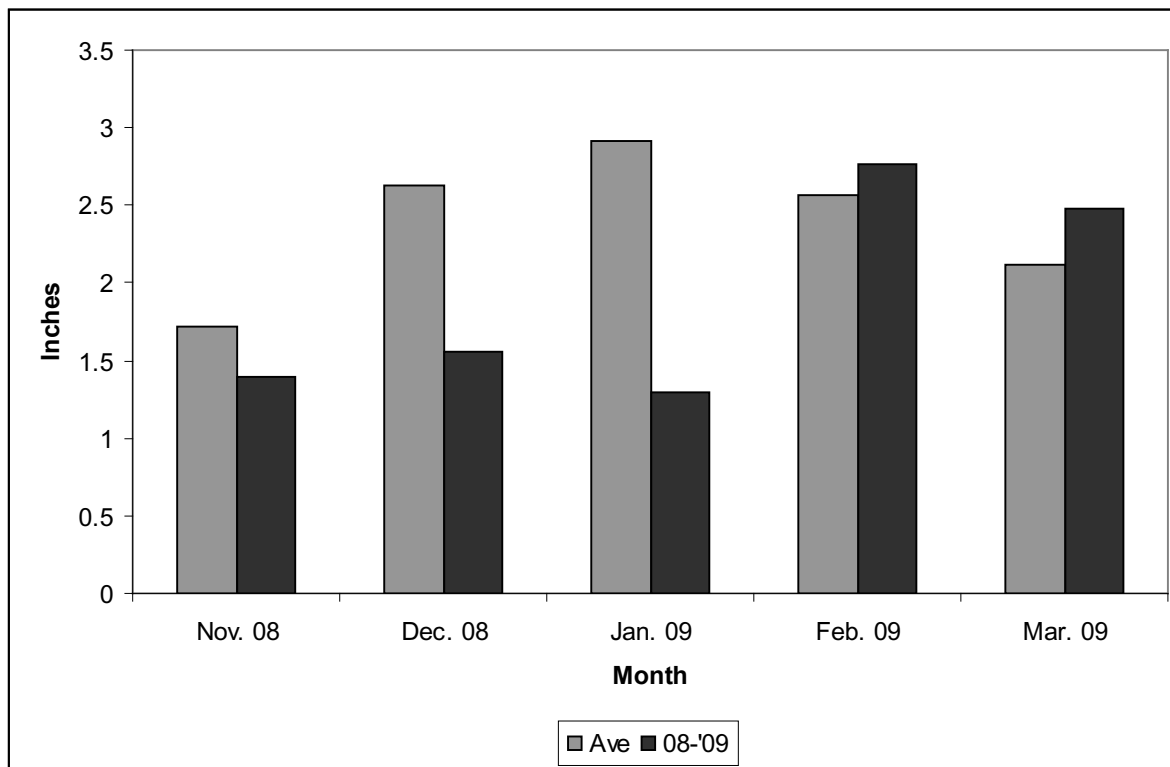


This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



**FIGURE 1-2**  
**SITE LOCATION**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA





**FIGURE 1-3**  
Precipitation Data November 2008 through March 2009

The Project is located in the San Joaquin Delta Hydrologic Unit (HUC 18040003), which has a drainage area of 433,302 acres (Biogeographic Information and Observation System [BIOS], 2009). The National Wetland Inventory (NWI) shows two palustrine emergent wetlands and two palustrine unconsolidated shore wetlands along the service water pipeline alignment along Bruns Road (Appendix B). USGS topographic information for the Clifton Court Forebay quadrangle indicates four blue line drainages along Bruns Road. Drainage in the vicinity of the Project area is generally to the north, where it is diverted around Clifton Court Forebay and into Italian Slough (Appendix C).

The natural hydrology in the vicinity of the Project area has been historically altered by the construction of reservoirs, aqueducts, canals, and agricultural drainages. Regionally, the most significant modifications are associated with the State Water Project, which was initiated in 1959 and fully operational by 1965. Water is diverted from the Delta into Clifton Court Forebay and is then pumped from the Harvey O. Banks Delta Pumping Plant into the Bethany Reservoir, where the South Bay Pumping Plant lifts water into the South Bay Aqueduct and the California Aqueduct.

### 1.2.3 Soils

Five soil series and nine different soil map units occur within the limits of the Project study area (Appendix D). General information on the soils based on local soil surveys (NRCS, 1977; 1966) and official soil series descriptions (NRCS, 2009) are provided below. All soil colors are for moist soils, unless otherwise noted.

**Altamont Clays (AaC)**

The Altamont series consists of well-drained soils with slow permeability derived from weathered shale and fine-grained sandstone. These soils are found on rolling hills and steep slopes east of Livermore. In a representative profile, the surface layer to a depth of 28 inches is dark brown (10YR 3/3) clay. A very thin, grayish-brown (10 YR 5/2) [dry] surface crust may be present in some areas and very dark brown to black films are often present on the upper ped surfaces. Light-colored calcium carbonate films and segregations are often common below 7 inches and soils become slightly alkaline with depth. The clay content in this soil ranges from 35 to 60 percent and wide, deep cracks are common throughout, once the soil is dry.

**Linne Clay Loam (LaD, LbD, LaC)**

The Linne series consists of well-drained calcareous soils derived from weathered shale and sandstone. These soils are found on rolling hills and slopes. In a typical profile, the upper 14 inches is a moderately alkaline, black (10 YR 2/1) clay loam. Between 14 and 29 inches, the soil is a moderately alkaline, very dark gray (10 YR 3/1) clay loam. Light-colored lime filaments and deposits are present in the lower part of the horizon, increasing with depth. Permeability is moderately slow and these soils have medium to very rapid runoff.

**Rincon Clay Loam (RdB)**

Rincon soils are found on alluvial fans and nearly level valley floors east of Livermore and north of Mountain House, where they formed in alluvium derived from sedimentary materials. In a typical profile, the surface horizon is a slightly acidic, very dark gray (10YR 3/1) silty clay loam to a depth of 16 inches. From 16 to 25 inches, the soil is very dark grayish-brown (10YR 3/2) sandy clay, often with clay films along the ped surfaces. These soils are well drained with slow permeability and slow to rapid runoff.

**San Ysidro Loam (Sa, Sc)**

The San Ysidro series consists of moderately well-drained soils formed in alluvium derived from sedimentary rocks. These soils occur on old valley fill and low terraces east of Livermore. In a representative profile, the surface layer (0 to 14 inches) is a slightly acidic, dark brown (10YR 4/3 to 3/3) fine sandy loam with few fine, distinct, brownish-yellow (10YR 6/6) concentrations. Below 14 inches, the soil is a dark brown (7.5YR 4/4) clay with a thin light gray (10 YR 6/2) bleach layer. Many moderately thick clay films are present along the ped surfaces and pore linings and common, fine iron and manganese concentrations are present. These soils have slow to medium runoff and very slow permeability.

**Solano Fine Sandy Loam (Sf, Sfaa)**

Solano soils are formed in alluvium derived from mixed sedimentary materials and are found on nearly level low terraces and in valley plains with slightly irregular or hummocky surface micro-topography. In a typical profile, the surface horizon is a strongly acidic, dark grayish-brown (10 YR 4/2) loam with few, fine, distinct dark reddish-brown (5 YR 3/4) concentrations. Below 9 inches, the soil is neutral to slightly alkaline, brown (10 YR 4/3) clay loam with dark, thin clay films on ped surfaces and pore linings. These soils are somewhat poorly drained with very slow to slow runoff and very slow permeability.



# Methods

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An initial site survey was conducted on December 29, 2008, by CH2M HILL biologists Russell Huddleston and Todd Elwood, to identify potential wetlands and other waters and to collect data on seasonal hydrologic conditions in the Project study area. Additional surveys were conducted by Mr. Huddleston and/or Mr. Elwood on February 19, April 8, April 15, and June 4, 2009.

The approximately 69-acre Project study area included 41-acre area in which the power plant facility, laydown area, and natural gas pipeline would be located, as well as 100-foot-wide survey corridors along the transmission line and service water pipeline alignments (Figure 2-1). The following sections provide information on the methodology used for the delineation.

## 2.1 Wetland Delineation

The USACE defines wetlands as areas that are “inundated by surface water or groundwater with a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” (Title 40 Code of Federal Regulations [CFR] Section 230.3 and Title 33 CFR Section 238). The wetland field surveys were conducted following the survey methodology described in 1987 *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008).

The USACE uses the three-criterion approach (vegetation, soils, and hydrology) to determine the presence of wetlands. As a general rule, under this method, evidence of a minimum of one positive indicator for each criterion must be found in order to make a positive wetland determination. In general, wetlands will normally meet the following criteria:

- **Hydrophytic Vegetation:** More than 50 percent of the dominant vegetation is composed of plant species that are adapted to survive and grow in hydrophytic (wet) conditions. These species have been assigned a wetland indicator value of facultative (FAC), facultative wetland (FACW), or obligate (OBL) on the *National List of Plant Species That Occur in Wetlands* (Reed, 1988).
- **Hydric Soils:** The NRCS defines hydric soil as “soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part...” (Federal Register, July 13, 1994). The criteria for establishing the presence of hydric soils vary among soil types, drainage classes, and land resource regions. The NRCS (2006) has developed field indicators for identification of hydric soils. These indicators are currently used by the USACE in the *Arid West Regional Supplement to the 1987 Wetland Delineation Manual* (USACE, 2008). They rely on soil characteristics such as texture, color, and the amount of redoximorphic features to determine if soils are hydric.

- **Wetland Hydrology:** Areas with wetland hydrology are defined as "...inundated either permanently or periodically at mean water depths less than 2 meters (6.6 feet), or the soil is saturated to the surface at some time during the growing season" (Environmental Laboratory, 1987). Areas where saturation or inundation is present for at least 5 percent of the growing season may be considered wetlands. In the Project study area, wetlands would therefore need to be inundated or saturated for a minimum of 18 consecutive days to meet the wetland hydrology criterion.

A total of 15 sample points were established in potential wetlands and adjacent non-wetland areas (Figure 2-1). At each sample location vegetation, soil, and hydrology indicators were recorded on wetland determination data sheets, which are included in Appendix E. Representative Project study area photographs are provided in Appendix F.

Dominant plant species at each sample location were identified, and the percent cover was visually estimated within an approximately 5-foot radius area. All taxonomic designations follow *The Jepson Manual of Higher Plants of California* (Hickman, 1993) or the current revised taxonomy per the *Jepson Interchange for California Floristics* (University of California, 2009). The wetland indicator status was determined using the *National List of Plant Species that Occur in Wetlands: Region 0* (Reed, 1988). Dominant species within each vegetation strata included the most abundant species whose cumulative cover accounted for at least 50 percent of the total cover, as well as any single species that accounted for at least 20 percent of the vegetative cover. Strata that contained less than 5 percent total cover were not considered in the dominance test. A list of Plant species identified at each sample location is included in Appendix G.

Descriptions of soils were made at each sample location by examining soil pits dug with a tile spade to depths of at least 12 inches where possible. Soil morphological features such as texture, color, and redoximorphic features were noted. Soils texture was estimated in the field using the "ribbon test" to approximate the clay, silt, and sand content. Moist soil colors were determined using Munsell® color charts.

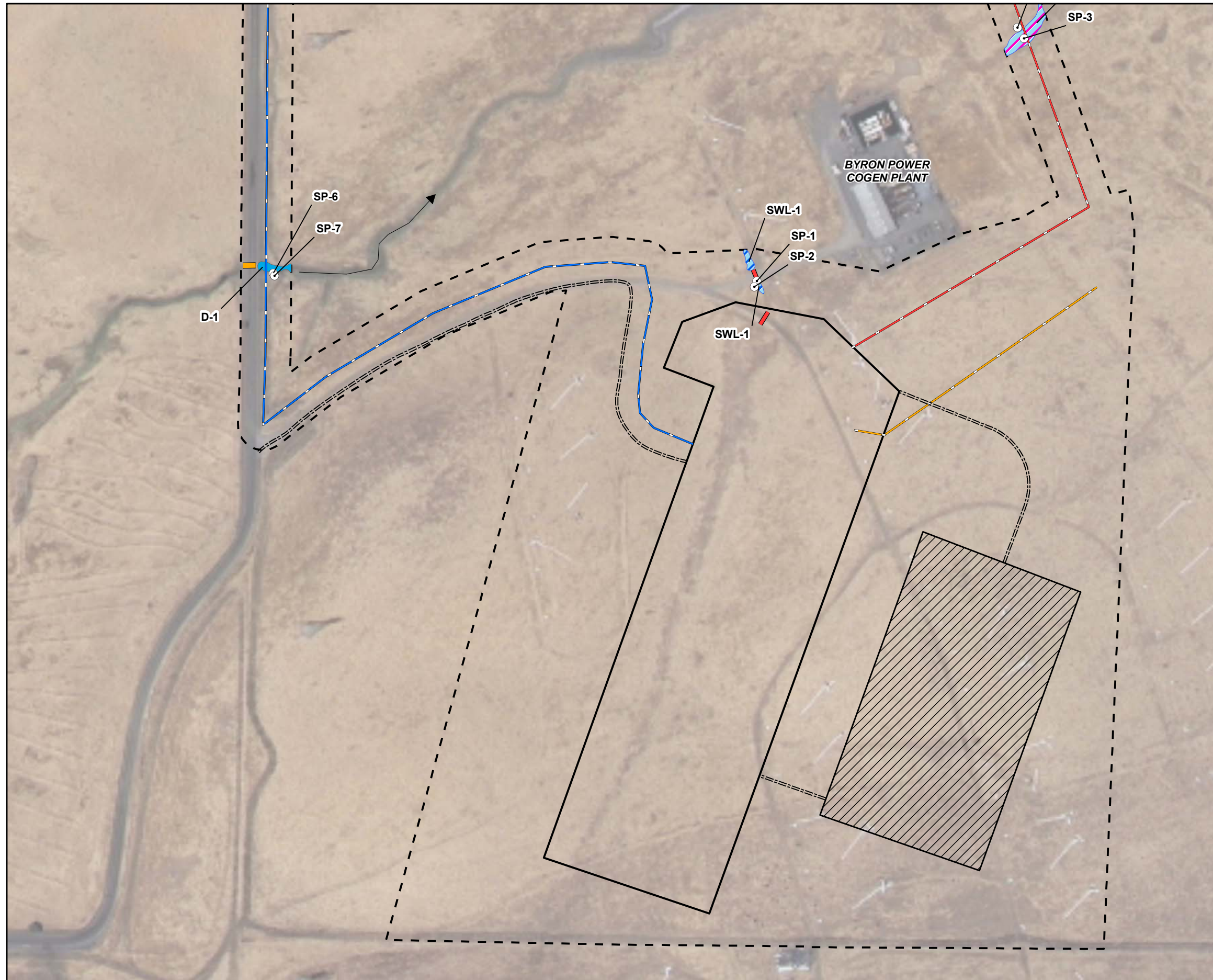
Wetland hydrology was determined based on observations of saturation or inundation during the field surveys and other primary and secondary indicators of wetland hydrology such as presence of aquatic invertebrates, algal matting, water marks, and sediment deposits. Additional factors considered in the wetland hydrology determinations at each sample point included site drainage, landscape position, and micro-topography.

Wetland boundaries were determined in the field based on the vegetation, soils, and hydrology observed at selected sample points as well as distinct changes in vegetation and micro-topography and best professional judgment. A Trimble® Geo-XT global positioning system (GPS) unit was used to map all sample point locations, wetland boundaries, and other relevant features such as culverts and swales. The GPS data were then differentially corrected to generally sub-meter accuracy and plotted on aerial photograph base maps (Figure 2-1).

## 2.2 Other Features

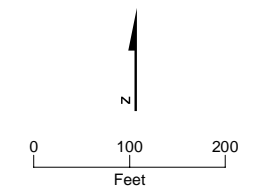
Other features, including unvegetated ephemeral drainages and erosional channels, were identified and mapped with a GPS during the wetland delineation field surveys. The limits of these features were determined based on evidence of an ordinary high-water mark (e.g., scouring, drift lines, and/or sediment deposits) and/or defined bed and bank characteristics.





- LEGEND**
- DATA POINTS
  - ≡≡≡ ACCESS ROAD
  - NATURAL GAS PIPELINE ROUTE
  - TRANSMISSION LINE ROUTE
  - WATER SUPPLY PIPELINE ROUTE
  - FLOW DIRECTION
  - BOX CULVERT
  - CULVERT
- POTENTIAL JURISDICTIONAL WATERS/WETLANDS**
- DITCH
  - ALKALI SINK WETLAND
  - DRAINAGE WETLAND
  - WATERS OF THE U.S.
- POTENTIAL NON-JURISDICTIONAL WATERS/WETLANDS**
- EROSIONAL CHANNEL
  - CANAL
  - SEASONAL WETLAND
  - SWALE
- SITES**
- ▨ CONSTRUCTION LAYDOWN/PARKING AREA
  - ▭ TRANSMISSION LINE LAYDOWN AREA
  - ▨ WATER SUPPLY PIPELINE LAYDOWN AREA
  - ▭ PROJECT SITE
  - ▭ PROJECT STUDY AREA

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



1 OF 5

**FIGURE 2-1**  
**WETLAND DELINEATION**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA



**LEGEND**

- DATA POINTS
- == ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
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- ▭ CULVERT

**POTENTIAL JURISDICTIONAL WATERS/WETLANDS**

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- ▭ ALKALI SINK WETLAND
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- ▭ WATERS OF THE U.S.

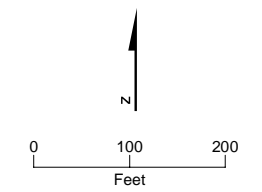
**POTENTIAL NON-JURISDICTIONAL WATERS/WETLANDS**

- ▭ EROSIONAL CHANNEL
- ▭ CANAL
- ▭ SEASONAL WETLAND
- ▭ SWALE

**SITES**

- ▭ CONSTRUCTION LAYDOWN/PARKING AREA
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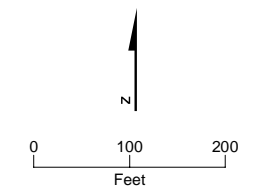


**FIGURE 2-1**  
**WETLAND DELINEATION**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA

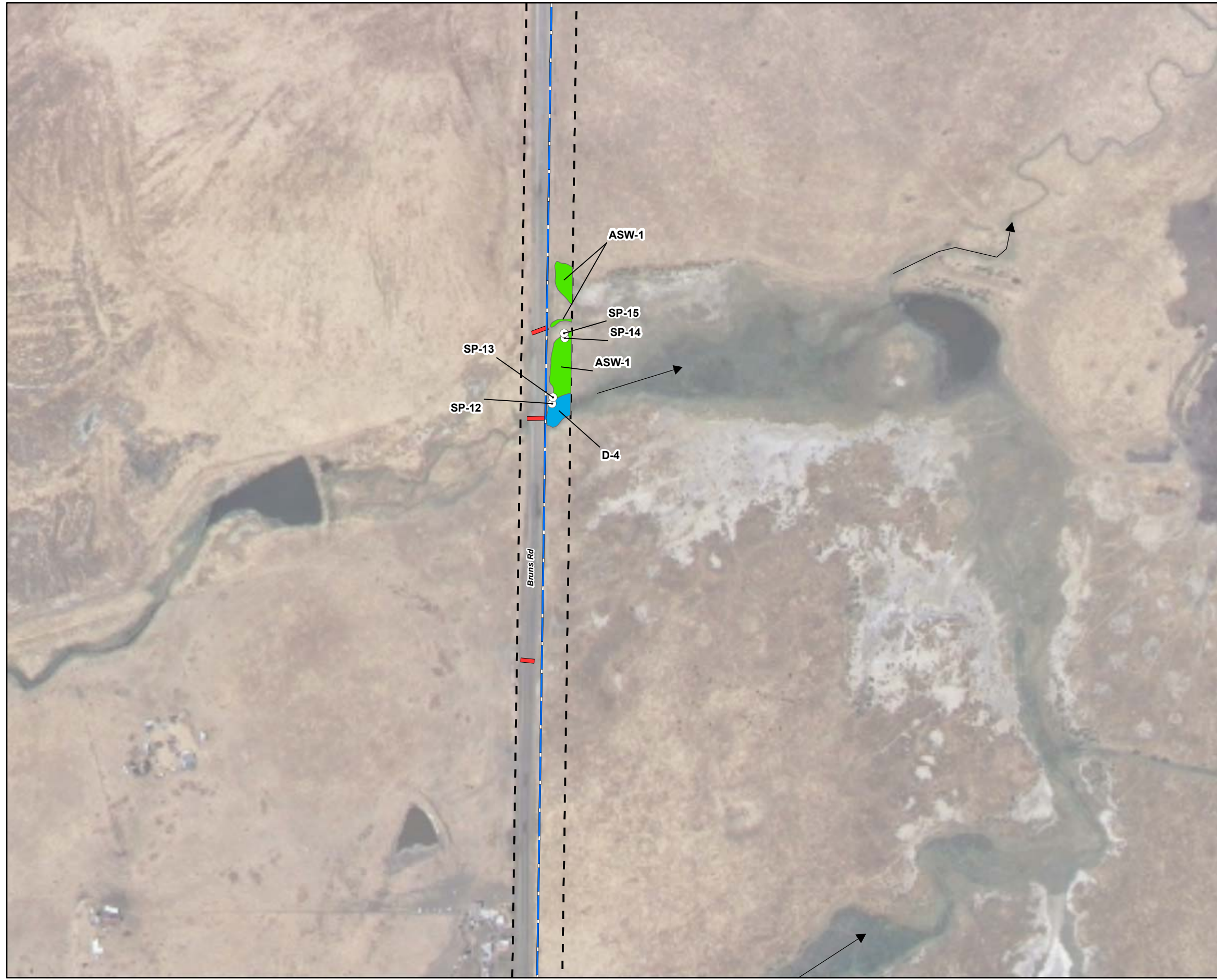


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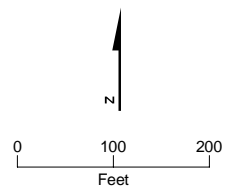


**FIGURE 2-1**  
**WETLAND DELINEATION**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA



- LEGEND**
- DATA POINTS
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  - WATER SUPPLY PIPELINE ROUTE
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  - ▭ PROJECT STUDY AREA

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



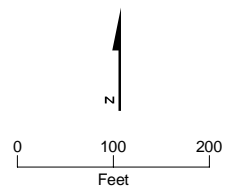
**FIGURE 2-1**  
**WETLAND DELINEATION**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA





- LEGEND**
- DATA POINTS
  - == ACCESS ROAD
  - NATURAL GAS PIPELINE ROUTE
  - TRANSMISSION LINE ROUTE
  - WATER SUPPLY PIPELINE ROUTE
  - FLOW DIRECTION
  - BOX CULVERT
  - CULVERT
- POTENTIAL JURISDICTIONAL WATERS/WETLANDS**
- DITCH
  - ALKALI SINK WETLAND
  - DRAINAGE WETLAND
  - WATERS OF THE U.S.
- POTENTIAL NON-JURISDICTIONAL WATERS/WETLANDS**
- EROSIONAL CHANNEL
  - CANAL
  - SEASONAL WETLAND
  - SWALE
- SITES**
- ▨ CONSTRUCTION LAYDOWN/PARKING AREA
  - ▨ TRANSMISSION LINE LAYDOWN AREA
  - ▨ WATER SUPPLY PIPELINE LAYDOWN AREA
  - ▨ PROJECT SITE
  - ▨ PROJECT STUDY AREA

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



5 OF 5

**FIGURE 2-1**  
**WETLAND DELINEATION**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA



SECTION 3.0

# Results

Based on the observations made during the field surveys, a total of 0.251 acre of potential jurisdictional drainage wetlands, 0.166 acre of alkali sink wetland, and 0.075 acre of potential jurisdictional waters of the U.S. occur within the approximately 69-acre Project study area (Table 1). An additional 0.228 acre of potentially non-jurisdictional areas including isolated seasonal wetlands and swales, three erosional channels, and a small section of Canal 45 were also identified in the Project study area (Table 1). The following sections provide descriptions of the wetlands, waters, and other features that were identified and mapped in the Project study area.

**TABLE 1**  
Potential Jurisdictional and Non-Jurisdictional Wetland and Waters Identified in the Project Study Area

Feature	Acreage	Description
<b>Potential Jurisdictional Waters of the U.S.</b>		
Drainage Wetland (D-1)	0.021	Defined drainage channel characterized by saltgrass within the channel; blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough
Drainage Wetland (D1a)	0.006	Weakly expressed drainage swale characterized by saltgrass, Mediterranean barley, soft chess, and foxtail barley, blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough
Drainage Wetland (D-2)	0.032	Small swale-like feature characterized by saltgrass, Italian ryegrass, and meadow barley with some scouring evident along the channel; blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough
Drainage Wetland (D-3)	0.138	Shallow, well-defined drainage channel characterized by cosmopolitan bulrush with scattered rabbitsfoot grass, curly dock, and cattail. Palustrine Emergent Permanently Flooded wetland on the National Wetland Inventory Map and is a blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough
Drainage Wetland (D-4)	0.053	Shallow, well-defined channel characterized by dense cattails growing in the center of the channel with dense saltgrass growing around the outer edges; Palustrine Emergent Semi-Permanently Flooded wetland on the National Wetland Inventory Map and is a blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough
Waters of the U.S (D-1b)	0.023	Defined channel with steep cut banks, largely devoid of vegetation, continuation of Drainage 1 on the north side of Kelso Road, blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough

**TABLE 1**  
Potential Jurisdictional and Non-Jurisdictional Wetland and Waters Identified in the Project Study Area

<b>Feature</b>	<b>Acreeage</b>	<b>Description</b>
Waters of the U.S. (D-2a and Ditch 1)	0.052	Small, well-defined channel with defined bed and bank, channel is a continuation of Drainage 2, portion of the original channel has been realigned through the PG&E facility to the west; blue line creek on USGS topographic map with apparent hydrologic connection with Italian Slough
Alkali Sink Wetland (ASW-1)	0.166	Wetland area is characterized by saltgrass and common rusty molly with scattered sand spurry, alkali heath, and common spikeweed; strongly alkaline soils; shown as a Palustrine Unconsolidated Shore Seasonally Flooded wetland on the National Wetland Inventory Map
<b>Total</b>	<b>0.491</b>	
<b>Potential Non-Jurisdictional Waters of the U.S.</b>		
Seasonal Wetland (SWL-1)	0.018	Two shallow, well-defined basins along access road to the Byron Power Cogen Plant connected by a corrugated metal pipe (cmp); slender popcorn flower and other vernal pool plants scattered within the basin; no hydrologic connection or significant nexus with any other drainage or water features
Seasonal Wetland (SWL-2)	0.007	Shallow, weakly expressed topographic low area with scattered coyote thistle and Italian ryegrass, adjacent to transmission line laydown area; no hydrologic connection or significant nexus with any other drainage or water features
Swale (SW-1)	0.063	Low topographic swale characterized by Mediterranean barley; appears to convey low-volume, short-duration flows in response to storm events but lacks evidence of prolonged inundation; water flows west and ponds in low areas around the Byron Power Cogen Plant; no hydrologic connection or significant nexus with any other drainage or water features
Swale (SW-2)	0.045	Low topographic swale characterized by Mediterranean barley; appears to convey low-volume, short-duration flows in response to storm events but lacks evidence of prolonged inundation; water flows west and ponds in low areas around the Byron Power Cogen Plant; no hydrologic connection or significant nexus with any other drainage or water features
Swale (SW-3)	0.012	Small, weakly expressed swale from 12-inch-diameter culvert under Kelso Road; characterized by soft chess, Italian ryegrass, and saltgrass; appears to convey low, very-low volume flow for very short durations only in response to heavy rainfall
Erosional Channel (E-1)	0.002	Small, weakly expressed erosional rill resulting from direct runoff from the Kelso Substation
Erosional Channel (E-2)	0.013	Erosional channel resulting from direct runoff from the Kelso Substation
Erosional Channel (E-3)	0.022	Large, deeply scoured erosional channel resulting from direct runoff from the Kelso Substation
Canal 45	0.046	Constructed and routinely maintained irrigation canal
<b>Total</b>	<b>0.228</b>	

## 3.1 Potential Jurisdictional Wetlands

Four drainage features all of which are shown as blue line drainages on the USGS Clifton Court Forebay 7.5-minute quadrangle were identified in the Project study area. These drainages all flow into a broad seasonal wetland area on the west side of Bruns Road at the Alameda-Contra Costa County Line. From this wetland, water flows approximately 0.5 mile to the north through a natural drainage channel and then continues north through a series of constructed drainage ditches for approximately 2.5 miles, where water is eventually discharged into Italian Slough (Appendix C). An alkali sink wetland is located adjacent to one of the drainages within the Project study area. All of these features are found along the proposed water supply pipeline route and the transmission line route (Figure 2-1).

### 3.1.1 Drainage Wetlands (D-1 and D1a)

The service water pipeline would cross a seasonal drainage (D-1) on the east side of Bruns Road, approximately 0.3 mile south of the intersection with Kelso Road (Figure 2-1; Map 1). A 6-foot by 6-foot box culvert is located under the road in this area. Within the Project study area, the drainage channel is well-defined with gently sloping banks. The area immediately around the culvert is characterized by dense perennial pepperweed (*Lepidium latifolium*). To the east, the channel is characterized by saltgrass (*Distichlis spicata*), with scattered rabbitsfoot grass (*Polypogon monspeliensis*), Italian ryegrass (*Lolium multiflorum*), sand spurry (*Spergularia marina*), and brass buttons (*Cotula coronopifolia*). The surface soil, to a depth of 5 inches, is a dark gray (10 YR 4/1) clay loam. Between 5 and 12 inches, the soil is a dark gray (2.5 Y 4/1) silty clay loam with approximately 10 percent dark yellowish-brown (10 YR 4/6) and dark brown (7.5 YR 4/3) concentrations, and a few grayish-green (Gley 1 6/10Y) depletions. Below 12 inches, the soil is a light olive brown (2.5 Y 5/3) mixed with some dark gray (2.5 Y 4/1) inclusions and dark yellowish-brown (10 YR 4/6) concentrations. No flow was observed during the April 8, 2009, field survey; but saturated soils were present at a depth of 12 inches and shallow standing water was present in the deeper parts of the channel. From the Project study area, this channel continues to the northeast for approximately 900 feet, where it enters an impoundment area.

Drainage 1a is a continuation of Drainage D-1 on the north side of the impoundment. Only a small portion of the drainage is present within the Project study area along the transmission line alignment at Kelso Road (Figure 2-1; Map 2). In this area, the drainage is a low, swale-like feature that lacks defined bed and bank characteristics. The vegetation is characterized by saltgrass, Mediterranean barley (*Hordeum marinum* ssp. *gussonianum*), soft chess, and foxtail barley. The channel was dry during all surveys and lacks evidence of an ordinary high water mark. A 30-inch-diameter corrugated metal pipe (cmp) is present under Kelso Road in this area. The natural hydrology of this channel has been significantly altered by the impoundment approximately 700 feet south of the Project study area.

### 3.1.2 Drainage Wetland (D-2)

Drainage 2 is a small swale-like feature located along Bruns Road immediately west of PG&E's Bethany Compressor Station, approximately 600 feet north of the intersection of Kelso Road (Figure 2-1; Map 2). A 12-inch-diameter cmp is located under the road in this area. Vegetation within the channel is characterized by dense saltgrass, Italian ryegrass, and meadow barley (*Hordeum brachyantherum*). Soil in the upper 5 inches is a moderately

alkaline, dark grayish-brown (10 YR 4/2) sandy clay loam with approximately 2 percent dark brown (7.5 YR 3/4) concentrations. From 5 to 16 inches the soil is a light yellowish-brown (2.5 Y 6/4) clay loam with approximately 5 percent black (10 YR 2/1) manganese concentrations. The channel was dry at the time of the survey, but some scouring was evident along the shallow banks of the channel. This drainage flows to the east where it enters a rock-lined, linear drainage channel that flows east through the PG&E facility and eventually discharges into Drainage 2a.

### 3.1.3 Drainage Wetland (D-3)

Drainage Wetland 3 is a shallow, well-defined channel on the east side of Bruns Road approximately 0.3 mile north of the intersection with Kelso Road (Figure 2-1; Map 3). A 6-foot by 6-foot cement box culvert is located under the road at this location. The drainage channel is characterized by dense growth of cosmopolitan bulrush (*Bolboschoenus maritimus*) with scattered rabbitsfoot grass, curly dock (*Rumex crispus*), and cattail (*Typha dominigensis*). Surface soils were inundated at the time of the survey and had a strong positive reaction to alpha alpha-dipyridyl. The upper 6 inches is a mixed greenish-black (Gley 1 2.5/5GY) and black (5 Y 2.5/2) clay loam with approximately 5 percent strong brown (7.5 YR 4/6) concentrations. The channel was inundated with 3 to 6 inches of gently flowing water at the time of the survey. The vegetated channel flows to the north into a larger open water area and then continues to flow to the north northeast into the larger seasonal wetland area. This feature is included as a Palustrine Emergent Permanently Flooded (PEMH) wetland on the National Wetland Inventory Map (Appendix B).

### 3.1.4 Drainage Wetland (D-4)

This drainage is located immediately north of the Alameda County line along the east side of Bruns Road (Figure 2-1; Map 4). The shallow, well-defined channel is characterized by dense cattails (*Typha latifolia* and *T. dominingensis*) growing in the center of the channel with dense saltgrass growing around the outer edges. Mexican rush (*Juncus mexicanus*) and curly dock are also present in scattered locations. The soil at the outer edge of the channel is a strongly alkaline, dark grayish-brown (10 YR 4/2) fine sandy clay loam to clay loam. No redoximorphic features were noted in this area, possibly due to the high soil pH; however, hydric conditions were presumed to be present based on the level of inundation and abundant, lush OBL and FACW vegetation in this area. Shallow water was observed flowing from a 36-inch-diameter cmp under the road into this area during the surveys. The channel continues to flow to the east into a larger wetland area. This feature is included as a Palustrine Emergent Semi-Permanently Flooded (PEMF) wetland on the National Wetland Inventory Map (Appendix B).

### 3.1.5 Alkali Sink Wetland (ASW-1)

A large alkali sink wetland is present immediately north and directly abutting Drainage D-4 (Figure 2-1; Map 4). Within the Project study area, this feature is characterized by saltgrass and common rusty molly (*Kochia californica*) with scattered sand spurry, alkali heath (*Frankenia salina*), and common spikeweed (*Centromadia pungens*). The surface soil is a strongly alkaline, dark grayish-brown (10YR 4/2) fine sandy clay loam to a depth of 8 inches. From 8 to 24 inches, the soil is a very dark grayish-brown (10 YR 3/2) clay loam that is also strongly alkaline. No redoximorphic features were observed in the upper part of

the soil, but this area was considered problematic due to the high soil pH. This area was dry at the time of the survey, but appears to be subject to at least seasonal inundation and most likely a prolonged seasonally shallow water table. This feature is identified as a Palustrine Unconsolidated Shore Seasonally Flooded wetland by the National Wetland Inventory Map (Appendix B).

## 3.2 Potential Waters of the U.S. (Non-Wetlands)

Portions of two drainage channels within the Project study area were considered to be non-wetland waters of the U.S. due to the lack of vegetation cover and presence of well-defined bed and bank characteristics.

### 3.2.1 Drainage 1b

Drainage 1b is a continuation of Drainage 1 north of Kelso Road, approximately 0.2 mile east of the intersection with Bruns Road (Figure 2-1; Map 2). A 30-inch-diameter cmp is located under the road in this area. The area along the channel immediately north of the road is highly eroded and disturbed and the bed and bank are poorly defined. As the channel continues north, it quickly becomes well-defined with steep 3-foot-tall to 3.5-foot-tall banks and an open channel that ranges from approximately 5 to 8 feet wide. With the exception of sparse saltgrass, the channel is devoid of vegetation. From the Project study area, this channel continues to the north where it eventually discharges into the large wetland area near the county line.

### 3.2.2 Drainage 2a (Includes Ditch 1)

Drainage 2a is a continuation of Drainage 2 on the northeast side of the Kelso Substation. Within the PG&E facility this drainage has been realigned, flows through a series of small, rock-lined, linear drainage channels. Where it exits the facility, it becomes a well defined earthen channel with steep cut banks 2 to 2.5 feet tall with a 2-foot-wide to 5-foot-wide bed. With the exception of sparse Italian ryegrass, the channel is devoid of vegetation. This channel flows to the north into a seasonal wetland area that continues north and eventually connects into a larger wetland area near the county line.

## 3.3 Non-Jurisdictional Features

Potentially non-jurisdictional features identified in the Project study area include two isolated seasonal wetlands, three swales, three erosional channels, and a small section of BBID's Canal 45.

### 3.3.1 Seasonal Wetland (SWL-1)

This seasonal wetland occurs along the existing access road to the Byron Power Cogen Plant along the northern edge of the Project study area (Figure 2-1; Map 1). The two distinct basins are hydrologically connected by a partially collapsed 18-inch-diameter cmp. Vegetation within the basins is generally sparse and includes species such as popcorn flower (*Plagiobothrys stipitatus*), coyote thistle (*Eryngium vaseyi*), Italian ryegrass, gumweed dense-flower willowherb (*Epilobium densiflorum*), wooly marbles (*Psilocarphus oregonus*),

brass buttons, and water pygmyweed (*Crassula aquatica*). Surface soil in this area is a dark grayish-brown (10 YR 4/2) clay loam with few (less than 1 percent), fine, dark yellowish-brown (10YR 4/4) concentrations present in the upper 3 inches. A dark brown (10 YR 4/3) clay layer is present at a depth of 10 inches below the surface. Surface soil had a neutral pH but no strong redoximorphic indicators were evident in the upper part of the soil at this sample location. The basins were both dry during the April field survey, but inundation and aquatic invertebrates were noted in this area during earlier site visits. Based on the presence of characteristic seasonal wetland vegetation, the distinct wetland-upland boundary, and observations of inundation and aquatic invertebrates, this area was presumed to also support hydric soils, despite the lack of redoximorphic features.

This wetland area is located nearly 500 feet south of Drainage D-1 and there is no apparent hydrological connection between this basin and the drainage. Because this feature lacks any evidence of a direct connection, was not considered to be an adjacent wetland, and does not appear to have a significant nexus to a traditional navigable water body, it was considered an isolated wetland.

### 3.3.2 Seasonal Wetland SWL-2

Seasonal wetland 2 is a very shallow, poorly defined depression along the east side of the transmission line laydown area (Figure 2-1; Map 2). Scattered Italian ryegrass is present along the outer edges of the basin and the central part is largely open soil with sparse, scattered coyote thistle. Surrounding grassland vegetation in this area is also sparse. Deep cattle hoof marks occur throughout the basin, which suggest this area is subject to at least some seasonal saturation and possible inundation. This small basin is located more than 100 feet from Drainage 1b with no apparent hydrologic connection or significant nexus to this channel.

### 3.3.3 Swales

Three weakly expressed, low topographic swales were observed in the Project area. Two swales were observed along the transmission line route south of Kelso Road (Figure 2-1; Map 2) and one swale was observed along the service water pipeline route north of Drainage Wetland D-3 (Figure 2-1; Map 3).

Swales SW-1 and SW-2 are very similar and are both located in the California grassland northeast of the Byron Power Cogen Plant. The vegetation in these areas is generally similar to the adjacent grassland, except Mediterranean barley becomes the dominant annual grass species within the swale areas, where soft chess and foxtail barley are dominant in the adjacent grassland. Other associated species include sparse saltgrass, alkali heath, and Italian ryegrass, all of which also occur in the adjacent grassland habitat. The upper 2 inches of the soil are a dark grayish-brown (10 TR 4/2) fine sandy clay loam with dark yellowish-brown (10 YR 4/4/ and 4/6) concentrations. Below 2 inches, the soil is a brown (10 YR 4/3) fine sandy loam with no evident redoximorphic features. Similar soils were noted in the adjacent grassland, but with fewer and faint (10 YR 4/4) redox features only in the upper 2 inches. These swales appear to convey short-duration flows in response to storm events and appear to be subject to short-duration inundation, but only shallow, intermittent inundation was noted in these areas during other wet season surveys of the site. It is uncertain, even in a more normal rainfall year, if these areas would support inundation or



surface saturation for 18 consecutive days. Both swales drain to the southwest where water ponds in low depressions near the Byron Power Cogen Plant. There is no apparent surface hydrologic connection to any drainage or apparent significant nexus to any traditional navigable water body.

The third swale (SW-3), is found along the water supply line, just north of Drainage D-3 on the east side of Bruns Road. A 12-inch-diameter cnp is located under the road just west of the swale feature. Within the Project study area, the swale is generally weakly expressed and exhibits no ordinary high-water mark or evidence of recent flow. Vegetation in this area is similar to the adjacent California annual grassland and includes species such as soft chess, Italian ryegrass, and saltgrass with scattered gumweed, alkali heath, and coyote thistle. To the east of the Project study area, closer to the open water, the swale is characterized by a dense cover of lush saltgrass. Because this swale appears to convey very infrequent and low-volume flows and short-duration flow, it was not considered to be subject to jurisdiction under the Federal CWA.

### **3.3.4 Erosional Channels**

Three erosional channels are present within the Project study area along the transmission line alignment, on the north side of the Kelso Substation (Figure 2-1; Map 3). These channels have formed as a result of directed stormwater runoff from the substation and range in size from a relatively small erosional rill to a large, deeply eroded channel with defined bed and bank characteristics. These erosional channels are largely devoid of vegetation within the active flow channel, but upland grassland species common along the sides and upper edges. These features appear to convey infrequent, short-duration flows in response to heavy rainfall events that drain only uplands and were therefore not considered to be jurisdictional waters of the U.S.

### **3.3.5 Canal 45**

Service water for the Project will be supplied from the BBID Canal 45 (Figure 2-1; Map 5). In the Project study area, this portion of the canal is a constructed and routinely maintained earthen channel devoid of vegetation. Cement rip rap is present along the lower banks of the canal.



## SECTION 4

# References

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**Appendix A**  
**Natural Resource Conservation Service**  
**WETS Tables for Alameda County, California**

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----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
30				0.63									0.63
31	3.45	1.67	M0.57	0.36	0.93	0.11	0.00	0.00	M0.00	0.27	1.89	5.63	14.88
32	1.29	3.15	0.19	0.41	0.37	0.00	0.00	0.00	0.00	0.00	0.51	2.03	7.95
33	4.51	0.44	2.09	0.13	0.70	0.03	0.00	0.00	0.01	0.75	0.00	3.69	12.35
34	1.29	2.86	0.00	0.13	0.60	0.53	0.00	0.00	0.27	0.62	2.71	2.32	11.33
35	3.53	0.52	3.16	3.28	0.00	0.00	0.00	0.04	0.00	0.79	0.21	1.53	13.06
36	3.28	6.76	0.71		0.46	0.10	0.00	0.00	0.00	0.40	0.02	3.26	14.99
37	3.38	4.13	5.07	0.68	0.17	0.20	0.00	0.00	0.00	0.55	2.46	4.57	21.21
38	2.40	6.14	4.09	0.90	0.02	0.00	0.00	0.00	0.00	1.00	1.08	0.52	16.15
39	2.40	1.57	2.18	0.53	0.18	0.00	M0.00	0.00	0.16	1.23	0.15	0.78	9.18
40	8.13	M4.54	2.60	0.35	0.14	0.00	0.00	0.00	0.25	0.50	0.43	4.63	21.57
41	3.24	4.19	2.07	2.76	0.23	0.00	0.00	0.03	0.00	0.72	0.89	5.34	19.47
42	3.89	1.68	1.42	3.10	1.00	0.00	0.00	0.00	0.09	1.08	3.05	1.73	17.04
43	4.48	1.68	2.39	1.14	0.00	0.06	0.00	0.00	0.00	0.30	0.53	1.23	11.81
44	2.36	4.89	1.01	M0.94	0.73	0.00	0.00	0.00	0.00	0.77	3.41	2.03	16.14
45	0.87	3.68	3.19	0.20	0.17	0.00	0.00	0.02	0.00	1.07	2.07	M2.98	14.25
46	0.76	1.23	1.69	0.02	0.61	0.00	0.24	0.00	0.02	0.02	2.93	2.07	9.59
47	0.69	1.45	2.34	0.53	0.17	0.36	0.00	0.00	0.00	1.84	0.85	0.51	8.74
48	0.20	1.11	2.79	2.50	1.03	M0.16	0.03	M0.00	M0.00	M0.46	0.34	M2.71	11.33
49	M1.39	2.47	3.38	0.02	M0.34	M0.00	0.03	0.16	0.05	0.08	1.20	M1.21	10.33
50	4.65	1.54	1.44	M0.85	M0.59	0.01	M0.00	0.00	0.08	M1.84	M5.95	4.95	21.90
51	2.23	M1.81	M1.82	0.55	M0.35	M0.06	M0.00	M0.00	0.00	1.04	M3.01	6.07	16.94
52	7.60	1.40	M2.36	2.20	M0.16	0.04	M0.00	0.00	M0.10	0.01	2.11	6.33	22.31
53	2.07	0.05	M1.12	M1.42	0.61	0.59	M0.00	M0.15	0.00	M0.21	M1.33	M0.64	8.19
54	2.19	2.27	M3.00	0.73	0.16	M0.27	0.00	0.00	M0.04	M0.00	1.68	M3.33	13.67
55	M2.45	1.69	M0.38	M1.28	0.65	0.00	0.00	M0.01	0.01	M0.01	M1.31	10.15	17.94
56	5.49	M1.15	0.14	1.92	M0.63	0.00	0.00	0.00	M0.63	0.79	0.03	0.48	11.26
57	2.65	M2.23	1.30	1.14	M2.65	M0.04	0.00	0.00	M0.05	1.06	0.37	M1.62	13.11
58	3.16	5.37	4.44	3.74	0.66	0.41	0.00	0.00	0.02	0.09	0.14	0.86	18.89
59	2.45	3.59	0.29	0.35	0.00	0.00	0.00	0.07	1.89	0.00	0.00	0.75	9.39
60	2.98	4.12	0.60	0.48	0.42	0.00	0.02	0.00	0.01	0.05	2.92	1.25	12.85
61	2.08	1.04	1.92	1.03	0.69	0.19	0.00	0.13	0.16	0.15	2.24	0.82	10.45
62	0.73	5.61	1.82	0.22	0.00	0.00	0.00	0.00	0.00	3.64	0.28	1.55	13.85
63	1.40	4.50	2.60	3.47	M0.70	0.00	0.00	0.00	0.33	0.93	3.18	0.19	17.30
64	2.37	0.08	1.57	0.21	0.48	0.32	0.00	0.12	0.04	0.85	2.44	4.91	13.39
65	2.11	0.59	1.73	1.53	0.00	0.00	0.00	0.21	0.00	0.03	4.22	3.23	13.65
66	1.05	1.17	0.17	0.33	0.10	0.12	0.17	0.00	0.11	0.00	3.43	2.35	9.00
67	6.14	0.29	4.15	4.65	0.19	0.48	0.00	0.00	0.02	0.24	0.88	1.62	18.66
68	3.93	0.90	2.40	0.43	0.15	0.00	0.00	0.00	0.00	0.43	2.48	3.04	13.76
69	6.28	4.76	0.55	1.24	0.08	0.00	0.00	0.00	0.00	1.10	0.49	2.34	16.84
70	5.38	1.18	1.42	0.40	0.07	0.32	0.00	0.00	0.00	0.41	5.24	5.27	19.69
71	1.19	0.33	1.75	1.37	0.54	0.00	0.00	0.00	0.13	0.04	0.46	3.27	9.08
72	0.90	0.79	0.14	0.64	0.00	0.04		0.00	0.58	2.98		2.22	8.29
73	5.50			0.29	0.03	0.00	0.00	0.00	0.08	2.08	3.71	3.80	15.49
74	1.50	0.71	2.69	1.62	0.00	0.00	0.00	0.00	0.00	0.50	0.66		7.68
75	0.84	3.65	5.24	1.42	0.00	0.06	0.10	0.35	0.00	1.27	0.08	0.21	13.22
76	0.30	1.46	0.48	0.39	0.00	0.18	0.00	0.91	0.95	0.50	0.50	0.73	6.40
77	1.15	0.83	0.82	0.16	1.01	0.00	0.10	0.00	0.22	0.13		3.07	7.49
78	5.44	2.95		2.49	0.01	0.00	0.00	0.00	0.04	0.00	2.16	0.58	13.67
79	4.52	3.19	1.86	0.88	0.34	0.00	0.06	0.00	0.00	1.51	1.13	2.66	16.15
80	4.16	4.24	1.36	1.32	0.48	0.00	0.70	0.00	0.00	0.04	0.28	1.18	13.76
81	3.97	1.11	2.94	0.61	0.11	0.00	0.00	0.00	0.06	2.07	3.44	2.57	16.88
82	5.29	2.16	5.58	1.50	0.00	0.28	0.00	0.01	1.48	2.24	3.72	2.80	25.06
83	6.28	5.56	6.14	3.51	0.21	0.00	0.00	0.50	1.02	0.27	5.44	3.44	32.37
84	0.33	1.87	1.00	0.53	0.01	0.03	0.00	0.00	0.04	1.25	4.71	1.51	11.28
85	0.48	1.25	2.62	0.32	0.07	0.22	0.00	0.03	0.13	0.89	2.69	1.97	10.67



86	2.04	7.11	4.09	0.40	0.14	0.00	0.01	0.00	0.45	0.04	0.08	0.92	15.28
87	1.83	3.47	2.30	0.16	0.09		0.00	0.00	0.00	0.87	1.40	2.30	12.42
88	1.78	0.38	0.26	1.15	0.45	0.10	0.00	0.00	0.00	0.11	1.92	2.03	8.18
89	0.81	0.95	2.94	0.88	0.08	0.10	0.00	0.00	1.33	1.13	1.02	0.10	9.34
90	1.54	2.46	0.87	0.37	1.78	0.00	0.02	0.00	0.06	0.08	0.39	1.45	9.02
91	0.31	2.20	5.87	0.34	0.35	0.08	0.00	0.21	0.04	1.65	0.31	1.19	12.55
92	1.39	4.61	1.97	0.43	0.00	0.09	0.00	0.00	0.00	0.90	0.15	4.79	14.33
93	6.41	4.53	2.91	0.63	0.51	0.30	0.00	0.00	0.00	0.57	2.00	1.81	19.67
94	0.94	3.33	0.15	1.20	1.78	0.04	0.00	0.00	0.00	0.58		1.36	9.38
95	6.64	0.33	6.66	1.02	0.92	0.70	0.00	0.00	0.00	0.00	0.01	5.37	21.65
96	5.17	4.10	2.34	1.91	1.05	0.00	0.00	0.00	0.00	1.08	2.55	4.43	22.63
97	5.81	0.15	0.06	0.15	0.29	0.17	0.00	0.42	0.00	0.28	4.23	1.95	13.51
98	5.47	7.30	2.37	1.37	2.00	0.13	0.00	0.00	0.18	0.54	2.48	0.73	22.57
99	3.23	3.33	1.67	0.99	0.08	0.01	0.00	0.03	0.04	0.15	1.26	0.25	11.04
0	4.61	4.87	1.25	0.59	0.69	0.18	0.00	0.01	0.24		0.49	0.45	13.38
1	1.92	2.89	1.22	1.80	0.00	0.12	0.00	0.00	0.09	0.37	1.92	5.09	15.42
2													

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WETS Station : NEWARK, CA6144  
Latitude: 3731 Longitude: 12202 Elevation: 00010  
State FIPS/County(FIPS): 06001 County Name: Alameda  
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)				Precipitation (Inches)				
	-----				-----				
					30% chance will have		avg	# of	avg
	avg	avg	avg	avg	less	more	w/.1	days	total
daily	daily			than	than	or		snow	
max	min					more		fall	
January	57.6	42.0	49.8	2.96	1.35	3.62	6	0.0	
February	61.1	45.2	53.1	2.81	1.27	3.43	6	0.0	
March	63.7	47.3	55.5	2.39	1.03	2.92	6	0.0	
April	67.2	49.8	58.5	2.62	0.40	2.83	2	0.0	
May	70.4	52.9	61.7	0.42	0.03	0.47	1	0.0	
June	74.5	56.0	65.3	0.12	0.00	0.12	0	0.0	
July	76.7	57.7	67.2	0.03	0.00	0.00	0	0.0	
August	77.1	58.4	67.7	0.07	0.00	0.01	0	0.0	
September	76.8	57.5	67.2	0.20	0.00	0.24	0	0.0	
October	72.8	53.8	63.3	0.90	0.29	1.10	2	0.0	
November	64.1	47.1	55.6	1.84	0.61	2.20	4	0.0	
December	57.7	41.7	49.7	2.08	1.16	2.57	5	0.0	
Annual	-----	-----	-----	-----	11.48	19.40	--	-----	
Average	68.3	50.8	59.6	-----	-----	-----	--	-----	
Total	-----	-----	-----	16.44	-----	-----	32	0.0	

GROWING SEASON DATES

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| Temperature

Probability	24 F or higher	28 F or higher	32 F or higher
Beginning and Ending Dates Growing Season Length			
50 percent *	----- > 365 days	12/30 to 12/30 > 365 days	> 365 days > 365 days
70 percent *	----- > 365 days	12/30 to 12/30 > 365 days	> 365 days > 365 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1948-2002 prcp

Station : CA6144, NEWARK

----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
48							0.00	0.00	0.00	0.59	0.17	3.10	3.86
49	0.97	2.45	4.33	0.00	0.19	0.01	0.03	0.08	0.00	0.26	1.22	1.67	11.21
50	5.18	M1.49	1.76	0.96	0.15	0.00	0.03	0.00	0.05	M0.80	M3.15	M3.94	17.51
51	2.42	1.88	1.83	0.75	0.41	0.04	0.00	0.01	0.00	M0.86	3.14	M6.44	17.78
52	6.63	1.15	M4.00	1.38	0.04	M0.17	0.00	0.00	0.00	0.05	2.29	M6.05	21.76
53	2.02	0.00	0.93	1.23	M0.63	0.16	0.00	0.12	0.02	M0.25	1.77	1.04	8.17
54	M2.42	M1.37	2.84	0.74	M0.16	M0.29	0.00	0.00	0.00	0.06	M1.20	M2.97	12.05
55	M4.44	M1.75	0.17	M0.87	M0.80	0.00	0.00	0.00	0.01	0.00	1.29	M7.93	17.26
56	M6.27	0.97	M0.04	1.35	0.83	0.00	0.00	0.00	0.25	0.69	0.02	0.32	10.74
57	M2.31	M1.96	1.63	1.26	M2.38	0.00	0.00	0.00	M0.25	M1.61	M0.51	3.34	15.25
58	4.27	M5.45	M4.36	M3.23	0.63	M0.02	0.02	0.00	0.05	M0.04	M0.16	M0.85	19.08
59	M2.78	M2.50	0.30	0.06	0.00	0.00	0.00	0.00	M0.75	0.05	0.00	M0.45	6.89
60	5.33	M3.41	M0.98	M0.35	0.45	0.00	0.00	0.00	0.02	0.17	M3.82	M1.06	15.59
61	M3.27	M1.04	M1.19	0.82	M0.56	0.18	0.00	0.09	0.30	0.05	M2.95	M0.91	11.36
62	M1.20	M6.62				0.00	0.00	0.00	0.00	M4.53	0.34	2.20	14.89
63	1.51	M2.88	M3.09	4.19	0.57	0.08	0.00	0.01	0.09	1.21	M2.93	0.24	16.80
64	3.54	0.00	1.31	0.07	0.45	0.41	0.00	0.09	0.00	0.67	M1.99	M4.23	12.76
65	M1.45	0.50	1.55	1.77	0.00	0.00	0.00	0.18	0.00	0.11	M4.21	2.84	12.61
66	1.54	1.27	0.32	0.36	0.05	0.11	0.24	0.00	0.13	0.00	2.71	2.28	9.01
67	M5.63	0.25	M2.84	M3.57	0.11	0.51	0.00	0.00	0.00	0.22	1.02	2.18	16.33
68	3.77	M0.56	M2.17	0.76	0.18	0.00	0.00	0.72	0.00	0.27	M2.48	M2.26	13.17
69	6.24	M3.96	1.38	M1.15	0.02	0.00	0.00	0.00	0.05	0.47	0.36	1.23	14.86
70	5.36	0.93	1.51	0.20	0.01	0.20	0.00	0.00	0.00	0.56	5.90	4.87	19.54
71	0.73	M0.79	1.43	1.25	0.12	0.00	0.00	0.09	0.12	0.01	0.81	2.90	8.25
72	0.77	0.65	0.04	0.38	0.00	0.20	0.00	0.00	0.58	M2.87	M5.90	1.70	13.09
73	3.79	M5.33	2.05	0.39	0.03	0.00	0.00	0.00	0.04	M1.63	M2.99	M3.84	20.09
74	M2.41	0.88	M2.23	M1.66	0.00	0.63	0.15	0.00	0.00	M0.89	0.61	1.38	10.84
75	0.84	M2.21	M3.28	M1.67	0.02	0.00	0.13	0.43	0.01	1.12	0.27	0.18	10.16
76	0.27	0.90	1.41	0.57	0.01	0.08	0.09	0.65	0.68	0.52	M0.82	0.89	6.89
77	0.81	0.63	1.64	0.18	1.09	0.00	0.14	0.00	0.44	0.22	M0.92	3.04	9.11
78	M6.26	3.07	M3.60	2.96	0.00	0.00	0.00	0.00	0.05	0.00	2.12	0.48	18.54
79	4.09	3.26	1.79	0.54	0.19	0.00	0.07	0.01	0.00	1.71	1.14	2.66	15.46
80	2.89	5.87	1.54	0.84	0.06	0.00	0.38	0.00	0.00	0.02	0.17	1.20	12.97
81	3.41	1.39	2.66	0.37	0.08	0.01	0.00	0.00	0.02	2.01	3.04	1.89	14.88
82	4.26	2.90	4.39	2.12	0.00	0.10	0.00	0.09	0.86	1.95	2.85	2.42	21.94
83	5.97	3.67	7.17	3.50	0.42	0.00	0.00	0.04	0.60	0.51	6.04	3.60	31.52
84	0.14	2.04	1.15	51.00	0.00	0.10	0.00	0.04	0.24	1.74	4.33	1.68	62.46

85	0.86	1.04	2.43	0.05	0.25	0.03	0.03	0.00	0.40	1.02	2.41	1.95	10.47
86	1.82	5.30	3.48	0.59	0.27	0.00	0.00	0.00	0.62	0.07	0.06	0.98	13.19
87	2.13	2.72	1.54	0.15	0.02	0.00	0.00	0.00	0.00	0.87	0.97	2.16	10.56
88	2.46	0.31	0.06	1.00	0.47	0.05	0.00	0.00	0.01	0.16	1.81	2.92	9.25
89	0.93	1.07	2.66	0.56	0.09	0.00	0.00	0.00	0.63	2.05	0.87	0.00	8.86
90	1.78	1.90	0.93	0.26	1.88	0.00	0.00	0.00	0.09	0.12	0.51	1.75	9.22
91	0.28	2.31	5.37	0.35	0.19	0.12	0.00	0.11	0.07	1.62	0.33	1.88	12.63
92	1.41	5.33	3.56	0.48	0.00	0.16	0.00	0.00	0.00	0.79	0.13	4.79	16.65
93	6.90	4.72	2.50	0.79	0.50	0.38	0.00	0.00	0.00	0.54	2.92	2.15	21.40
94	1.85	3.24	0.18	1.05	1.69	0.05	0.00	0.00	0.14	0.31	2.98	1.46	12.95
95	8.36	0.16	6.25	1.09	0.99	1.10	0.00	0.00	0.00	0.00	0.01	4.60	22.56
96	4.32	3.95	1.89	1.00	1.11	0.00	0.00	0.00	0.00	0.60	1.40	5.67	19.94
97	5.37	0.28	0.14	0.17	0.29	0.37	0.00	0.48	0.00	0.59	5.29	1.98	14.96
98	5.90	10.79	2.57	1.74	2.06	0.01	0.00	0.00	0.09	0.62	1.95	1.27	27.00
99	3.22	3.82	1.85	1.21	0.03	0.03	0.00	0.00	0.27	0.35	1.01	0.33	12.12
0	4.72	6.26	2.03	0.65	0.69	0.29	0.00	0.03	0.17	1.94	0.44	0.54	17.76
1	2.08	3.32	1.25	1.32	0.00	0.15	0.00	0.01	0.04	0.27	1.97	4.68	15.09
2													

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WETS Station : OAKLAND MUSEUM, CA6336 Creation Date: 08/29/2002  
Latitude: 3748 Longitude: 12216 Elevation: 00030  
State FIPS/County(FIPS): 06001 County Name: Alameda  
Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)					
	avg daily max	avg daily min	avg	avg	30% chance will have		avg	total snow fall	
					less than	more than	# of days  w/.1 or more		
January	57.3	44.6	51.0	4.85	2.24	5.93	7	0.0	
February	61.6	47.9	54.7	4.40	1.83	5.35	7	0.0	
March	63.3	49.1	56.2	3.56	1.54	4.34	6	0.0	
April	66.5	50.6	58.5	1.35	0.53	1.66	3	0.0	
May	69.0	53.4	61.2	0.59	0.05	0.65	1	0.0	
June	71.7	55.7	63.7	0.12	0.00	0.12	0	0.0	
July	72.5	56.9	64.7	0.07	0.00	0.00	0	0.0	
August	73.5	58.3	65.9	0.10	0.00	0.01	0	0.0	
September	74.7	58.3	66.5	0.31	0.00	0.36	0	0.0	
October	72.1	55.4	63.8	1.38	0.53	1.69	2	0.0	
November	63.9	49.5	56.7	3.24	1.30	3.93	5	0.0	
December	57.7	44.6	51.1	3.13	1.71	3.88	5	0.0	
Annual					16.81	25.64	--	--	
Average	67.0	52.0	59.5				--	--	
Total				23.10			36	0.0	

GROWING SEASON DATES  
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Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
Beginning and Ending Dates Growing Season Length			
50 percent *	----- > 365 days	----- > 365 days	> 365 days > 365 days
70 percent *	----- > 365 days	----- > 365 days	> 365 days > 365 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1971-2002 prcp

Station : CA6336, OAKLAND MUSEUM  
----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
71	1.73	0.43	2.80	0.93	0.13	0.00	0.00	0.00	0.26	0.10	2.04	4.19	12.61
72	1.32	1.58	0.18	1.02		0.34	0.00	0.01	0.90	4.25	6.39	3.20	19.19
73	10.43	6.31	2.95	0.02	0.04	0.00	0.00	0.00	0.64	1.77	9.67	5.39	37.22
74	3.39	1.76	5.15	3.33	0.00	0.15	1.19	0.00	0.00	M1.16	0.78	2.52	19.43
75	2.29	3.88	5.68	2.25	0.01	0.08	0.21	0.05	0.03	3.85	0.56	0.52	19.41
76	0.31	2.01	1.08	0.89	0.00	0.04	0.00	1.09	0.61	0.57	1.09	2.30	9.99
77	1.55	0.77	2.10	0.00	0.54	0.00	0.01	0.00	0.68	0.21	2.83		8.69
78	7.87	4.80	6.89	3.76	0.00	0.00	0.00	0.00	0.59	0.00	1.64	0.70	26.25
79	7.18	5.52	2.82	1.04	0.10	0.00	0.43	0.00	0.00	2.37	3.96	5.77	29.19
80	4.81	7.63	M1.82	1.66	0.44	0.00		0.00	0.00	0.13	0.20	2.42	19.11
81	6.15	1.33	4.41	0.30	0.10	0.00	0.00	0.00	0.08	2.80	5.93	4.65	25.75
82	10.75	3.80	8.55	4.13	0.00	0.19	0.03	0.00	M0.00	2.89	5.31	3.11	38.76
83	7.22	8.08	9.83	3.87	0.42		0.00	0.05	0.61	0.23	7.12	6.84	44.27
84	0.33	2.28	1.60	0.98	0.09	M0.00	0.00	0.17	0.31	2.99	M6.89		15.64
85	0.77	2.08	3.65	0.15	0.04			0.00	0.53	1.18	M3.26	1.67	13.33
86	5.24	8.92	5.89	0.70	0.13	0.00	0.03	0.00	1.54	0.14	0.32	1.47	24.38
87	3.60	4.93	2.32	0.20	0.04	0.00	0.00	0.00	0.00	1.57	2.34	4.29	19.29
88	3.83	0.49	0.03	2.77	0.98	0.44	0.00	0.01	0.00	0.37	2.49	3.81	15.22
89	1.27		5.16	0.63	0.04	0.04	0.00	0.00	1.45	1.73	1.25	0.00	11.57
90	4.41		1.21	0.24	2.92	0.01	0.00	0.00	0.06	0.35	0.49	1.58	11.27
91	0.42	3.49	7.04	0.72	0.20	0.24	0.00	0.19	0.00	M1.20	0.36	2.22	16.08
92	1.71	7.53	4.54	0.26	0.00	0.30	0.00	0.03	0.00	2.49	0.30	6.82	23.98
93	8.90	3.94	2.61	0.60	0.94	0.11	0.00	0.00	0.00	0.62	2.08	3.01	22.81
94	2.56	4.52	0.28	1.69	1.54	0.00	0.00	0.00	0.04	0.40	9.37	3.23	23.63
95	M9.77	0.21	7.60	1.86	1.07	0.92	0.00	0.00	0.00				21.43
96	6.40	M5.87	2.01		2.67	0.00					3.44	8.90	29.29
97	7.80	0.22	0.56	0.57	0.27	0.28	0.00	1.25	0.01	1.18	M6.79	3.36	22.29
98	12.45	15.14	2.76	1.83	2.98	0.01	0.00	0.00	0.04	0.81	3.82	1.23	41.07
99	4.04	7.17	2.89	1.80	0.09	0.03	0.00	0.06	0.13	0.50	2.55	0.48	19.74
0	7.13	9.94	2.45	1.01	1.21		0.00	0.00	0.26	2.75	M0.70	0.77	26.22
1	3.27	7.39	1.27	1.69	0.00	0.07	0.00	0.00	0.26	0.54	4.41	9.40	28.30
2													

WETS Station : TRACY PUMPING PLANT, CA9001                      Creation Date: 08/29/2002  
Latitude: 3748                      Longitude: 12135                      Elevation: 00060

State FIPS/County(FIPS): 06001 County Name: Alameda  
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)					
	avg daily max	avg daily min	avg	avg	30% chance will have		avg	# of days w/.1 or more	avg total snow fall
					less than	more than			
January	54.8	38.5	46.7	2.68	1.16	3.26	6	0.0	
February	61.6	41.9	51.8	2.29	1.01	2.79	5	0.0	
March	66.4	45.0	55.7	1.98	0.80	2.40	5	0.0	
April	72.8	48.0	60.4	0.73	0.39	0.90	2	0.0	
May	80.0	53.4	66.7	0.45	0.00	0.46	1	0.0	
June	87.4	57.5	72.4	0.09	0.00	0.07	0	0.0	
July	92.1	60.4	76.3	0.04	0.00	0.00	0	0.0	
August	91.6	60.3	76.0	0.06	0.00	0.00	0	0.0	
September	87.4	58.5	72.9	0.25	0.00	0.19	0	0.0	
October	78.5	52.2	65.4	0.72	0.22	0.91	1	0.0	
November	64.6	44.1	54.3	1.63	0.58	2.03	4	0.0	
December	55.3	38.0	46.7	1.55	0.75	1.89	4	0.0	
Annual	-----	-----	-----	-----	8.76	13.96	--	-----	
Average	74.4	49.8	62.1	-----	-----	-----	--	-----	
Total	-----	-----	-----	12.48	-----	-----	28	0.0	

## GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	----- > 365 days	12/30 to 12/30 > 365 days	1/17 to 12/20 338 days
70 percent *	----- > 365 days	12/30 to 12/30 > 365 days	> 365 days > 365 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1955-2002 prcp

Station : CA9001, TRACY PUMPING PLANT  
 ----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
55		0.87	0.59	1.24	0.36	0.00	0.00	0.00	0.00	0.12	1.07	6.33	10.58
56	4.13	0.48	0.00	1.35	0.46	0.00	0.00	0.00	0.68	0.32	0.04	0.21	7.67
57	1.78	2.38	0.93	M0.92	M1.32	0.02	0.00	0.00	0.17	M0.70	0.21	1.81	10.24
58	3.19	4.68	3.78	3.03	0.67	0.15	0.00	0.09	0.06	0.00	0.00	0.59	16.24
59	2.53	3.05	0.11	0.10	0.05	0.00	0.00	0.00	2.60	0.00	0.00	0.79	9.23
60	2.27	2.39	0.27	0.24	0.25	0.00	0.01	0.00	0.01	0.07	2.91	0.40	8.82
61	2.21	0.58	1.13	0.69	0.89	0.00	0.00	0.06	0.19	0.03	2.50	0.55	8.83
62	0.60	5.93	1.02	0.01	0.00	0.00	0.00	0.00	0.05	2.87	0.18	1.35	12.01
63	1.90	2.45	1.84	2.27	0.30	0.00	0.00	0.00	0.17	0.68	3.21	0.11	12.93
64	1.48	0.01	0.80	0.17	0.15	1.80	0.02	0.30	0.00	1.03	1.95	3.74	11.45
65	1.90	0.50	1.19	1.16	0.00	0.00	0.05	0.36	0.00	0.02	3.14	2.23	10.55
66	0.82	1.19	0.11	0.42	0.15	0.00	0.25	0.00	0.06	0.00	3.21	2.93	9.14
67	5.27	0.24	3.11	2.53	0.02	0.55	0.00	0.00	0.00	0.09	0.66	0.92	13.39
68	3.32	1.33	1.64	0.44	0.00	0.00	0.00	0.60	0.00	0.19	2.22	2.44	12.18
69	5.02	3.88	0.29	0.65	0.00	0.00	0.00	0.00	0.04	0.95	0.36	1.97	13.16
70	5.40	1.70	1.17	0.21	0.00	0.19	0.00	0.00	0.00	0.64	4.42	3.62	17.35
71	0.81	0.28	1.11	1.00	1.32	0.00	0.00	0.00	0.03	0.00	0.36	2.06	6.97
72	0.51	0.62	0.05	0.30	0.03	0.02	0.00	0.00	0.69	1.77	4.15	1.17	9.31
73	4.38	3.97	2.35	0.41	0.00	0.00	0.00	0.00	0.00	1.35	3.36	2.80	18.62
74	2.03	0.26	1.82	1.23	0.00	0.05	0.10	0.00	0.00	0.63	0.31	1.96	8.39
75	0.33	3.04	3.40	0.92	0.00	0.00	0.18	0.32	0.00	0.98	0.28	0.30	9.75
76	0.25	1.17	0.25	0.55	0.00	0.03	0.00	0.73	0.89	0.43	0.45	0.69	5.44
77	0.52	0.66	0.74	0.63	0.83	0.00	0.01	0.00	0.24	0.13	1.71	2.45	7.92
78	5.61	2.87	3.11	1.14	0.00	0.00	0.00	0.00	0.07	0.00	1.93	0.25	14.98
79	3.68	2.53	2.05	0.62	0.00	0.00	0.20	0.00	0.00	1.30	0.92	2.24	13.54
80	3.46	3.28	1.02	0.98	0.13	0.00	0.62	0.00	0.00	0.03	0.17	0.85	10.54
81	3.16	0.75	2.11	0.27	0.02	0.00	0.00	0.00	0.08	1.29	3.12	2.09	12.89
82	5.46	1.47	4.10	1.45	0.00	0.29	0.00	0.00	2.20	1.64	3.87	1.99	22.47
83	5.12	3.89	5.89	2.91	0.16	0.00	0.00	0.51	0.76	0.43	4.93	2.88	27.48
84	0.45	1.48	0.45	0.30	0.01	0.01	0.00	0.00	0.00	1.41	3.80	1.25	9.16
85	0.42	0.81	1.20	0.21	0.00	0.40	0.00	0.00	0.00	0.48		2.89	6.41
86	1.66	5.10	4.74	0.31	0.07	0.00	0.03	0.00	0.71	0.00	0.00	0.87	13.49
87	1.48	4.15	1.65	0.13	0.00	0.00	0.00	0.00	0.00	M0.58	M1.02	M2.11	11.12
88	M2.27	M0.45	0.83	M1.35	M0.32	0.76	0.00	0.00	0.00	0.24	M1.02	M1.63	8.87
89	M0.83	M0.92	M1.67	M0.30	0.10	M0.02	0.00	M0.01	M1.56	M0.64	M0.85	M0.05	6.95
90	M1.04	M2.11	M0.57	M0.47	M2.00	0.00	0.00	0.00	M0.07	0.15	0.20	1.08	7.69
91	M0.22	M1.98	M3.60	M0.37	0.26	M0.00	0.10	0.15	0.00	1.01	M0.25	M0.70	8.64
92	M1.43	M3.73	M1.46	0.60	0.00	0.14	0.00	0.00	0.00	M0.71	M0.29	M4.42	12.78
93	M5.86	M2.89	M2.83	M0.53	M0.93	M0.14	0.00	0.00	0.00	0.30	2.11	1.39	16.98
94	1.02	2.71	0.07	1.01	1.39	0.00	0.00	0.00	0.05	0.33	2.55	0.67	9.80
95	5.13	0.16	M5.19	0.71	0.48	0.71	0.00	0.00	0.00	0.00	0.00	4.67	17.05
96	M4.02	3.79	2.45	1.09	1.19	0.00	0.00	0.00	0.00	1.11	1.99	3.58	19.22
97	5.22	M0.17	0.11	0.03	0.55	0.15	0.00	0.05	0.00	0.22	3.22	1.59	11.31
98	4.57	7.27	1.43	1.08	3.15	0.10	0.00	0.00	0.13	0.52	1.81	0.44	20.50
99	3.08	2.38	1.99	0.71	0.06	0.00	0.00	0.00	0.07	0.06	0.96	0.27	9.58
0	4.32	4.42	0.79	0.42	0.51	0.02	0.00	0.00	0.02	3.87	0.52	0.47	15.36
1	1.84	2.38	1.16	1.08	0.00	0.05	0.00	0.00	0.25	0.17	1.79	4.55	13.27
2													

WETS Station : UPPER SAN LEANDRO FLTR, CA9185      Creation Date: 08/29/2002  
Latitude: 3746      Longitude: 12210      Elevation: 00390  
State FIPS/County(FIPS): 06001      County Name: Alameda  
Start yr. - 1971      End yr. - 2000

Temperature (Degrees F.)	Precipitation (Inches)
-----------------------------	---------------------------

Month	avg daily max	avg daily min	avg	avg	30% chance will have		avg	total
					less than	more than	# of days w/.1 or more	
January	57.6	40.7	49.1	5.20	2.32	6.34	8	0.0
February	61.3	42.6	51.9	4.64	2.07	5.66	7	0.0
March	62.7	43.9	53.3	4.49	2.34	5.48	8	0.0
April	66.6	44.9	55.7	1.70	0.71	2.07	3	0.0
May	69.5	48.0	58.8	0.75	0.06	0.83	1	0.0
June	73.0	51.6	62.3	0.15	0.00	0.18	0	0.0
July	75.4	53.3	64.3	0.06	0.00	0.00	0	0.0
August	75.3	54.2	64.8	0.11	0.00	0.02	0	0.0
September	76.1	53.9	65.0	0.36	0.00	0.38	1	0.0
October	72.8	51.0	61.9	1.52	0.55	1.88	2	0.0
November	64.4	45.2	54.8	3.88	1.54	4.70	6	0.0
December	58.6	41.4	50.0	3.84	1.81	4.69	6	0.0
Annual					20.36	29.92	--	
Average	67.8	47.6	57.7				--	
Total				26.69			42	0.0

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	> 365 days	> 365 days	> 365 days
70 percent *	> 365 days	> 365 days	> 365 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1948-2002 prcp

Station : CA9185, UPPER SAN LEANDRO FLTR  
Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
48							0.00	0.02	0.00	0.64	0.86	4.10	5.62
49	1.58	3.12	4.59	0.02	0.78	0.00	0.05	M0.12	0.00	0.32	M1.73	M2.24	14.55
50	9.80	2.31	3.32	1.57	0.91	0.02	0.00	0.00	0.00	2.36	6.08	6.19	32.56
51	6.25	M2.47	M2.24	1.09	0.70	0.01	0.00	0.34	0.03				13.13

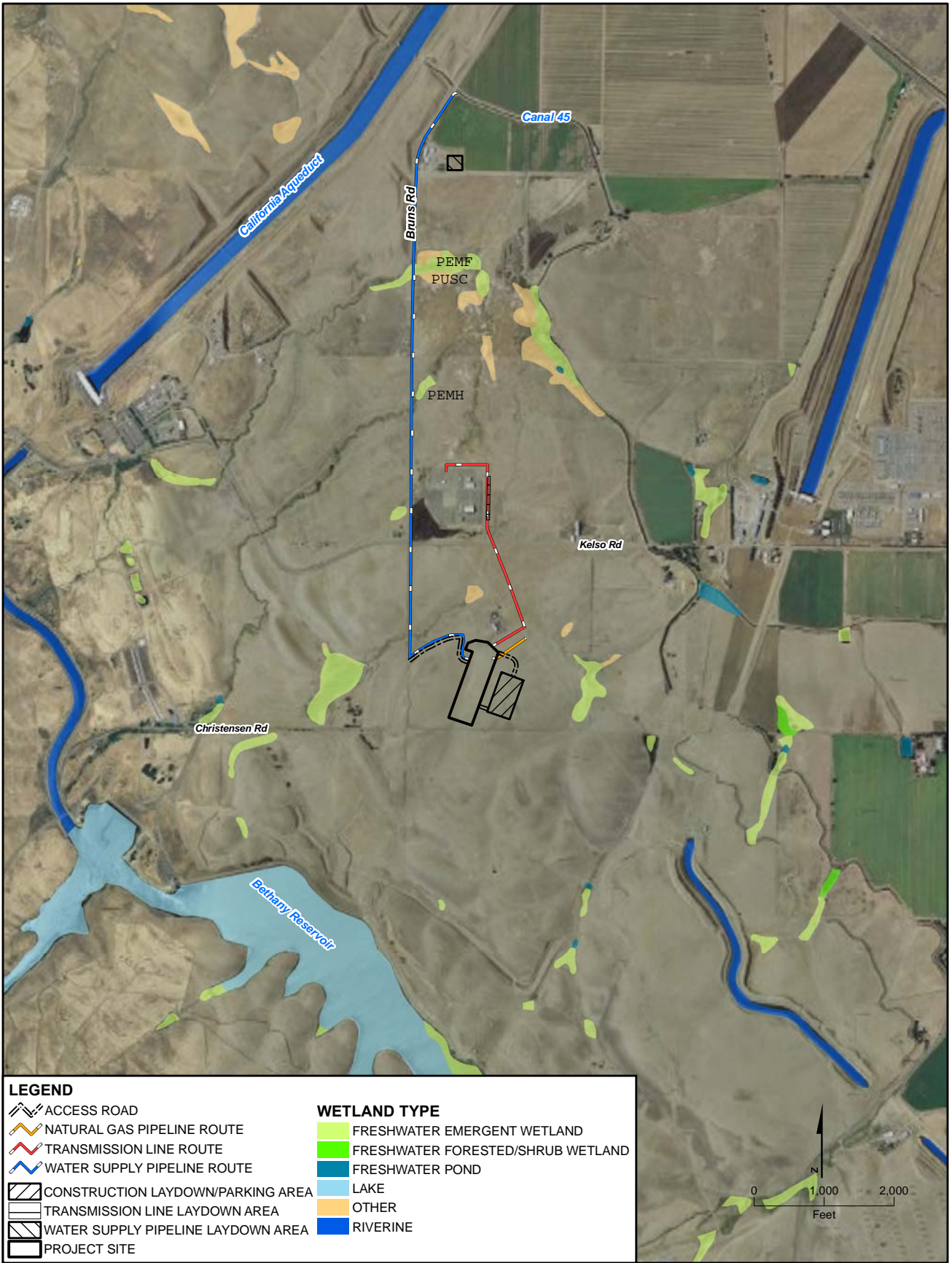
58								0.00	0.06	0.22	0.12	1.93	2.33
59	4.73	4.70	0.83	0.02	M0.02	0.00	0.00	0.03	3.31	0.03	0.00	1.61	15.28
60	M3.01	5.63	3.05	0.97	0.96	M0.00	M0.00	0.00	0.00	0.32	M5.81	0.91	20.66
61	2.99	M1.44	3.76	M1.29	0.79	0.00	0.00	0.13	0.34	M0.34	4.07	2.90	18.05
62	1.74	8.93	2.61	0.53	0.00	0.00	0.00	0.14	0.43	13.13	0.95	2.97	31.43
63	2.62	4.47	4.09	5.64	0.69	0.00	0.00	0.00	0.23	1.83	4.10	0.57	24.24
64	4.91	0.19	2.13	0.32	0.66	0.69	0.03	0.05	0.00	1.35	4.21	7.52	22.06
65	4.86	0.98	2.04	3.99	0.00	0.00	0.02	0.10	0.00	0.28	5.48	4.22	21.97
66	2.98	2.97	0.84	0.73	0.34	0.00	0.15	0.14	0.15	0.00	5.03	4.18	17.51
67	10.20	0.37	5.23	5.80	0.09	1.15	0.00	0.00	0.02	0.66	1.20	3.79	28.51
68	6.61	2.81	3.61	0.44	0.57	0.00	0.00	0.25	0.03	0.28	3.26	4.74	22.60
69	9.00	9.14	1.63	2.27	0.00	0.12	0.00	0.00	0.00	2.31	0.73	5.70	30.90
70	9.71	1.59	1.99	0.06	0.01	0.81	0.00	0.00	0.00	0.77	8.03	8.77	31.74
71	1.61	0.76	3.81	1.02	0.23	0.00	0.00	0.00	0.18	0.12	2.13	4.43	14.29
72	1.73	1.97	0.19	1.89	0.01	0.30	0.00	0.00	1.56	3.70	7.02	3.85	22.22
73	11.00	6.89	3.77	0.09		0.00	0.00	0.00	0.79	1.52	9.20	6.94	40.20
74	4.01	2.21	6.80	4.68	0.00	0.10	1.16	0.00	0.00	0.90		2.37	22.23
75	2.21	6.17	6.05	2.85	0.00	0.11	0.14	0.11	0.02	6.41	1.05	0.38	25.50
76	0.33	1.10	2.51	0.98	0.00	0.06	0.00	1.30	0.88	0.72	1.34	1.98	11.20
77	1.29	1.22	2.52	0.20	1.22	0.00	0.00	0.03	0.96	0.48	3.95	5.73	17.60
78	9.51	4.82	7.30	6.17	0.03	0.00	0.00	0.00	0.48	0.00	2.43	0.91	31.65
79	8.83	5.82	4.06	0.96	0.19	0.00	0.02	0.00	0.00	3.11	3.45	5.79	32.23
80	5.79	7.40	2.55	2.19	0.36	0.05	0.19	0.00	0.00	0.15	0.35	2.33	21.36
81	6.05	1.45	5.60	0.61	0.25	0.00	0.00	0.00	0.08	3.66	6.77	6.93	31.40
82	9.38	5.03	7.68	5.05	0.00	0.12	0.05	0.01	1.12	2.80	7.94	4.33	43.51
83	8.11	8.20	13.10	3.57	0.41	0.00	0.00	0.17	0.45	0.93	9.18	7.77	51.89
84	0.22	2.83	2.21	0.99	0.17	0.92	0.00	0.09	0.04	3.82	8.90	2.08	22.27
85	0.56	2.35	4.24	0.08	0.56	0.26	0.08	0.07	0.54	0.90	3.85	1.90	15.39
86	5.23	10.80	6.52	0.81	0.26	0.00	0.04	0.00	1.90	0.17	0.58	1.90	28.21
87	4.25	5.77	3.26	0.53	0.10	0.00	0.00	0.00	0.00	1.24	2.30	5.13	22.58
88	4.40	0.50			0.70	0.41	0.00	0.00	0.00	0.62	5.01	4.17	15.81
89	1.41	1.80	6.85	0.59	0.03	0.08	0.01	0.00	0.91	3.31	2.10	0.03	17.12
90	4.66	2.44	1.31	0.48	3.83	0.01	0.00	0.00	0.12	0.57	0.73	2.21	16.36
91	0.53	3.06	8.35	0.49		0.13	0.00	0.10	0.00	2.76	0.57	2.57	18.56
92	1.84	7.74	4.68	0.34	0.00	0.02		0.01	0.00	2.12	0.27	8.14	25.16
93	9.17	4.55	2.73	1.37	1.19	0.22	0.00	0.00	0.00	0.66	1.75	2.89	24.53
94	2.29	5.51	0.33	1.83	1.69	0.02	0.00	0.00	0.02	0.29	9.46	3.03	24.47
95	11.17	0.12	8.41	2.49	2.13	1.00	0.00	0.00	0.00	0.00	0.10	8.38	33.80
96	6.68	6.29	3.35	2.45	3.18	0.00	0.00	0.00	0.10	1.08	4.38	10.98	38.49
97	M8.77	0.40	0.55	1.22	0.16	0.44	0.00	1.23	0.01	0.93	7.68	3.61	25.00
98	12.19	15.43	3.13	2.47	3.62	0.12		0.00	0.11	0.70	3.93	2.45	44.15
99	4.54	8.07	3.82	2.02	0.06	0.03	0.00	0.11	0.02	0.34	2.08	0.64	21.73
0	8.13	8.48		0.94		0.21		0.00	0.47			1.28	19.51
1	3.46		1.73	1.95	0.00	0.22	0.00	0.00	0.20	0.50	4.33	10.42	22.81
2													



**Appendix B**  
**National Wetland Inventory Map**

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**LEGEND**

ACCESS ROAD	<b>WETLAND TYPE</b>
NATURAL GAS PIPELINE ROUTE	FRESHWATER EMERGENT WETLAND
TRANSMISSION LINE ROUTE	FRESHWATER FORESTED/SHRUB WETLAND
WATER SUPPLY PIPELINE ROUTE	FRESHWATER POND
CONSTRUCTION LAYDOWN/PARKING AREA	LAKE
TRANSMISSION LINE LAYDOWN AREA	OTHER
WATER SUPPLY PIPELINE LAYDOWN AREA	RIVERINE
PROJECT SITE	

Source: U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, National Wetlands Inventory, California, 2008.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

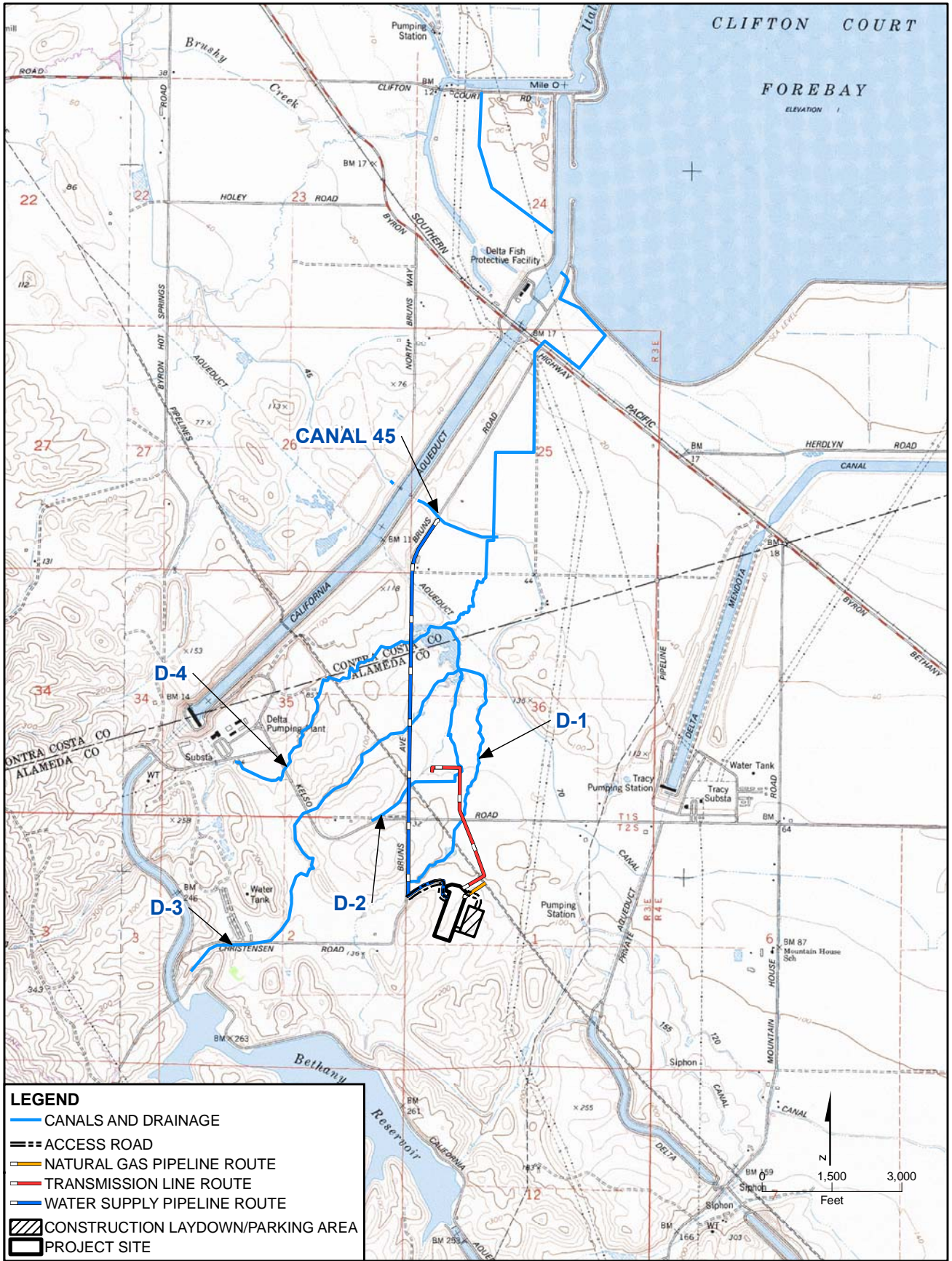
**FIGURE B-1**  
**NWI MAP**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA



**Appendix C**  
**Drainage and Topography Map**

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**Notes:**

1. Source: USGS, the National Atlas of the United States, Environmental Systems Research Institute (ESRI).  
Water Bodies - 2004, River and Streams - 2006.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

**FIGURE C-1**  
**DRAINAGE AND TOPOGRAPHY**  
MARIPOSA ENERGY PROJECT  
ALAMEDA COUNTY, CALIFORNIA

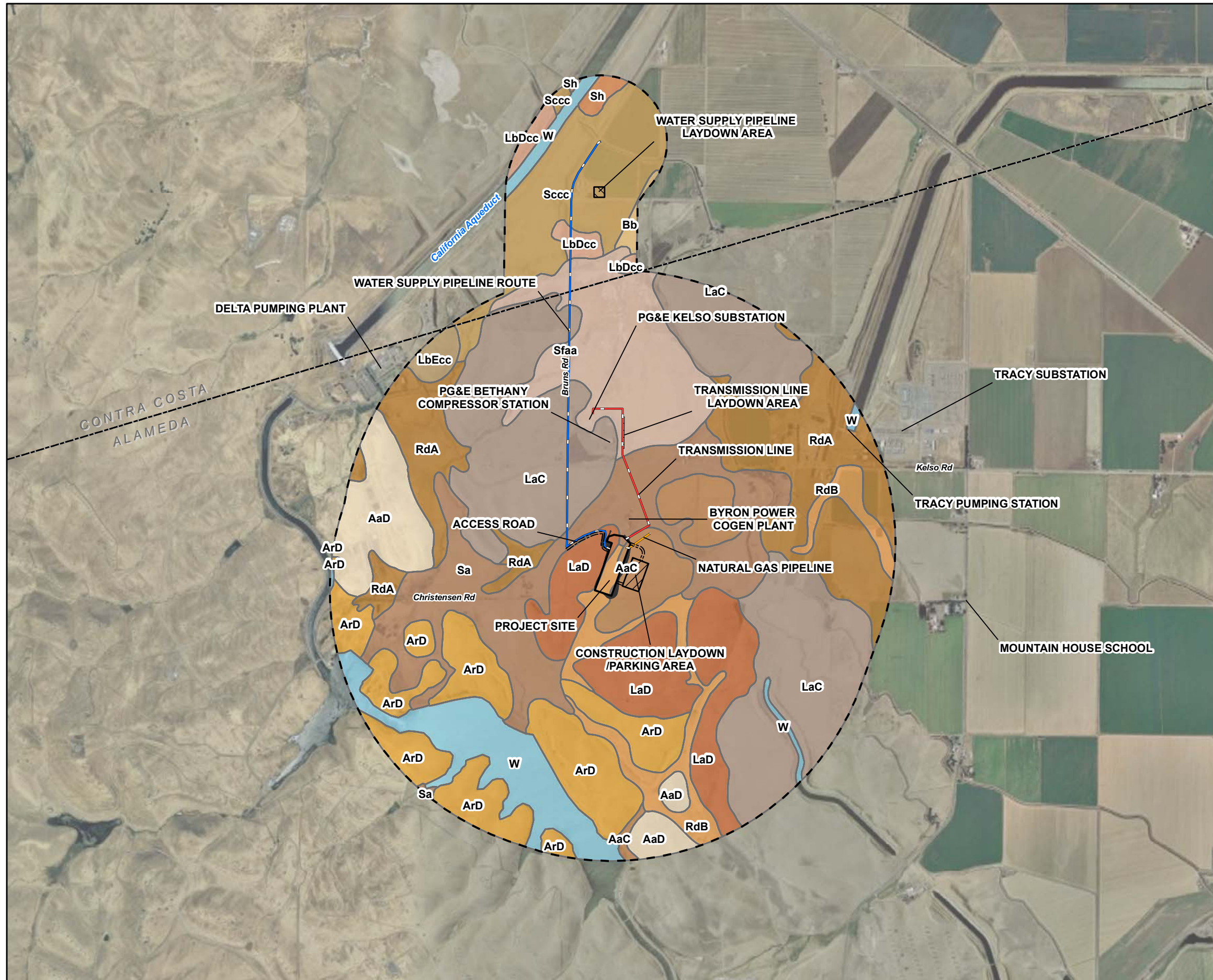




**Appendix D**  
**Mapped Soil Units in the Project Vicinity**

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**LEGEND**

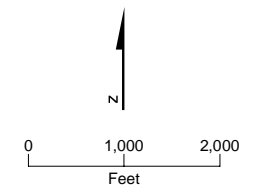
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- TRANSMISSION LINE LAYDOWN AREA
- WATER SUPPLY PIPELINE LAYDOWN AREA
- PROJECT SITE
- DISTURBED AREA
- BUFFER

**SOIL TYPE**

- AaC, ALTAMONT CLAY, 3 TO 15 PERCENT SLOPES
- AaD, ALTAMONT CLAY, 15 TO 30 PERCENT SLOPES
- ArD, ALTAMONT ROCKY CLAY, 7 TO 30 PERCENT SLOPES
- Bb, BRENTWOOD CLAY LOAM
- LaC, LINNE CLAY LOAM, 3 TO 15 PERCENT SLOPES
- LaD, LINNE CLAY LOAM, 15 TO 30 PERCENT SLOPES
- LbDcc, LINNE CLAY LOAM, 5 TO 15 PERCENT SLOPES
- LbEcc, LINNE CLAY LOAM, 15 TO 30 PERCENT SLOPES
- RdA, RINCON CLAY LOAM, 0 TO 3 PERCENT SLOPES
- RdB, RINCON CLAY LOAM, 3 TO 7 PERCENT SLOPES
- Sa, SAN YSIDRO LOAM
- Sccc, SAN YSIDRO LOAM
- Sf, SOLANO FINE SANDY LOAM
- Sfaa, SOLANO FINE SANDY LOAM
- Sh, SOLANO LOAM
- W, WATER

Notes:  
 1. 1 Mile Buffer around Project Site, 1/4 Mile Buffer around all Linears.  
 2. Source: U.S. Department of Agriculture, Natural resources Conservation Service, Soil Survey Geographic (SSURGO) Database for Contra Costa and Alameda County, California, 2005.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



**FIGURE D-1**  
**SOIL TYPES**  
 MARIPOSA ENERGY PROJECT  
 ALAMEDA COUNTY, CALIFORNIA



**Appendix E**  
**Wetland Determination Data Forms**

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**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/8/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-01  
 Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 28.127" Long: -121° 36' 05.172" Datum: WGS1984  
 Soil Map Unit Name: Linne Clay Loam; 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  Yes, or Hydrology  Yes naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Small concave depressional areas along gravel access road to the Byron CoGen Plant connected by a partially crushed 18-inch diameter culvert. Problematic area: seasonal wetland hydrology; no hydric soil indicators were noted but were presumed to meet the definition of a hydric soil as noted in the remarks.	

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. <u>None</u>				Number of Dominant Species that are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____				Percent of Dominant Species that are OBL, FACW, or FAC:	<u>100%</u> (A/B)
4. _____					
Total Cover: <u>N/A</u>					
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Prevalence Index Worksheet:</b>	
1. <u>None</u>				Total % Cover Of:	Multiply By:
2. _____				OBL species _____ ×1 = _____	
3. _____				FACW species _____ ×2 = _____	
4. _____				FAC species _____ ×3 = _____	
5. _____				FACU species _____ ×4 = _____	
Total Cover: <u>N/A</u>				UPL species _____ ×5 = _____	
				Column Totals: _____ (A) _____ (B)	
				Prevalence Index = B/A = _____	
Herb Stratum Plot Area: ~1m <sup>2</sup>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Plagiobothrys stipitatus</u>	20%	X	OBL	<input checked="" type="checkbox"/> Dominance Test is >50%	
2. <u>Lolium multiflorum</u>	3%		(FAC)	<input type="checkbox"/> Prevalence Index is ≤3.0*	
3. <u>Grindelia camporum</u>	3%		FACU	<input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)	
4. <u>Epilobium densiflorum</u>	2%		OBL	<input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain)	
5. <u>Psilocarphus oregonus</u>	1%		OBL	* Indicators of hydric soil and wetland hydrology must be present.	
6. <u>Crassula aquatica</u>	1%		OBL		
7. <u>Veronica peregrina</u>	T		OBL		
8. <u>Juncus bufonius</u>	T		FACW		
Total Cover: <u>30%</u>					
Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b>	
1. <u>None</u>				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
2. _____					
Total Cover: <u>N/A</u>					
% Bare Ground in Herb Stratum <u>70</u>		% Cover of Biotic Crust <u>N/A</u>			

Remarks: Basin is characterized by *Plagiobothrys* with other scattered vernal pool plants; species around the margins of the basin included *Bromus hordeaceus*, *Hordeum murinum*, *Erodium botrys*, *Grindelia*, and *Medicago polymorpha*. The small basin on the north side of the road is largely open soils (80% bare ground) with approximately 15% cover of *Cotula coronopifolia*; with 5% cover composed of *Plagiobothrys stipitatus*, *Eryngium vaseyi*, *Lolium multiflorum* and *Epilobium densiflorum*. **Note:** *Lolium multiflorum* is not included on the Reed (1988) plant list but is generally considered to be a facultative species and was therefore assigned a FAC indicator status.

**SOIL**

Sampling Point SP-01

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-3	10 YR 4/2	100	10 YR 4/4	<1	C	M	CL	pH 7.0 - 7.2
3-10	10 YR 4/2	100					CL	
10-16	10 YR 4/3	100					C	

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input checked="" type="checkbox"/> Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: 10"  
 Depth (inches): Clay Layer

**Hydric Soil Present?** Yes  No

Remarks: At the time of the survey, soils were very dry and hard, difficult to excavate to depth. Soils in this area are mapped as part of the Linne Series, but appear to be somewhat transitional between the Lynne and San Ysidro Series. The soil pH was neutral (7.0 to 7.2) throughout the upper 16 inches. Despite the presence of OBL and FACW plants throughout the basin as well as observations of seasonal inundation and presence of aquatic invertebrates, no hydric soil indicators were evident; however, the assumption is that soils in this area are ponded long enough to become anaerobic in the upper part during the growing season and are therefore considered to meet the definition of a hydric soil.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (any one indicator is sufficient)</u>	
<input checked="" type="checkbox"/> * Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> * Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> X Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	

Secondary Indicators (two or more required)

<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >16  
 Saturation Present? Yes  No  Depth (inches): >16  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Basin was dry at the time of the survey, but seasonal inundation and aquatic invertebrates were observed in this location during field surveys in February 2009. In addition, the defined topographic basin with an abrupt boundary with the adjacent grassland, abundance of OBL and FACW vegetation, and deep cattle prints all suggest prolonged seasonal saturation and/or inundation occurs at this sample location.



## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/8/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-02  
 Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 28.013" Long: -121° 36' 05.233" Datum: WGS1984  
 Soil Map Unit Name: Linne Clay Loam 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks: Sample point located adjacent to well-defined basin with distinct change in vegetation along gravel access road to the Byron Power Cogen Plant. Soils very gravelly and hard at this location and were not excavated at the time of the survey; this area is characterized by upland plants and has no evidence of seasonal saturation or inundation.

### VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. <u>None</u>				Number of Dominant Species that are OBL, FACW, or FAC:	<u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____				Percent of Dominant Species that are OBL, FACW, or FAC:	<u>0%</u> (A/B)
4. _____					
Total Cover:	<u>N/A</u>				
Sapling/Shrub Stratum				<b>Prevalence Index Worksheet:</b>	
1. <u>None</u>				Total % Cover Of:	Multiply By:
2. _____				OBL species _____	×1 = _____
3. _____				FACW species _____	×2 = _____
4. _____				FAC species _____	×3 = _____
5. _____				FACU species _____	×4 = _____
Total Cover:	<u>N/A</u>			UPL species _____	×5 = _____
				Column Totals:	<u>        </u> (A) <u>        </u> (B)
				Prevalence Index = B/A = <u>        </u>	
Herb Stratum Plot Area: ~1m <sup>2</sup>				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Bromus hordeaceus</u>	45%	X	FACU-	<input type="checkbox"/> Dominance Test is >50%	
2. <u>Erodium moschatum / E. botrys</u>	15%	X	NL	<input type="checkbox"/> Prevalence Index is ≤3.0*	
3. <u>Grindelia camporum</u>	10%		FACU	<input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)	
4. <u>Medicago polymorpha</u>	2%		NL	<input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain)	
5. <u>Trifolium hirtum</u>	1%		NL	* Indicators of hydric soil and wetland hydrology must be present.	
6. <u>Hordeum murinum subsp. leporinum</u>	1%		NL		
7. <u>Lolium multiflorum</u>	1%		(FAC)		
8. _____					
Total Cover:	<u>75%</u>				
Woody Vine Stratum				<b>Hydrophytic Vegetation Present?</b>	
1. <u>None</u>				Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
2. _____					
Total Cover:	<u>N/A</u>				
% Bare Ground in Herb Stratum <u>25%</u>		% Cover of Biotic Crust <u>N/A</u>			
Remarks: Annual grassland habitat located adjacent to well-defined topographic basin; distinct upland/wetland boundary at this location. <b>Note:</b> <i>Lolium multiflorum</i> is not included on the Reed (1988) plant list but is generally considered to be a facultative species and was therefore assigned a FAC indicator status.					

**SOIL**

Sampling Point SP-02

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-2	10 YR 4/2	100					CL	pH 7.0-7.2

<sup>a</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup> Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No \_\_\_\_\_ \*

Remarks: Soil very hard with high gravel content at the time of the survey. Soil pit was not excavated in this location; no indication that this area is subject to seasonal saturation or inundation, therefore, soils are likely non-hydric. Note: No hydric soil indicators were noted in the adjacent depression basin characterized by OBL and FACW vegetation.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (**Nonriverine**)
- Sediment Deposits (B2) (**Nonriverine**)
- Drift Deposits (B3) (**Nonriverine**)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (two or more required)

- Water Marks (B1) (**Riverine**)
- Sediment Deposits (B2) (**Riverine**)
- Drift Deposits (B3) (**Riverine**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes \_\_\_\_\_ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample point taken in upland area adjacent to well-defined topographic depression. No evidence of seasonal saturation or inundation evident at this location.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-03  
 Investigator(s): Russell Huddleston Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 32.965" Long: -121° 35' 58.615" Datum: WGS1984  
 Soil Map Unit Name: San Ysidro Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Swale feature within annual grassland that flows to the southwest where water collects in low areas around the Byron Power Cogen Plant. Wetland hydrology uncertain at this location, appears to support short-duration inundation and low-volume flow in response to rain events, but does not appear to support prolonged, continuous saturation or inundation.	

**VEGETATION**

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. <u>None</u>				Number of Dominant Species that are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____				Percent of Dominant Species that are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____					
Total Cover:	<u>N/A</u>				
<b><u>Sapling/Shrub Stratum</u></b>					
1. <u>None</u>				<b>Prevalence Index Worksheet:</b>	
2. _____				Total % Cover Of:	Multiply By:
3. _____				OBL species _____	×1 = _____
4. _____				FACW species _____	×2 = _____
5. _____				FAC species _____	×3 = _____
Total Cover:	<u>N/A</u>			FACU species _____	×4 = _____
<b><u>Herb Stratum</u> Plot Area: ~1m<sup>2</sup></b>					
1. <u>Hordeum marinum</u>	<u>85</u>	<u>X</u>	<u>FAC</u>	UPL species _____	×5 = _____
2. <u>Distichlis spicata</u>	<u>5</u>		<u>FACW</u>	Column Totals:	<u>        </u> (A) <u>        </u> (B)
3. <u>Frankenia salina</u>	<u>5</u>		<u>FACW+</u>	Prevalence Index = B/A =	<u>        </u>
4. <u>Lolium multiflorum</u>	<u>T</u>		<u>(FAC)</u>	<b>Hydrophytic Vegetation Indicators:</b>	
5. _____				<input checked="" type="checkbox"/> Dominance Test is >50%	
6. _____				<input type="checkbox"/> Prevalence Index is ≤3.0*	
7. _____				<input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)	
8. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain)	
Total Cover:	<u>95</u>			* Indicators of hydric soil and wetland hydrology must be present.	
<b><u>Woody Vine Stratum</u></b>					
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b>	
2. _____				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Total Cover:	<u>N/A</u>				
% Bare Ground in Herb Stratum <u>5</u>		% Cover of Biotic Crust <u>N/A</u>			
Remarks: Vegetation notably different within the swale than the adjacent annual grassland – swales are characterized by Mediterranean barley where the adjacent areas are characterized by foxtail barley and soft chess. Saltgrass, alkali heath and Italian ryegrass are widely scattered throughout and not restricted to the swale areas. Note: <i>Lolium multiflorum</i> is not included on Reed (1988), but is generally considered to be a facultative species.					

**SOIL**

Sampling Point SP-03

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-2	10 YR 4/2	95	7.5 YR 4/4	2	C	M	FSCl	
2-12			7.5 YR 4/6	3	C	M	FSCl	

<sup>a</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup> Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >12

**Hydric Soil Present?** Yes  No

Remarks: Soils just meet the criteria for a depleted matrix at this location. Adjacent soils were similar, but lack the 7.5 YR 4/6 concentrations in the upper 2 inches.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (**Nonriverine**)
- Sediment Deposits (B2) (**Nonriverine**)
- Drift Deposits (B3) (**Nonriverine**)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (two or more required)

- Water Marks (B1) (**Riverine**)
- Sediment Deposits (B2) (**Riverine**)
- Drift Deposits (B3) (**Riverine**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches):             
 Water Table Present? Yes  No  Depth (inches): >12  
 Saturation Present? Yes  No  Depth (inches): >12  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Area was dry at the time of the survey and characterized by FAC vegetation; appears to convey low-volume flows in response to storm events and may be subject to temporary inundation, but does not appear to support prolonged inundation or saturation for a minimum of 18 consecutive days and was therefore unlikely to meet the wetland hydrology criterion. Only sporadic, very shallow pockets of water were noted in this area during site visits during the wet season.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Mariposa Energy Center City/County: Alameda Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-04  
 Investigator(s): Russell Huddleston Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 33.174" Long: -121° 35' 58.781" Datum: WGS1984  
 Soil Map Unit Name: San Ysidro Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: California annual grassland adjacent to low topographic swale, dark brown concentrations in the upper part of the soil are characteristic for this soil type.	

### VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover: <u>N/A</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>None</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ × 1 = _____ FACW species _____ FAC species _____ FACU species _____ UPL species _____ Column Totals: _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover: <u>N/A</u>				
<b>Herb Stratum Plot Area: ~1m<sup>2</sup></b>				
1. <u>Bromus hordeaceus</u>	80%	X	FACU-	<b>Hydrophytic Vegetation Indicators:</b> ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0* ___ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
2. <u>Grindelia camporum</u>	10%		FACU	
3. <u>Erodium botrys</u>	5%		NL	
4. <u>Eryngium vaseyi</u>	3%		FACW	
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>98%</u>				
<b>Woody Vine Stratum</b>				
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. _____				
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>2%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: Annual grassland habitat adjacent to seasonal wetland swale.				

**SOIL**

Sampling Point SP-04

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-2	10 YR 4/2	98	7.5 YR 4/4	2	C	M	FSL	
2-14	10 YR 4/3	100					FSCL	

<sup>a</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup> Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE

Depth (inches): \_\_\_\_\_

**Hydric Soil Present? Yes  No**

Remarks: Soils have 2 percent distinct concentrations in the upper 2 inches – just meets the criteria for a depleted matrix; the San Ysidro Series soils typically have few fine, distinct concentration in the upper part of the soils – unlikely that these concentrations are the result of current hydrologic conditions in this area.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (**Nonriverine**)
- Sediment Deposits (B2) (**Nonriverine**)
- Drift Deposits (B3) (**Nonriverine**)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (two or more required)

- Water Marks (B1) (**Riverine**)
- Sediment Deposits (B2) (**Riverine**)
- Drift Deposits (B3) (**Riverine**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

- Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_
- Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_
- Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

**Wetland Hydrology Present? Yes  No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of seasonal saturation or inundation at this location.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-05  
 Investigator(s): Russell Huddleston Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 36.220" Long: -121° 35' 59.921" Datum: WGS1984  
 Soil Map Unit Name: San Ysidro Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: Soil point taken in very weakly expressed low area within slightly hummocky annual grassland habitat along transmission line alignment; no evidence of wetland hydrology was observed in this area during any of the surveys.	

**VEGETATION**

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: <u>N/A</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: <u>N/A</u>				
<u>Herb Stratum</u> Plot Area: <u>~1m<sup>2</sup></u>				<b>Hydrophytic Vegetation Indicators:</b> _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0* _____ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
1. <u>Bromus hordeaceus</u>	<u>70</u>	<u>X</u>	<u>FACU-</u>	
2. <u>Erodium moschatum</u>	<u>10</u>		<u>NL</u>	
3. <u>Eryngium vaseyi</u>	<u>5</u>		<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: <u>85%</u>				
<u>Woody Vine Stratum</u>				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>15%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: Vegetation in this area similar to surrounding grassland habitat.				

**SOIL**

Sampling Point SP-05

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-2	10 YR 4/3	98	7.5 YR 4/4	2	C	M	FSL	
2-12	10 YR 4/3	100					FSL-FSCL	

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >12

**Hydric Soil Present?** Yes  No

Remarks: Brown concentrations in the upper part are typical for this soil unit, but chroma of 3 does not meet the depleted matrix hydric soil indicator.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	

Secondary Indicators (two or more required)

<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches):             
 Water Table Present? Yes  No  Depth (inches): >12  
 Saturation Present? Yes  No  Depth (inches): >12  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of seasonal inundation or saturation at this location.



## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/8/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-06  
 Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 28.170" Long: -121° 36' 17.167" Datum: WGS1984  
 Soil Map Unit Name: San Ysidro Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Well-defined drainage channel with gently sloping banks shown as a blue line creek on USGS topographic map; sample point located within the ordinary high water line of seasonal drainage channel along Bruns Road within the work area for the proposed service water pipeline; 6-foot by 6-foot box culvert under the road at this location.	

### VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover: <u>N/A</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>None</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover: <u>N/A</u>				
<b>Herb Stratum Plot Area: ~1m<sup>2</sup></b>				
1. <u>Distichlis spicata</u>	40%	X	FACW	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0* <input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
2. <u>Polypogon monspeliensis</u>	5%		FACW	
3. <u>Lolium multiflorum</u>	5%		(FAC)	
4. <u>Cotula coronopifolia</u>	<1%		FACW+	
5. <u>Spergularia marina</u>	<1%		FACW*	
6. <u>Hordeum marinum subsp. leporinum</u>	<1%		NL	
7. _____				
8. _____				
Total Cover: <u>55%</u>				
<b>Woody Vine Stratum</b>				
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>45%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: Dense <i>Lepidium latifolium</i> between the fence and the culvert west of the sample point. Lower part of channel characterized by saltgrass and rabbitsfoot grass. Note: <i>Lolium multiflorum</i> is not listed on Reed (1988) but is generally considered to be a facultative species.				

**SOIL**

Sampling Point SP-06

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-5	10 YR 4/1	100					CL	
5-12	2.5 Y 4/1	90%	10 YR 4/6	5	C	M	FS-SiCL	
			Gley 1 6/10Y	<1	D	RC		
			7.5 YR 3/4	5	C	RC		
12+	2.5 Y 5/3	80	10 YR 4/6	10	C	M	SiCL	
	2.5 Y 4/1	10						

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >12

**Hydric Soil Present? Yes  No**

Remarks: Evidence of reducing conditions observed throughout the soil profile below a depth of 5 inches.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	

Secondary Indicators (two or more required)

<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input checked="" type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): 12  
 (includes capillary fringe)

**Wetland Hydrology Present? Yes  No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample point is within the ordinary high water line of a seasonal drainage, some standing water present in the deeper part of the channel at the time of the survey. Saturated soils were observed at a depth of 12 inches and soil redox indicates prolonged saturated conditions within the upper part.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/8/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-07  
 Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: NW ¼ Sec 1; T 2 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 47' 28.119" Long: -121° 36' 17.137" Datum: WGS1984  
 Soil Map Unit Name: San Ysidro Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Sample point located in grassland adjacent to seasonal drainage D-1 on the east side of Bruns Road south of Kelso Road – along service water pipeline route.	

**VEGETATION**

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover:	<u>N/A</u>			
<u>Sapling/Shrub Stratum</u>				
1. <u>None</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover:	<u>N/A</u>			
<u>Herb Stratum</u> Plot Area: <u>~1m<sup>2</sup></u>				
1. <u>Hordeum marinum subsp. leporinum</u>	<u>60%</u>	<u>X</u>	<u>NL</u>	<b>Hydrophytic Vegetation Indicators:</b> ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0* ___ Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
2. <u>Bromus hordeaceus</u>	<u>30%</u>	<u>X</u>	<u>FACU-</u>	
3. <u>Medicago polymorpha</u>	<u>2%</u>		<u>NL</u>	
4. <u>Erodium moschatum</u>	<u>1%</u>		<u>NL</u>	
5. <u>Lolium multiflorum</u>	<u>&lt;1%</u>		<u>(FAC)</u>	
6. _____				
7. _____				
8. _____				
Total Cover:	<u>95%</u>			
<u>Woody Vine Stratum</u>				
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. _____				
Total Cover:	<u>N/A</u>			
% Bare Ground in Herb Stratum <u>5%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: <i>Lolium multiflorum</i> is not listed on Reed (1988) but is generally considered to be a facultative species. Vegetation in this area is typical for the grasslands throughout the Project study area.				

**SOIL**

Sampling Point SP-07

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-12	10 YR 4/1	100					CL	No Redoximorphic Features

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >12

**Hydric Soil Present?** Yes  No

Remarks: Soils very hard and dense – difficult to excavate at this location.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

<u>Primary Indicators (any one indicator is sufficient)</u>		<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >12  
 Saturation Present? Yes  No  Depth (inches): >12  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample point located on terrace adjacent to seasonal drainage channel – no evidence of prolonged saturation or inundation at this location.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/8/2009

Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-08

Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: SW ¼ Sec 36; T 1 S; R 3 E (MDM)

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1 %

Subregion (LRR): C Lat: 37° 47' 47.811" Long: -121° 36' 17.289" Datum: WGS1984

Soil Map Unit Name: Linne Clay Loam 3 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> * No <input type="checkbox"/>		

Remarks: Small drainage channel on east side of Bruns Road just west of PG&E Bethany Compressor Station, north of Kelso Road – flows to the east into rock-lined drainage ditch within the PG&E facility; 12-inch-diameter culvert (cmp) under the road in this area; shown as a blue line creek on the USGS topographic map – area may be more of a vegetated waters than a wetland, but duration of inundation/saturation is indeterminate.

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>None</u>				
2. _____				
3. _____				
4. _____				
Total Cover: <u>N/A</u>				
Sapling/Shrub Stratum				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>None</u>				
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover: <u>N/A</u>				
Herb Stratum Plot Area: ~1m <sup>2</sup>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0* <input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
1. <u>Lolium multiflorum</u>	40	X	(FAC)	
2. <u>Distichlis spicata</u>	35	X	FACW	
3. <u>Hordeum brachyantherum</u>	25	X	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>95%</u>				
Woody Vine Stratum				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None</u>				
2. _____				
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>5%</u>		% Cover of Biotic Crust <u>N/A</u>		

Remarks: *Lolium multiflorum* is not listed on Reed (1988) but is generally considered to be a facultative species. Vegetation in this area is similar to the adjacent grassland area on low terrace above the drainage feature.

**SOIL**

Sampling Point SP-08

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-5	10 YR 4/2	98	7.5 YR 3/4	2	C	M	SCL	pH 8.2
5-16	2.5 Y 6/4	95	10 YR 2/1	5	C	M	CL	Mn Nodules

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >16

**Hydric Soil Present?** Yes  No

Remarks: Surface soil is moderately alkaline in this area.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

<u>Primary Indicators (any one indicator is sufficient)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches):             
 Water Table Present? Yes  No  Depth (inches): >16  
 Saturation Present? Yes  No  Depth (inches): >16  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Shallow, defined drainage channel, some evidence of scouring along the banks – area appears to convey seasonal flows for some duration – this area may function more as vegetated waters rather than a wetland, wetland hydrology (18 consecutive days of saturation or inundation) was indeterminate in this area at the time of the survey, but area appears to convey flows and therefore wetland hydrology was tentatively assumed to be present.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/8/2009

Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-09

Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: SW ¼ Sec 36; T 1 S; R 3 E (MDM)

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %

Subregion (LRR): C Lat: 37° 47' 47.881" Long: -121° 36' 17.276" Datum: WGS1984

Soil Map Unit Name: Linne Clay Loam 3 to 15 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: Elevated area adjacent to small drainage channel on the east side of Bruns Road, near PG&E Bethany Compressor Station – Vegetation similar to that found in adjacent drainage, but this area lacks evidence of wetland hydrology. May be occasionally flooded in response to heavy rains, but unlikely that water persists in this area.

**VEGETATION**

<u>Tree Stratum</u> (Use scientific names.)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	<b>Dominance Test worksheet:</b>	
1. <u>None</u>				Number of Dominant Species that are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____				Percent of Dominant Species that are OBL, FACW, or FAC:	<u>100%</u> (A/B)
4. _____					
Total Cover:	<u>N/A</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>	
1. <u>None</u>				<u>        </u> Total % Cover Of:	<u>        </u> Multiply By:
2. _____				OBL species <u>        </u> x1 = <u>        </u>	
3. _____				FACW species <u>        </u> x2 = <u>        </u>	
4. _____				FAC species <u>        </u> x3 = <u>        </u>	
5. _____				FACU species <u>        </u> x4 = <u>        </u>	
				UPL species <u>        </u> x5 = <u>        </u>	
Total Cover:	<u>N/A</u>			Column Totals:	<u>        </u> (A) <u>        </u> (B)
				Prevalence Index = B/A = <u>        </u>	
<u>Herb Stratum</u> <u>Plot Area: ~1m<sup>2</sup></u>				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Hordeum brachyantherum</u>	<u>90</u>	<u>X</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is >50%	
2. <u>Distichlis spicata</u>	<u>&lt;1</u>		<u>FACW</u>	<input type="checkbox"/> Prevalence Index is ≤3.0*	
3. _____				<input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)	
4. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain)	
5. _____				* Indicators of hydric soil and wetland hydrology must be present.	
6. _____					
7. _____					
8. _____					
Total Cover:	<u>90%</u>				
<u>Woody Vine Stratum</u>				<b>Hydrophytic Vegetation Present?</b>	
1. <u>None</u>				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2. _____					
Total Cover:	<u>N/A</u>				
% Bare Ground in Herb Stratum <u>10%</u>		% Cover of Biotic Crust <u>N/A</u>			

Remarks: Sample point characterized by dense meadow barley; no distinct vegetation change with the adjacent drainage channel.

**SOIL**

Sampling Point SP-09

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-6	10 YR 4/1	100					CL	pH 8.6 to 8.8
6-15	10 YR 3/2	100	2.5 Y 7/4	<2	C	M	C	Light concentrations are CaCO <sub>3</sub> nodules and filaments – not redox features

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >16

**Hydric Soil Present?** Yes  No

Remarks: Surface soil is strongly alkaline with calcium carbonate deposits present below 6 inches.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (**Nonriverine**)
- Sediment Deposits (B2) (**Nonriverine**)
- Drift Deposits (B3) (**Nonriverine**)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

Secondary Indicators (two or more required)

- Water Marks (B1) (**Riverine**)
- Sediment Deposits (B2) (**Riverine**)
- Drift Deposits (B3) (**Riverine**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >16  
 Saturation Present? Yes  No  Depth (inches): >16  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Elevated areas adjacent to small drainage feature, no evidence of prolonged saturation or inundation in this area. Possibly subject to short-term flooding due to heavy storm events.



## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Mariposa Energy Center City/County: Alameda Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-10  
 Investigator(s): Russell Huddleston Section, Township, Range: SW ¼ Sec 36; T 1 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 48' 00.183" Long: -121° 36' 17.334" Datum: WGS1984  
 Soil Map Unit Name: Solano Fine Sandy Loam NWI classification: PEMH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Shallow well-defined drainage perennial drainage channel on east side of Bruns Road; 6-foot by 6-foot cement box culvert under road. This feature is shown as a blue line creek on the USGS topographic map and is a Palustrine Emergent Permanently Flooded (PEMH) on the National Wetland Inventory Map.	

### VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover: <u>N/A</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>None</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover: <u>N/A</u>				
<b>Herb Stratum Plot Area: ~1m<sup>2</sup></b>				
1. <u>Bolboschoenus maritimus</u>	<u>70</u>	<u>X</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0* <input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
2. <u>Distichlis spicata</u>	<u>15</u>		<u>FACW</u>	
3. <u>Chenopodium album</u>	<u>&lt;1</u>		<u>FAC</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>85%</u>				
<b>Woody Vine Stratum</b>				
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>15%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: Dense cosmopolitan bulrush throughout the channel, relatively distinct vegetation boundary with the adjacent grasses.				

**SOIL**

Sampling Point SP-10

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-6	Gley 1 2.5/5GY	60	7.5 YR 4/6	5	C	M	CL	Strong reaction to α α-dipyrdyl
	5Y 2.5/2	35						

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >6

**Hydric Soil Present? Yes  No**

Remarks: Soils were inundated at the time of the survey with extensive roots and rhizomes in the upper part, evidence of reducing condition noted in the upper part with alpha alpha-dipyrdyl dye test.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

<u>Primary Indicators (any one indicator is sufficient)</u>		<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 3  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_ **Wetland Hydrology Present? Yes  No**   
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Shallow perennial drainage, flows to the north into open water area located outside of the Project study area.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Mariposa Energy Center City/County: Alameda Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-11  
 Investigator(s): Russell Huddleston Section, Township, Range: SW ¼ Sec 36; T 1 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 48' 00.241" Long: -121° 36' 17.340" Datum: WGS1984  
 Soil Map Unit Name: Solano Fine Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Sample point on north side of drainage channel above the ordinary high water line, area is characterized by dense saltgrass, but lacks evidence of hydric soil and wetland hydrology.	

### VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover: <u>N/A</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>None</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover: <u>N/A</u>				
<b>Herb Stratum Plot Area: ~1m<sup>2</sup></b>				
1. <u>Distichlis spicata</u>	<u>100</u>	<u>X</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0* <input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
2. <u>Cressa truxillensis</u>	<u>&lt;1</u>		<u>FACW</u>	
3. <u>Cirsium vulgare</u>	<u>&lt;1</u>		<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>100%</u>				
<b>Woody Vine Stratum</b>				
1. <u>None</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>0%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: Dense saltgrass along the upper edges of the channel.				

**SOIL**

Sampling Point SP-11

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-12	2.5 Y 4/2	80					SL	CaCO <sub>3</sub> Nodules Present
	2.5 Y 5.2	20						

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >12

**Hydric Soil Present?** Yes  No

Remarks: No redoximorphic features observed in this location.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	

Secondary Indicators (two or more required)

<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >12  
 Saturation Present? Yes  No  Depth (inches): >12  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upper edge of drainage channel, possibly subject to occasional flooding, but no evidence this area is subject to prolonged saturation or inundation. Sample point is above the ordinary high water line of the drainage channel.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Alameda Date: 4/15/2009

Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-12

Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: NW ¼ Sec 36; T 1 S; R 3 E (MDM)

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1 %

Subregion (LRR): C Lat: 37° 48' 19.996" Long: -121° 36' 17.153" Datum: WGS1984

Soil Map Unit Name: Solano Fine Sandy Loam NWI classification: PEMF

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks: Sample point taken at outer edge of drainage channel on the east side of Bruns Road, 30-inch-diameter cmp culvert under the road in this area. Sample point at the edge of the ordinary high water line – likely subject to shallow groundwater saturation during the wet season. This feature is shown as a blue line on the USGS topographic map and is a Palustrine Emergent Semi-permanently Flooded (PEMF) on the National Wetland Inventory Map.

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>None</u>				
2. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____				Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____				
Total Cover: <u>N/A</u>				
Sapling/Shrub Stratum				Prevalence Index Worksheet:
1. <u>None</u>				Total % Cover Of: _____ Multiply By: _____
2. _____				OBL species _____ x1 = _____
3. _____				FACW species _____ x2 = _____
4. _____				FAC species _____ x3 = _____
5. _____				FACU species _____ x4 = _____
Total Cover: <u>N/A</u>				UPL species _____ x5 = _____
Herb Stratum Plot Area: ~1m <sup>2</sup>				Column Totals: _____ (A) _____ (B)
1. <u>Distichlis spicata</u>	<u>75</u>	<u>X</u>	<u>FACW</u>	Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>100%</u>				
Woody Vine Stratum				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>None</u>				<input checked="" type="checkbox"/> Dominance Test is >50%
2. _____				<input type="checkbox"/> Prevalence Index is ≤3.0*
Total Cover: <u>N/A</u>				<input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
% Bare Ground in Herb Stratum <u>25%</u>				<input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain)
% Cover of Biotic Crust <u>N/A</u>				* Indicators of hydric soil and wetland hydrology must be present.
				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: Dense, lush saltgrass along the outer edges of the channel, center part of the channel filled with dense cattails.

**SOIL**

Sampling Point SP-12

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-3.5	10 YR 4/2	100					FSCl	pH 9.6
3.6-16	10 YR 4/2	100					CL	pH 9.2

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >16

**Hydric Soil Present? Yes  No**

Remarks: No redoximorphic features observed in this location; however, the soil is strongly alkaline and was therefore considered problematic. Lush FACW vegetation along with topographic low position adjacent to drainage channel suggest soils in this area are likely seasonally saturated or inundated for a period of time and hydric conditions likely exist.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >16  
 Saturation Present? Yes  No  Depth (inches): >16      **Wetland Hydrology Present? Yes  No**   
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This point was dry at the time of the survey, but water was present in the deeper part of the channel at the time of the survey; low topographic position adjacent to channel and lush saltgrass suggest this area may be subject to seasonal saturation or inundation. Wetland hydrology was assumed to be present at this location.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Contra Costa Date: 4/15/2009

Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-13

Investigator(s): Russell Huddleston, Todd Ellwood Section, Township, Range: NW ¼ Sec 36; T 1 S; R 3 E (MDM)

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %

Subregion (LRR): C Lat: 37° 48' 20.115" Long: -121° 36' 17.127" Datum: WGS1984

Soil Map Unit Name: Solano Fine Sandy Loam NWI classification: PUSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation No, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u>      </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X*</u> No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X*</u> No <u>      </u>		

Remarks: Sample point is within alkali sink wetland adjacent to drainage channel on the east side of Bruns Road – just north of the Alameda County line. Area is characterized by notable change in vegetation and soils from the surrounding grassland areas. Considered a problem area due to the strongly alkaline soils and probable seasonal wetland hydrology. Area is Palustrine Unconsolidated Shore Seasonally Flooded (PUSC) wetland on the National Wetland Inventory Map.

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>None</u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>N/A</u>			
<b>Sapling/Shrub Stratum</b>				
1. <u>None</u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Prevalence Index Worksheet:</b> Total % Cover Of: <u>      </u> Multiply By: <u>      </u> OBL species <u>      </u> x1 = <u>      </u> FACW species <u>      </u> x2 = <u>      </u> FAC species <u>      </u> x3 = <u>      </u> FACU species <u>      </u> x4 = <u>      </u> UPL species <u>      </u> x5 = <u>      </u> Column Totals: <u>      </u> (A) <u>      </u> (B) Prevalence Index = B/A = <u>      </u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>N/A</u>			
<b>Herb Stratum Plot Area: ~1m<sup>2</sup></b>				
1. <u>Distichlis spicata</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
2. <u>Kochia californica</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
3. <u>Hordeum brachyantherum</u>	<u>25</u>	<u>X</u>	<u>FACW</u>	
4. <u>Lolium multiflorum</u>	<u>&lt;1</u>	<u>      </u>	<u>(FAC)</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>85%</u>			
<b>Woody Vine Stratum</b>				
1. <u>None</u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Hydrophytic Vegetation Indicators:</b> <u>X</u> Dominance Test is >50% <u>      </u> Prevalence Index is ≤3.0* <u>      </u> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>N/A</u>			
% Bare Ground in Herb Stratum <u>15%</u>		% Cover of Biotic Crust <u>N/A</u>		
Total Cover:	<u>N/A</u>			
Total Cover:	<u>N/A</u>			<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>

Remarks: Vegetation includes hydrophytic plant species that area also tolerant of saline/alkaline soil conditions – notable change in vegetation from the adjacent grassland areas. *Lolium multiflorum* is not included on Reed (1988) but is generally considered a facultative species.

**SOIL**

Sampling Point SP-13

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-6	10 YR 4/2	100					CL	pH 8.8-9.0
6-16	10 YR 31/1	80					CL	
	10 YR 4/2	20						

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >16

**Hydric Soil Present? Yes  No**

Remarks: No redoximorphic features observed in this location; however, the soil is strongly alkaline and was therefore considered problematic. Lush FACW vegetation along with topographic low position adjacent to drainage channel suggest soils in this area are likely seasonally saturated or inundated for a period of time and hydric conditions likely exist.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >16  
 Saturation Present? Yes  No  Depth (inches): >16 **Wetland Hydrology Present? Yes  No**   
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This point was dry at the time of the survey, but this area potentially supports shallow seasonal inundation or shallow groundwater resulting in saturated soil condition in the upper 12 inches. Hydrology was indeterminate at this location, but topographic position and notable change in vegetation suggest wetland hydrology may be present.



**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Mariposa Energy Center City/County: Contra Costa Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-14  
 Investigator(s): Russell Huddleston Section, Township, Range: NW ¼ Sec 36; T 1 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 48' 21.291" Long: -121° 36' 16.854" Datum: WGS1984  
 Soil Map Unit Name: Solano Fine Sandy Loam NWI classification: PUSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  No, Soil  Yes, or Hydrology  Yes naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Sample point take in the alkali sink wetland adjacent to drainage channel on the east side of Bruns Road – just north of the Alameda County line. Area is characterized by notable change in vegetation and soils from the surrounding grassland area. Shown as a Palustrine Unconsolidated Shore Seasonally Flooded wetland on the National Wetland Inventory Map.	

**VEGETATION**

<u>Tree Stratum</u> (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover: <u>N/A</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b> Total % Cover Of: _____ Multiply By: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>None</u>				
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover: <u>N/A</u>				
<u>Herb Stratum</u> <span style="float:right"><u>Plot Area: ~1m<sup>2</sup></u></span>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0* <input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain) * Indicators of hydric soil and wetland hydrology must be present.
1. <u>Distichlis spicata</u>	<u>50</u>	<u>X</u>	<u>FACW</u>	
2. <u>Kochia californica</u>	<u>25</u>	<u>X</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>75%</u>				
<u>Woody Vine Stratum</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None</u>				
2. _____				
Total Cover: <u>N/A</u>				
% Bare Ground in Herb Stratum <u>25%</u> % Cover of Biotic Crust <u>N/A</u>				
Remarks: Vegetation includes hydrophytic plant species that area also tolerant of saline/alkaline soil conditions – notable change in vegetation from the adjacent grassland areas.				

**SOIL**

Sampling Point SP-14

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-8	10 YR 4/2	100					FiSCL	pH 9.2 - 9.4; moderate rxn to HCl
8-24	10 YR 3/2	100					CL	pH 8.8; weak rxn to HCl

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present? Yes  No**

Remarks: No redoximorphic features observed in this location; however, the soil is strongly alkaline and was therefore considered problematic. Shallow soil saturation possible in this area resulting in the development of hydric condition during the wet season.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

<u>Primary Indicators (any one indicator is sufficient)</u>		<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >24  
 Saturation Present? Yes  No  Depth (inches): >24 **Wetland Hydrology Present? Yes  No**   
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This point was dry at the time of the survey, but potentially supports shallow seasonal inundation or shallow groundwater, resulting in saturated soil condition in the upper 12 inches. Hydrology was indeterminate at this location, but topographic position and notable change in vegetation suggest wetland hydrology may be present.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Mariposa Energy Center City/County: Contra Costa Date: 6/4/2009  
 Applicant/Owner: Diamond Energy Corp. State: CA Sampling Point: SP-15  
 Investigator(s): Russell Huddleston Section, Township, Range: NW ¼ Sec 36; T 1 S; R 3 E (MDM)  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1 %  
 Subregion (LRR): C Lat: 37° 48' 21.387" Long: -121° 36' 16.878" Datum: WGS1984  
 Soil Map Unit Name: Solano Fine Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  No, Soil  No, or Hydrology  No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  Yes, Soil  No, or Hydrology  No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Sample point taken in annual grassland adjacent to alkali sink wetland area, vegetation in this area is characterized by facultative plant species, but notable change from the adjacent vegetation in the alkali sink – possible difference is due to soil chemistry rather than wetland hydrology, but this could not be definitively determined at the time of the survey.	

### VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. <u>None</u>				Number of Dominant Species that are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____				Percent of Dominant Species that are OBL, FACW, or FAC:	<u>100%</u> (A/B)
4. _____					
Total Cover:	<u>N/A</u>				
Sapling/Shrub Stratum				<b>Prevalence Index Worksheet:</b>	
1. <u>None</u>				Total % Cover Of:	Multiply By:
2. _____				OBL species _____ x1 = _____	
3. _____				FACW species _____ x2 = _____	
4. _____				FAC species _____ x3 = _____	
5. _____				FACU species _____ x4 = _____	
Total Cover:	<u>N/A</u>			UPL species _____ x5 = _____	
Herb Stratum	Plot Area: ~1m <sup>2</sup>			Column Totals:	<u>        </u> (A) <u>        </u> (B)
1. <u>Hordeum marinum</u>	<u>50</u>	<u>X</u>	<u>FAC</u>	Prevalence Index = B/A = _____	
2. <u>Lolium multiflorum</u>	<u>30</u>	<u>X</u>	<u>(FAC)</u>		
3. <u>Frankenia salina</u>	<u>15</u>		<u>FACW</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
Total Cover:	<u>95%</u>				
Woody Vine Stratum				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>None</u>				<input checked="" type="checkbox"/> Dominance Test is >50%	
2. _____				<input type="checkbox"/> Prevalence Index is ≤3.0*	
				<input type="checkbox"/> Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)	
				<input type="checkbox"/> Problematic Hydrophytic Vegetation* (Explain)	
				* Indicators of hydric soil and wetland hydrology must be present.	
				<b>Hydrophytic Vegetation Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Total Cover:	<u>N/A</u>				
% Bare Ground in Herb Stratum <u>5%</u>		% Cover of Biotic Crust <u>N/A</u>			
Remarks: <i>Lolium multiflorum</i> is not assigned an indicator status per Reed (1988) but is generally considered to be a facultative species. Sample point characterized by FAC plants, but these species are common and widespread throughout the annual grassland habitat in the surrounding area and may not be indicative of wetland conditions – notable change in vegetation from the adjacent alkali sink area.					

**SOIL**

Sampling Point SP-15

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>a</sup>	Loc <sup>b</sup>		
0-7	10 YR 4/2	100					CL	pH 8.4; weak rxn to HCl
7-14	10 YR 4/2	90					CL	pH 8.4; weak rxn to HCl
	2.5 Y 4/3	10						

<sup>a</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

<sup>b</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

**Indicators for Problematic Hydric Soils<sup>c</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>c</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: NE  
 Depth (inches): >14

**Hydric Soil Present?** Yes  No

Remarks: Soil in this location is moderately alkaline as compared to strongly alkaline soil in the adjacent alkali sink area. No indication of hydric conditions.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Secondary Indicators (two or more required)

<u>Primary Indicators (any one indicator is sufficient)</u>		<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >14  
 Saturation Present? Yes  No  Depth (inches): >14 **Wetland Hydrology Present?** Yes  No   
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: This point was dry at the time of the survey; facultative vegetation present, but consists of species that are common in grasslands throughout this area; no strong indication of wetland hydrology observed at this location.

**Appendix F**  
**Selected Site Photographs**

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**PROJECT SITE**  
Looking to the south-southeast from the existing access road



**LAYDOWN AREA**  
Looking north from south end of property



**DRAINAGE WETLAND (D-1)**  
Looking east from Bruns Road



**DRAINAGE WETLAND (D-1)**  
Looking west; 6-foot by 6-foot box culvert under Bruns Road



**DRAINAGE (1B)**  
North of Kelso Road, looking northeast at defined earthen channel



**DRAINAGE WETLAND (D-2)**  
Looking east from Bruns Road



**DRAINAGE (2A)**  
Looking east at earthen channel



**DRAINAGE WETLAND (D-3)**  
Looking west; 6-foot by 6-foot box culvert under Bruns Road



**DRAINAGE WETLAND (D-3)**  
Looking north along east side of Bruns Road



**DRAINAGE WETLAND (D-4)**  
Looking east from Bruns Road (30-inch-diameter cmp under road)



**DRAINAGE WETLAND (D-4)**  
Adjacent alkali sink wetland; looking south along Bruns Road



**ALKALI SINK WETLAND (ASW-1)**  
Looking northeast from Bruns Road





**SEASONAL WETLAND (SW-1)**  
Looking north, basins connected via 18-inch-diameter cmp



**SEASONAL WETLAND (SW-1)**  
Inundated on February 19, 2009



**PROJECT SITE**  
Low upland swale through center of site—no change in vegetation or evidence of any type of flow through this area



**SEASONAL WETLAND (SW-2)**  
Weakly expressed shallow area with Italian ryegrass and sparse coyote thistle



**SWALE (SW-1)**  
Looking west



**SWALE (SW-3)**  
Looking east from Bruns Road



**E-1**  
Small erosional rill; looking north; flows north into seasonal wetland area



**E-2**  
Erosional feature; looking south toward the PG&E Kelso Substation



**E-3**  
Large erosional channel with deeply scoured channel; looking north; flows north into large seasonal wetland area



**BBID CANAL 45**  
Looking east from Bruns Road

**Appendix G**  
**List of Plant Species Observed**  
**at Sample Points**

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TABLE G-1  
Plant Species Observed at Sample Point Locations

Scientific Name <sup>1</sup> (Name per Reed 1988)	Common Name (Name per Reed 1988)	Indicator Status <sup>2</sup>	Stratum
<i>Bolboschoenus maritimus</i> ( <i>Scirpus maritimus</i> )	Cosmopolitan bulrush (Saltmarsh bulrush)	OBL	H
<i>Bromus hordeaceus</i> ( <i>Bromus mollis</i> )	Soft chess (Soft brome)	FACU-	H
<i>Chenopodium album</i>	White goosefoot	FAC	H
<i>Cirsium vulgare</i>	Bull thistle	FACU	H
<i>Cotula coronopifolia</i>	Brass buttons	FACW+	H
<i>Crassula aquatica</i>	Water pigmy-weed	OBL	H
<i>Cressa truxillensis</i>	Spreading alkali weed	FACW	H
<i>Distichlis spicata</i>	Saltgrass (Inland)	FACW*	H
<i>Epilobium densiflorum</i> ( <i>Boisduvalia densiflora</i> )	Dense flower willowherb (Dense flower spike-primrose)	OBL	H
<i>Erodium botrys</i>		NL	H
<i>Erodium moschatum</i>		NL	H
<i>Eryngium vaseyi</i>	Vasey's coyote thistle	FACW	H
<i>Frankenia salina</i> ( <i>Frankenia grandiflora</i> )	Alkali heath	FACW+	H
<i>Grindelia camporum</i>	Great Valley gumweed	FACU	H
<i>Hordeum brachyantherum</i>	Meadow barley	FACW	H
<i>Hordeum marinum</i> ssp. <i>gussonianum</i> ( <i>Hordeum hystrix</i> )	Mediterranean barley	FAC	H
<i>Hordeum murinum</i> ssp. <i>leporinum</i> ( <i>Hordeum leporinum</i> )	Foxtail barley (Barley)	NI	H
<i>Juncus bufonius</i>	Toad rush	FACW+	H
<i>Kochia californica</i>	Rusty molly (California summer-cypress)	FACW	H
<i>Lolium multiflorum</i>	Italian Ryegrass	NL (FAC <sup>3</sup> )	H
<i>Medicago polymorpha</i>	Bur clover	NL	H
<i>Plagiobothrys stipitatus</i>	Slender popcorn flower	OBL	H
<i>Polypogon monspeliensis</i>	Annual rabbit-foot grass	FACW+	H
<i>Psilocarphus oregonus</i>	Oregon woolly-heads	OBL	H
<i>Spergularia marina</i>	Saltmarsh sandspurry	OBL	H

TABLE G-1  
Plant Species Observed at Sample Point Locations

Scientific Name <sup>1</sup> (Name per Reed 1988)	Common Name (Name per Reed 1988)	Indicator Status <sup>2</sup>	Stratum
<i>Trifolium hirtum</i>	Rose clover	NL	H
<i>Veronica peregrina</i>	Purslane speedwell	OBL	H

**NOTES:**

<sup>1</sup> Taxonomy follows current nomenclature per the University of California (2009) *Jepson On-Line Interchange for California Floristics*

<sup>2</sup> Indicator State follows the *National List of Plant Species that Occur in Wetlands: Region 0*. Reed (1988)

<sup>3</sup> *Lolium multiflorum* is not included on the Reed 1988 *National List of Plant Species that Occur in Wetlands: Region 0*, but is generally considered to be a facultative plant species

**Indicator Status Codes**

NL Not included on the *National List of Plant Species that Occur in Wetlands: Region 0*. Reed (1988)

NI Insufficient information available to assign an indicator status

FACU Facultative Upland (67 to 99 percent probability of occurrence in non-wetlands)

FAC Facultative (equally likely to occur in wetlands and non-wetlands)

FACW Facultative Wetland (67 to 99 percent probability of occurrence in wetlands)

OBL Obligate (99 percent probability of occurrence in wetlands)

+ Frequency tends toward the higher end of the category

- Frequency tends toward the lower end of the category

**Stratum**

H Herbaceous



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
1516 NINTH STREET, SACRAMENTO, CA 95814  
1-800-822-6228 – [WWW.ENERGY.CA.GOV](http://WWW.ENERGY.CA.GOV)

**APPLICATION FOR CERTIFICATION  
FOR THE *MARIPOSA ENERGY PROJECT*  
(MEP)**

***Docket No. 09-AFC-3***

***PROOF OF SERVICE***  
(Revised 9/15/09)

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**DECLARATION OF SERVICE**

I, Mary Finn, declare that on September 29, 2009, I served and filed copies of the attached USACE Delineation of Wetlands and Other Waters dated July 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:  
[\[http://www.energy.ca.gov/sitingcases/mariposa/index.html\]](http://www.energy.ca.gov/sitingcases/mariposa/index.html).

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

***(Check all that Apply)***

**For service to all other parties:**

sent electronically to all email addresses on the Proof of Service list;  
 by personal delivery or by depositing in the United States mail at Sacramento, California, with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses NOT marked "email preferred."

**AND**

**For filing with the Energy Commission:**

sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);

**OR**

depositing in the mail an original and 12 paper copies, as follows:

**CALIFORNIA ENERGY COMMISSION**

Attn: Docket No. 09-AFC-3  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

I declare under penalty of perjury that the foregoing is true and correct.



Mary Finn