U.S. ARMY CORPS OF ENGINEERS

JURISDICTIONAL DELINEATION

FOR THE

INDIAN VALLEY PROJECT

CONTRA COSTA COUNTY, CALIFORNIA

Prepared for:

BRUZZONE FAMILY TRUST
PO Box 97
Moraga, California 94556

Prepared by:

OLBERDING ENVIRONMENTAL, INC. AND MARYLEE GUINON LLC
Wetland Regulatory Consultants
3170 Crow Canyon Place, Suite 260
San Ramon, California 94583
Phone: (925) 866-2111 ~ Fax: (925) 866-2126
E-mail: jeff@olberdingenv.com
Contact: Jeff Olberding

SEPTEMBER 2014

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Scope 1

1.2 Location 2

1.3 Wetland Study Area Description 2

2.0 METHODOLOGY 3

2.1 Overview 3

2.2 USACE Definition of Wetlands/Waters 4

2.3 Data Collection for Potential Jurisdictional Wetlands/Waters 5

3.0 TECHNICAL FINDINGS 7

3.1 Vegetation Conditions 7

3.2 Vegetation Analysis of the Wetland Study Area 9

3.2.1 Non-Native Annual Grassland 11

3.2.2 Coast Live Oak Woodland 11

3.2.3 Northern Coyote Brush Scrub 12

3.2.4 Abandoned Orchard with Associated Ruderal Vegetation 12

3.2.5 Seasonal Wetland 12

3.2.6 Central Coast Riparian Scrub 13

3.2.7 Sage Scrub 13

3.3 Hydrology Conditions 13

3.4 Hydrologic Analysis of Wetland Study Area 15

3.5 Soils Conditions **16**

3.6 Soil Analysis of the Wetland Study Area **17**

3.6.1 Soil Analysis of Paired Data Points for Wetland Determination **19**

4.0 AREAS POTENTIALLY REGULATED BY THE CORPS OF ENGINEERS **19**

4.1 Areas Potentially Subject to Regulation (Wetlands/Waters of the U.S.) **19**

4.1.1 Potential Wetlands **20**

4.1.2 Potential Other Waters **20**

4.1.3 Section 10 Navigable Waters **20**

4.2 Areas Potentially Excluded From Regulation under Section 404 ..... **20**

4.2.1 Discretionary Exemptions **20**

4.2.2 Application of Discretionary Exemptions **21**

4.2.3 Isolated Wetlands **21**

4.2.4 Application of Isolated Waters Exemptions **22**

4.2.5 Significant Nexus **22**

4.2.6 Application of Significant Nexus **23**

5.0 CONCLUSIONS **23**

6.0 LITERATURE CITED **27**

TABLES

Table 1. Wetland Plant Indicator Status Categories……. 10

Table 2. Hydrology Indicators…….. 14

Table 3. Arid West Region – Hydrology Indicators…… 15

Table 4. Potentially Jurisdictional Wetlands and Waters…… 23

LIST OF ATTACHMENTS

ATTACHMENT 1 FIGURES

Figure 1. Regional Map
Figure 2. Project Vicinity
Figure 3. Aerial Map
Figure 4. USGS Topographic Map
Figure 5. Jurisdictional Delineation Map
Figure 6. Soils Map

ATTACHMENT 2 PLANT LIST

ATTACHMENT 3 WETLAND DELINEATION DATA FORMS

ATTACHMENT 4 SITE PHOTOGRAPHS

ATTACHMENT 5 SOILS DATA

This report should be cited as: Olberding Environmental, Inc. and Marylee Guinon LLC September 2014. *U.S Army Corps of Engineers Jurisdictional Delineation for the Indian Valley Project, Contra Costa County, California*. Prepared for Bruzzone Family Trust, Moraga, California.

SUMMARY

Olberding Environmental, Inc. (Olberding Environmental) and Marylee Guinon LLC conducted an investigation of the geographic extent of areas potentially subject to U.S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (wetlands and other waters) within the designated boundaries of the Wetland Study Area as identified for the approximately 450-acre Indian Valley Project (Project), located in the Town of Moraga, Contra Costa County, California.

Results of the jurisdictional delineation survey identified the presence of 34 seasonal wetland features that would be considered potentially jurisdictional by the USACE, and one artificially created seasonal wetland that is not subject to USACE jurisdiction within the survey boundary. Other waters mapped within the Wetland Study Area include 31 linear intermittent drainages, one pool, and a portion of one perennial drainage (Moraga Creek). The drainages flow generally to the southeast across the Wetland Study Area. The receiving water body for the site is Indian Creek, which is identified as a "water of the U.S." and therefore subject to USACE regulation.

The 34 features classified as potentially jurisdictional seasonal wetlands and one non-jurisdictional seasonal wetland are composed of 9.186 acres and 0.126 acre, respectively, for a total of 9.312 acres of seasonal wetlands. The seasonal wetlands are hydrologically connected to the intermittent drainages via sheet flow, therefore they would be considered to be under jurisdiction of the USACE.

The 31 features classified as intermittent drainages are composed of 1.751 acres (18,120 linear feet). These features are classified as jurisdictional waters. The intermittent drainages were observed to have ordinary high water lines corresponding with scouring along the channel banks and in several cases, evidence of sediment transport. The single pool mapped in the Wetland Study Area totals 0.015 acre. The portion of Moraga Creek (perennial drainage) within the study area totals 0.137 acre (122 linear feet).

Based on the survey results, it was determined that a total of **11.089** acres of potentially jurisdictional wetlands/waters are present within the Wetland Study Area. These features would be classified as jurisdictional wetlands/waters by the USACE, and they will be regulated by the Regional Water Quality Control Board as "Waters of the State".

1.0 INTRODUCTION

1.1 Scope

Olberding Environmental and Marylee Guinon LLC conducted an investigation of the geographic extent of areas potentially subject to USACE jurisdiction under Section 404 of the Clean Water Act (wetlands and other waters) within the identified Wetland Study Area boundary of the Indian Valley Project (Project). The Wetland Study Area is within the approximately 450-acre parcel (Assessor Parcel Number 257-180-041) within the Town of Moraga in Contra Costa County, California, plus an additional area along a portion of Canyon Road right-of-way that may require infrastructure improvements. On July 1, July 15, and July 22, 2014, field surveys

were performed for the purposes of determining the presence and possible extent of USACE jurisdiction within the Wetland Study Area. The survey area was investigated in order to make a technical evaluation as to the extent of USACE jurisdiction based on current and historic land use conditions. Visual observations as to the presence or absence of indicators of wetland soil, vegetation and hydrology conditions were made during the investigation. The boundaries of all potential wetland/water features observed were mapped using GPS technology and further defined in accordance with the USACE regulations and the required methodology described in the USACE Wetlands Delineation Manual (1987 Manual) and Arid West Supplement to the 1987 Manual (Arid West Supplement, 2008).

1.2 Location

The Wetland Study Area is located on the southwest side of the Town of Moraga, Contra Costa County. It is bounded by undeveloped and developed property within the Town of Moraga to the north and east, Canyon Road to the south, Indian Creek, Pinehurst Road and lands owned by East Bay Municipal Utility District to the south, Huckleberry Botanical Preserve to the west, and Redwood Regional Park to the south.

Attachment 1, Figure 1 depicts the regional location of the Project. Attachment 1, Figure 2 depicts the Project vicinity in relationship to surrounding lands. Attachment 1, Figure 3 is an aerial photograph of the Wetland Study Area. Attachment 1, Figure 4 identifies the location of the Wetland Study Area on the USGS 7.5-minute Quadrangle Map for Oakland East.

From San Francisco access to the Project is attained by taking Highway 24 east towards Orinda. Take the exit towards Orinda/Moraga. Follow Moraga Way to Canyon Road and turn right on Canyon Road. Follow Canyon Road until you reach a gated unpaved road off of Canyon Road on the southeast side of the Project Boundary. Turn right at the unpaved ranch road.

1.3 Wetland Study Area Description

The Wetland Study Area includes a portion of the approximate 450-acre parcel plus some additional land along Canyon Road. The majority of the Wetland Study Area is privately owned and currently undeveloped. A single rural residence occurs near the southwest corner of the Wetland Study Area. An unpaved road traverses the site north of and somewhat parallel to Indian Creek, and connects to an existing ranch road along the ridge. An abandoned walnut orchard occupies portions of the property. The Wetland Study Area occurs within the *San Francisco Bay Area* sub-region of the California Floristic Province (Baldwin, et al. 2012). In classifying the habitat types found on the Wetland Study Area, generalized plant community classification schema were used (Sawyer, Keeler-Wolf, and Evens 2009). The Wetland Study Area lies within the San Francisco Bay USGS Hydrological Unit 18050004 (CDFW 2014).

The elevation of the Wetland Study Area generally follows the 850-foot contour along the north side of the site and the 525-foot contour along Indian Creek on the south side of the site. Along Canyon Road, the elevation generally ranges from approximately 520 feet mean sea level (msl) at the lowest point to 700 feet msl at the highest point. The west end of the Wetland Study Area ranges from a low of approximately 650 feet msl near Indian Valley Creek to a high of

approximately 850 feet msl. The Wetland Study Area generally favors a drainage pattern to the southeast.

Due to the seasonal timing of the field delineation (i.e., early summer), much of the standing herbaceous cover was senescent, although positive identification to species-level was possible. The final classification and characterization of the habitat types of the Wetland Study Area were based on field observations made during the preliminary jurisdictional delineation conducted on July 1, 2014, and from the Biological and Wetland Assessment Report (Sycamore Associates 2003). Subsequent visits were made on July 15 and 22, 2014, for the purpose of obtaining precise ordinary high water widths and depths for several of the intermittent drainage features.

The following vegetation communities were identified on the Property during the biological and wetland assessment survey conducted in 2003 by Sycamore Associates (Sycamore Associates 2003): non-native annual grassland, coast live oak woodland, northern coyote brush scrub, freshwater marsh and seeps, Central Coast riparian scrub, abandoned orchard with associated ruderal vegetation, and sage scrub.

2.0 METHODOLOGY

2.1 Overview

Potential wetlands were delineated using USACE' methodology during site investigations conducted on July 1, 15, and 22, 2014. The existing landforms as well as associated vegetation, hydrology, and soil conditions were studied to identify areas that would likely contain wetland/waters and/or aquatic habitats. Potential jurisdictional areas were identified on field maps and compared to available aerial photography and topographical maps.

Prior to completing the site survey for this report, site maps, topographic maps, and aerial photographs of the Wetland Study Area were obtained from several sources and reviewed. This information was used in association with the detailed delineation survey to determine the extent and boundaries of wetland features. Resource materials used for the site analysis were as follows:

- *U. S. Geological Survey 7.5-Minute Quadrangle Map "Oakland East" California,*
- Google Earth aerial images; and
- Soils map information contained in the *Soil Survey of Contra Costa County, California* (Soil Conservation Service 1972).

The extent or boundary of wetland habitats was further defined using the 1987 "USACE Wetlands Delineation Manual" (1987 Manual)[1], the "Interim Regional Supplement to the Corps

[1] Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual." U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. plus appendices.

of Engineers Wetland Delineation Manual: Arid West Region" (Arid West Supplement)[2], routine on-site wetland determination protocol currently in use by the USACE, published Corps of Engineers regulatory guidance letters, and San Francisco District regulatory policy.

2.2 USACE Definition of Wetlands/Waters

Pursuant to the 1987 Manual, key criteria for determining the presence of wetlands are:

a) the presence of inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water, and

b) a prevalence of vegetation typically adapted for life in saturated soil conditions (hydrophytic vegetation).

Explicit in the definition is the consideration of three environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. The assessment of all three parameters enhances the technical accuracy, consistency, and credibility of wetland determination and is required per the 1987 USACE Manual.

Aquatic habitats other than wetlands that are considered to be waters of the United States were also investigated as part of this study. Their landward extent was defined following the definitions provided in the Corps of Engineers regulations [33 CFR §328.4(a)(b) and (c)]:

(a) *Territorial Seas*. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.

(b) *Tidal Waters of the United States*. The landward limits of jurisdiction in tidal waters:

(1) Extends to the high tide line, or

(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in (c) below.

(c) *Non-Tidal Waters of the United States*. The limits of jurisdiction in non-tidal waters:

(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water (OHW) mark, or

[2] Environmental Laboratory. 2008. "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)." U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi. 123 pp.

(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.

(3) When the water of the United States consists only of wetlands, the jurisdiction extends to the limit of the wetlands.

Tributary waters and their impoundments are under the regulatory jurisdiction of the USACE and extend to the OHW mark on opposing channel banks. Tributary waters include rivers, streams and seasonal drainage channels. The OHW mark is typically indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in character of soil, destruction of vegetation, exposed roots on the bank, deposition of leaf litter and other debris materials or lower limit of moss growth on channel banks.

Areas meeting the regulatory definition of "Waters of the United States" (jurisdictional waters) are subject to the jurisdiction of the USACE. The USACE, under provisions of Section 404 of the Clean Water Act (1972), has jurisdiction over "Waters of the U.S." These waters may include all waters used or potentially used for interstate commerce. This includes all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as "Waters of the U. S.," tributaries of waters otherwise defined as "Waters of the U.S.," the territorial seas, and wetlands adjacent to "Waters of the U.S." (33 CFR, Part 328, Section 328.3).

Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water-filled depressions (33 CFR, Part 328).

The Wetland Study Area was also reviewed to assess the potential for qualifying for Section 10 jurisdiction as a navigable water of the United States. Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR 329, Section 329.4). Section 10 jurisdiction extends to the lateral extent of the ordinary high water marks on opposing channel banks. Ultimately, the determination of navigability is made by the division engineer (33 CFR, Part 329, Section 329.14).

2.3 Data Collection for Potential Jurisdictional Wetlands/Waters

Data was collected by wetland scientists Jeff Olberding, Chad Aakre, Marc Beccio, and Marylee Guinon for the determination of wetlands/waters on July 1, 2014, as outlined in the methods section. Specific information on the ordinary high water line, vegetation, soils and hydrology was gathered on July 1, 2014. The purpose of this investigation was to identify and delineate potential jurisdictional waters, including wetlands. Additional surveys were conducted on July 15 and 22, 2014, to identify precise ordinary high water widths and depths of intermittent drainages. The Wetland Study Area was examined for

topographic features, drainages, alterations to site hydrology and areas of recent disturbance. All vascular plant species that were identifiable at the time of the survey were recorded and identified using keys and descriptions in The Jepson Manual (2nd ed., 2012; Attachment 2).

The habitat types occurring within the Wetland Study Area were characterized according to pre-established categories. In classifying the habitat types on the site, the generalized plant community classification schemas of *A Manual of California Vegetation* (Sawyer, Keeler-Wolf and Evens 2009) were consulted. The final classification and characterization of the habitat types found within the survey area were based on field observations.

Data was collected on vegetation, soils, and hydrology using wetland determination protocol as described in the 1987 Manual. Both upland and wetland data were collected to distinguish wetland boundaries from the adjacent upland; in some cases, single descriptive waypoints were taken to characterize the existing vegetation, soils, and hydrology of an area. On each transect, a sample point was sited in an area exhibiting wetland characteristics, while a second sample point was sited up slope of the first point in an upland position that defined the transitional break between wetland and upland. No soil test pits were taken within potential aquatic features that were confined to channels, thus conforming to the definition of "other waters" of the U.S. (i.e., exhibits a distinct bed and bank, with an ordinary high water mark (OHWM). GPS coordinates of each sample location were recorded in the field using a Trimble GEO XT.

A total of 17 paired sample points (each member of a pair designated either as "wetland" or upland") were established on within the boundaries of the Wetland Study Area; the upland positions are designated by "A" and the wetland positions "B." A single additional "descriptive waypoints" was taken to aid in defining the extent of potential wetland features.

Precipitation amounts during the 2013-2014 water years were approximately 65 percent of the annual average. Weather conditions at the time of the July 1, 2014 field delineation were sunny and clear, with mid-day temperatures approximately 75 degrees Fahrenheit and winds were generally calm with occasional light gusts. Weather at the time of the July 15, 2014 site visit were partly cloudy, with mid-day temperatures approximately 80 degrees Fahrenheit and winds were calm with occasional light gusts. Weather at the time of the July 22, 2014 site visit were clear and sunny, with mid-day temperatures approximately 85 degrees Fahrenheit and winds were calm.

The approximate location and extent of potentially jurisdictional wetlands/waters as well as other relevant data, were transferred on to a 1"= 200' scale topographical map of the survey area in the field. Information obtained at the sample point locations was recorded on modified USACE data sheets included in this report (Attachment 3). Representative photographs of the habitats associated with the drainage features in the Wetland Study Area can be viewed in Attachment 4.

The ordinary high water mark of each drainage feature was identified to determine the width of the potentially jurisdictional waters and the features were mapped on the Jurisdictional Delineation Map (Attachment 1, Figure 5).

3.0 TECHNICAL FINDINGS

The following discussion reports the hydrology, soil and vegetation conditions observed at the survey area during the course of the investigation.

3.1 Vegetation Conditions

The 1987 Manual states that the diagnostic environmental characteristics indicating wetland vegetation conditions are met when the prevalent vegetation (more than 50%) consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described above. In addition, hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Indicators of vegetation associated with wetlands include:

1. more than 50% of the dominant species are rated as Obligate ("OBL"), Facultative Wet ("FACW") or Facultative ("FAC") on lists of plant species that occur in wetlands;[3]

2. visual observations of plant species growing in areas of prolonged inundation or soil saturation; and

3. reports in the technical literature indicating the prevalent vegetation is commonly found in saturated soils" (1987 Manual).

In addition, hydrophytic indicators are applied to plant communities using the Arid West Supplement (December 2006) in the following sequence:

1. Apply the dominance test – more than 50% of the dominant species are rated as OBL, FACW, or FAC on lists of plant species that occur in wetlands.

    a. If the plant community passes the dominance test, then the vegetation is hydrophytic and no further vegetation analysis is required.

    b. If the plant community fails the dominance test, but indicators of hydric soil and wetland hydrology are both present, proceed to step 2.

[3] Lichvar, R.W. 2012. The National Wetland Plant List. Indicator Rating Definitions (ERDC/CRREL TR-12-11). U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH.

2. Apply the prevalence index – a weighted average wetland indicator status of all plant species (OBL=1, FACW=2, FAC=3, FACU=4, UPL=5). Weighting is by abundance (percent cover). A hydrophytic plant community will result in a prevalence index of 3.0 or less.

   a. If the plant community satisfies the prevalence index, then the vegetation is hydrophytic. No further vegetation analysis is required.

   b. If plant community fails prevalence index, proceed to step 3.

3. Apply morphological adaptations – morphological features which help plants survive prolonged inundation or saturation in the root zone, must occur on more than 50% of the FACU species living in an area where indicators of hydric soil and wetland hydrology are present.

Since 2006, the USACE has assumed administrative responsibility for the National Wetland Plant List (NWPL). The USACE initiated a national effort, led by a National Panel (NP) made up of representatives of the four agencies responsible for the NWPL, to update the NWPL indicator status categories, nomenclature, and geographic regions.[4] To more accurately reflect the existing information on plant frequencies, the NP dropped the 1988 numeric rating categories and revised the narrative definitions to be based on ecological descriptions; the plus (+) and minus (–) indicators were also eliminated. The following are the final refined wetland indicator definitions:

OBL (Obligate Wetland Plants) - Almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface.

These plants are of four types:

- Submerged (plants that conduct virtually all of their growth and reproductive activity under water);
- Floating (plants that most often grow with the leaves and other vegetative and reproductive organs floating on the water surface);
- Floating-leaved (plants that are rooted in sediment but also have leaves that float on the water surface); and

[4] Lichvar, R., and P. Minkin. 2008. Concepts and Procedures for Updating the National Wetland Plant List. ERDC/CRREL TN-08-03. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. http://libweb.erdc.usace.army.mil/Archimages/2295.PDF.

- Emergent (herbaceous and woody plants that grow with their bases submerged and rooted in inundated sediment or seasonally saturated soil and their upper portions, including most of the vegetative and reproductive organs, growing above the water level).

FACW (Facultative Wetland Plants) - Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

FAC (Facultative Plants) - Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic[5], or xeric[6] habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

FACU (Facultative Upland Plants) - Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

UPL (Upland Plants) - Almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

Table 1 provides a summary of the wetland plant indicator status categories used to determine if a particular plant species qualifies as a macrophyte which has adapted to areas having hydrologic and soil conditions.

It is important to note that, although there is a high probability that one would expect to find obligate, facultative wet and facultative plants growing in wetlands, there is also a significant possibility that the obligate, facultative wet, and facultative species will occur in areas that do not exhibit wetland soil and/or wetland hydrology conditions.

3.2 Vegetation Analysis of the Wetland Study Area

The Wetland Study Area supports seven habitat types: non-native annual grassland, coast live oak woodland, northern coyote brush scrub, abandoned orchard with associated ruderal vegetation, seasonal wetland (also referred to as freshwater marsh and seeps), Central Coast

---

[5] The mesic habitat description is essentially defined as occurring in a variety of habitats, typically with dense vegetation that shades "damp or moist" soils that are not hydric. In these settings, organic matter, which accumulates as plants decay, moderates soil temperatures and increases the soil's water-holding capacity.

[6] Nationally, the habitat description "xeric" is based in two different concepts. The xeric habitats of the Arid West typically occur in areas of low rainfall and in what are referred to as desert conditions. The other concept of xeric occurs throughout the remainder of the country in habitats often, but not always, located on hilltops and ridges, on south- or west-facing slopes, or on flatlands with sandy, porous soils. Vegetative cover in xeric habitats is sparser than the vegetation associated with mesic soils. As such, more sunlight reaches the soil surface, creating warmer, drier conditions in the rooting zone. Surface runoff and wind often erode topsoil, maintaining a shallow, excessively well drained to dry soil profile with a low water- holding capacity.

riparian scrub, and sage scrub. The majority of the Wetland Study Area is composed of non-native annual grassland.

Table 1

Wetland Plant Indicator Status Categories

Indicator Category	Symbol	Ecological Description
OBLIGATE WETLAND PLANTS	OBL	Almost always occur in wetlands
FACULTATIVE WETLAND PLANTS	FACW	Usually occur in wetlands, but may occur in non-wetlands
FACULTATIVE PLANTS	FAC	Occur in wetlands and non-wetlands
FACULTATIVE UPLAND PLANTS	FACU	Usually occur in non-wetlands, but may occur in wetlands
UPLAND PLANTS	UPL	Almost never occur in wetlands

*Based upon revised information contained in Army Corps of Engineers 2012 The National Wetland Plant List.

Indicator Rating Definitions (ERDC/CRREL TR-12-11)

3.2.1 Non-Native Annual Grassland

Non-native annual grassland is found throughout the California's coastal and interior valleys and foothills. It typically occurs on deep, poorly drained fine-textured soils. Vegetation is dominated by a non-native grasses and forbs of mostly Mediterranean origin that have replaces native perennial grassland and scrub species. Remnant populations of native wildflowers and grasses may be present in scattered patches.

The majority of the Wetland Study Area is dominated by non-native annual and biennial grasses and broad-leaved plants. Perennial plants are largely absent with some small stands scattered across the site. Dominant non-native grasses observed included rip-gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild oat (*Avena fatua*), medusahead (*Elymus caput-medusae*), and Italian ryegrass (*Festuca perennis*); the more commonly observed non-native broad-leaved plants observed included vetch (*Vicia* sp.), Italian thistle (*Carduus pycnocephalus* spp. *pycnocephalus*), rose clover (*Trifolium hirtum*), yellow-star thistle (*Centaurea solstitialis*), field bindweed (*Convolvulus arvensis*), broad-leaf filaree (*Erodium botrys*), bristly ox-tongue, (*Helminthotheca echioides*) English plantain (*Plantago lanceolata*) and black mustard (*Brassica nigra*).

Native grasses and forbs (i.e., wildflowers) typically observed within this habitat included creeping wild-rye (*Elymus triticoides*), nodding needle grass (*Stipa ceruna*), slender tarweed (*Madia gracilis*), soft rush (*Juncus effusus*), salt heliotrope (*Heliotropium curassavicum var. oculatum*), and silver lupine (*Lupinus albifrons*).

3.2.2 Coast Live Oak Woodland

Coast live oak woodland is typically found in ravines and north facing slopes in Central and Southern California, and is more widespread in mesic areas of Northern California. The community is dominated by coast live oak (*Quercus agrifolia*), although several other oak species may be present in this community, including blue oak (*Quercus douglasii*), and scrub oak *Quercus berberidifolia*). Other tree species in this community include California buckeye (*Aesculus californica*), California bay (*Umbellularia californica*), and madrone (*Arbutus menziesii*). Shrub-like species in this community include Western poison oak (*Toxicodendron diversilobum*), California sagebrush *(Artemisia californica*), and toyon (*Hetromeles arbutifolia*).

Coast live oak woodland occurs mainly on the along the eastern and western boundaries of the site. Coast live oak is the dominant tree species of this community, often forming dense stands with closed canopies. Other tree species found in this community on the site included valley oak, California buckeye, and California bay. Understory shrub species observed in this community included Western poison oak, common snowberry (*Symphoricarpos albus var. laevigatus*), Himalayan blackberry (*Rubus armeniacus*), and California blackberry (*Rubus ursinus*). Herbaceous species in this community included Western sword fern (*Polystichum munitum*) and a number of the same species present in the non-native annual grassland community.

3.2.3 Northern Coyote Brush Scrub

Northern coyote brush scrub is considered a sub-type of Franciscan coastal scrub, and is dominated by coyote brush (*Baccharis pilularis sbsp. pilularis*). This community is typically associated with sites that have shallow, rocky, soils on exposed slopes. This scrub type usually consists of a shrub layer of one to six feet in height with a well-developed herbaceous understory layer of grassland community species.

Northern coyote brush scrub occurs mainly on the western and eastern slopes of Gudde Ridge and the west side of Indian Creek. In addition, this community occurs in scattered patches on the upper slopes adjacent to several of the intermittent drainages. The northern coyote brush scrub on the site is dominated by coyote brush. Other plant species observed within this community included poison oak and an herbaceous understory comprised of many species representative of the non-native annual grassland community.

3.2.4 Abandoned Orchard with Associated Ruderal Vegetation

The abandoned orchard with associated ruderal vegetation consists of Northern California black walnut trees (*Juglans hindsii*) that appear to be the surviving rootstocks from cultivated English walnut trees (*Juglans regia*). The associated ruderal vegetation is dominated by an herbaceous understory comprised of many species representative of the non-native annual grassland community.

3.2.5 Seasonal Wetland

Seasonal wetland plant communities in northern California typically occur in slightly lower hydrogeomorphic positions in the landscape that pond water during the rainy season for sufficient duration to support vegetation adapted to wetland conditions. Seasonal wetlands in California are highly variable in plant composition, depending on the length of ponding or inundation. They also generally lack the plant community assemblage typical of defined marshes and vernal pools.

Many of the seasonal wetlands on the site are associated with freshwater seeps that are located on the northwest facing slopes of the site. Seep plant communities in northern California are typically found on permanently saturated soils but generally lack flowing surface water during the dry season. These communities are usually found on the lower portions of steep slopes, at the heads of swales, along fault lines or geological breaks, and along portions of stream banks.

Plant species found in the wet core of the seeps on the site included native species such as soft rush, iris-leaved rush (*Juncus xiphioides*), toad rush (*Juncus bufonius*), common or seep monkey flower *(Mimulus guttatus*), and umbrella sedge (*Cyperus eragrostis*). Non-native species observed in this community included Hyssop loosestrife (*Lythrum hyssopifolia*), pennyroyal (*Mentha pulegium*), rabbits-foot grass (*Polypogon monospeliensis*), and fiddle dock *(Rumex pulcher*).

The bulk of the seasonal wetland habitat on the site is associated with the fringes or downstream extent of the small localized seeps.

Plant species found in the seasonal wetlands on the site included native species such as creeping wildrye, whiteroot sedge (*Carex barbarae*), spreading rush (*Juncus pattens*), and narrow-leafed milkweed (*Asclepias fascicularis*). Non-native species observed in the seasonal wetlands included Italian ryegrass, soft chess, Mediterranean barley (*Hordeum marinum*), birds-foot trefoil (*Lotus corniculatus*), and curly dock (*Rumex crispus*).

3.2.6 Central Coast Riparian Scrub

Central Coast riparian scrub is found along river channels, permanent or intermittent streams and drainages, and along permanent seeps and freshwater marsh edges. This community is dominated by one to several willow species (*Salix* spp.). Central Coast riparian scrub is generally regarded as early seral, meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding. However, outside of riparian situations, that is, near groundwater seeps, willow-dominated scrub represents a relatively stable plant community and is not considered seral.

The Central Coast riparian scrub found on the site is supported by intermittent drainages and freshwater seeps. Characteristic native species found in this habitat type typically include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and occasionally white alder (*Alnus rhombifolia*), among others. Shade tolerant non-natives such as lemon balm (*Melissa officinalis*) are also present. Common shrubs such as poison oak and common snowberry are also part of this habitat, particularly where willows border oak woodlands. Central Coast riparian scrub as found on the site generally conform to the arroyo or red willow alliance as described by Sawyer, et al. (2009) and would be classified as a palustrine shrub-scrub wetland following Cowardin, et al. (1979).

3.2.7 Sage Scrub

Sage scrub consists is dominated by sparse to dense cover of woody shrubs up to three feet high. It is typically found well inland from the coast on rocky, shallow soils with southern exposures. Dominant species within this community include California sagebrush (*Artemisia californica*), coastal buckwheat, (*Eriogonum fasiculatum*), coyote brush, and bush monkey-flower (*Mimulus aurantiacus*), among others.

Sage scrub within the Wetland Study Area occurs on steep, southwest facing slopes of Gudde Ridge, and this community is intergraded with northern coyote brush scrub. Plant species observed included coyote brush, poison oak, and an understory on non-native annual grassland species.

3.3 Hydrology Conditions

The 1987 Manual states that the diagnostic environmental characteristics indicative of wetland hydrology conditions are: “the area is inundated either permanently or periodically at mean water depths less than or equal to 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation” (1987 Manual, p. 14). According to the Manual, indicators of hydrologic conditions that occur in wetlands may include features in Table 2.

Table 2 Hydrology Indicators	
Primary Indicators	**Secondary Indicators**
Inundation, Saturation	Oxidized Rhizospheres Associated with Living Roots
Watermarks	Water-Stained Leaves
Drift Lines	FAC-Neutral Test
Water-Borne Sediment Deposits	Local Soil Survey Data
Drainage Patterns Within Wetlands (With Caution)	

Department of the Army, U.S. Army Corps of Engineers, Washington, D.C., *Memorandum - Subject: Clarification and Interpretation of the 1987 Manual*, dated March 8, 1992, provides further clarification that:

> "Areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas wet between 5 percent and 12.5 percent of the growing season in most years (see Table 5, page 36 of the 1987 Manual) may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands. Wetland hydrology exists if field indicators are present as described herein and in the enclosed data sheet."

The presence of wetland hydrology using the Arid West Supplement (December 2006) is dependent on the presence of any one primary indicator or two or more secondary indicators included in Table 3.

Table 3 Arid West Region - Hydrology Indicators	
Primary Indicators	**Secondary Indicators**
Surface Water	Water Marks (riverine)
High Water Table	Sediment Deposits (riverine)
Saturation	Drift Deposits (riverine)
Water Marks (nonriverine)	Drainage Patterns
Sediment Deposits (nonriverine)	Dry-Season Water Table
Drift Deposits (nonriverine)	Thin Muck Surface
Surface Soil Cracks	Crayfish Burrows
Inundation Visible on Aerial Imagery	Saturation Visible on Aerial Imagery
Water-Stained Leaves	Shallow Aquitard
Salt Crust	FAC-Neutral Test
Biotic Crust	
Aquatic Invertebrates	
Hydrogen Sulfide Odor	
Oxidized Rhizospheres along Living Roots	
Presence of Reduced Iron	
Recent Iron Reduction in Plowed Soils	

3.4 Hydrologic Analysis of Wetland Study Area

Besides direct rainfall, water enters the site via Indian Creek, which generally flows from the northwest to southeast. Rainfall runoff from the northern portion of the site is via sheet flow and a number of intermittent drainages and seasonal wetland swales that convey flows in a northwest to southeast direction. The intermittent drainages typically exhibit head cuts where they discharge into Indian Creek. In general, the upper reaches of the intermittent drainages supported some hydrophytic vegetation, while there was sparse to no hydrophytic vegetation within the lower reaches of these features.

The pool feature identified on the Jurisdictional Delineation Map (Attachment 1, Figure 5) is located within the scour area of Indian Creek and is an in-channel pool feature. The pool was created by high water flows within the 60-inch diameter culvert that conveys water under Canyon Road. The pool feature is found directly below the flow line of the culvert and represents a scoured depression created by plunge pool erosion during high energy flows. The pool feature was approximately 26 feet in diameter and was estimated to have a depth at high water flows of approximately 7 feet. The pool had a maximum depth of approximately 5 feet deep at the time of the July 15, 2014 survey event.

The perennial drainage feature where Canyon Road crosses Moraga Creek is a steeply banked perennial creek with an ordinary high water width of approximately 50 feet and top of bank width at the road crossing of approximately 65 feet.

3.5 Soils Conditions

The USACE's 1987 Manual states that the diagnostic environmental characteristics indicative of wetland soil conditions are met where "soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions" (1987 Manual, p. 14). According to the Manual, indicators of soils developed under reducing conditions may include:

1. Organic soils (Histosols);
2. Histic epipedons;
3. Sulfidic material;
4. Aquic or peraquic moisture regime;
5. Reducing soil conditions;
6. Soil colors (chroma of 2 or less);
7. Soil appearing on hydric soils list; and
8. Iron and manganese concretions.

According to the most recent version of the National Technical Committee for Hydric Soils, the criteria to be used by the USACE for what constitutes current hydric soil/wetland soil conditions for the soils found at the Site are:

1. <u>Minimum Saturation at 12" to the surface</u>: 14 consecutive days during the growing season.

2. <u>Minimum Inundation (Flooded or Ponded)</u>: Soils that are frequently "ponded" for long duration (> 15 to 30 consecutive days) or very long duration (> 30 consecutive days) during the growing season, or soils that are frequently "flooded" for long duration or very long duration during the growing season.

According to the Arid West Supplement (September 2008), indicators for hydric soils are presented in three groups. Indicators for “all soils” (A) are used in any soil regardless of texture. Indicators for “sandy soils” (S) are used in soil layers with USDA textures of loamy

fine sand or coarser. Indicators for "loamy or clayey soils" (F) are used with soil layers of loamy very fine sand and finer (2006 Arid West Supplement, p.32). Hydric soils can be identified by the following indicators:

1. Histosol (A)
2. Histic Epipedon (A)
3. Black Histic (A)
4. Hydrogen Sulfide (A)
5. Stratified Layers (A)
6. 1 cm Muck (A)
7. Depleted Below Dark Surface (A)
8. Thick Dark Surface (A)
9. Sandy Mucky Mineral (S)
10. Sandy Gleyed Matrix (S)
11. Sandy Redox (S)
12. Stripped Matrix (S)
13. Loamy Mucky Mineral (F)
14. Loamy Gleyed Matrix (F)
15. Depleted Matrix (F)
16. Redox Dark Surface (F)
17. Depleted Dark Surface (F)
18. Redox Depressions (F)
19. Vernal Pools (F)

Where possible, the top 12 inches of the soil profile was examined for hydric characteristics. Such characteristics include the presence of organic soils (Histisols), histic epipedons, aquic or peraquic moisture regime, presence of soil on hydric soil list, mottling indicated by the presence of gleyed or bright spots of color within the soil horizons observed. Mottling of soils usually indicates poor aeration and lack of good drainage. A Munsell soil color charts (Kollmorgen Instr. Corp. 1990) were reviewed to obtain the soil color matrix for each soil sample. The last digit of the Munsell Soil Notation refers to the chroma of the sample. This notation consists of numbers beginning with zero for neutral grays and increasing at equal intervals to a maximum of about 20. Chroma values of the soil matrix which are one or less, or of two or less when mottling is present, are typical of soils which have developed under anaerobic conditions.

In sandy soils, such as alluvial deposits in the bottom of drainage channels, hydric soil indicators include high organic matter content in the surface horizon and streaking of subsurface horizons by organic matter.

3.6 Soil Analysis of the Wetland Study Area

The USDA Natural Resources Conservation Service (formerly Soil Conservation Service) mapped eight general soil types within the Wetland Study Area: Cropley Clay, 2 to 5 percent slopes, Diablo Clay, 15 to 30 percent slopes, Dibble silty clay loam, 15 to 30 percent slopes, Lodo clay loam 9 to 30 percent slopes, Los Osos clay loam 15 to 50 percent slopes, Los Osos-Los Gatos complex, Millsholm loam 50 to 75 percent slopes, and Rock outcrop-Xerorthents association. A detailed map of the soils for the Wetland Study Area can be found in Attachment 1, Figure 6. Soils Map includes the following types:

- **CkB: Cropley Clay, 2 to 5 percent slopes.** The Cropley clay series consists of moderately well-drained soils with a depth to a restrictive layer and the water table of more than 80 inches. Landform locations of this series are valleys at an elevation of 10 to 1,000 feet. This series is generally moist from November to May and is dry from June

until October, and it is classified within Hydrologic Group C. Permeability is slow and the available water capacity is high (9.3 inches). The Vegetation is annual grasses, forbs, and a few scattered oaks. Cropley Clay soils are considered prime farmland if irrigated.

- **DdE: Diablo Clay, 15 to 30 percent slopes.** The Diablo clay series consists of well-drained soils with a depth of 40 to 60 inches to a restrictive layer and a depth to the water table of more than 80 inches. Landform locations of this series are valleys at an elevation of 400 to 1,200 feet. This series is generally moist from November to May and is dry from June until October, and it is classified within Hydrologic Group C. Vegetation is annual grasses, forbs, and a few scattered oaks. Permeability is slow and the available water capacity is moderate to high (6 to 9 inches).

- **DeE**: **Dibble silty clay loam, 15 to 30 percent slopes**. The Dibble silty clay loam series consists of well-drained soils with a depth to a restrictive layer of 20 to 36 inches and depth to the water table of more than 80 inches. Landform locations of this series are hills at an elevation of 500 to 7,000 feet. This series is generally moist from November to May and is dry from June until October, and it is classified within Hydrologic Group D. Permeability is moderate and the available water capacity is low (5 inches). Vegetation is annual grasses, forbs, scattered oaks and conifers. Dibble silty clay loam soils are not considered prime farmland.

- **LcE**: **Lodo clay loam, 9 to 30 percent slopes**. The Lodo clay loam series consists of somewhat excessively drained soils with a depth to a restrictive layer of 10 to 20 inches and depth to the water table of more than 80 inches. Landform locations of this series are hills at an elevation of 300 to 3,000 feet. This series is generally moist from November to May and is dry from June until October, and it is classified within Hydrologic Group D. Permeability is moderate and the available water capacity is low (3.6 inches). Vegetation is annual grasses, forbs, scattered oaks and conifers. Lodo clay loam soils are not considered prime farmland.

- **LhE, LhF**: **Los Osos clay loam, 15 to 50 percent slopes**. The Los Osos clay loam series consists of well drained soils with a depth to a restrictive layer of 20 to 40 inches and depth to the water table of more than 80 inches. Landform locations of this series are hills at an elevation of 100 to 2,500 feet. This series is generally moist from November to May and is dry from June until October, and it is classified within Hydrologic Group D. Permeability is moderate and the available water capacity is low (5.1 inches). Vegetation is annual grasses, forbs, and scattered oaks. Los Osos clay loam soils are not considered prime farmland.

- **Lk: Los Osos-Los Gatos complex.** The Los Osos-Los Gatos complex series consists of well drained soils with a depth to a restrictive layer of 24 to 40 inches and depth to the water table of more than 80 inches. Landform locations of this series are hills at an elevation of 100 to 2,500 feet. This series is generally moist from November to May and is dry from June until October, and it is classified within Hydrologic Group D. Permeability is moderate and the available water capacity is low (5.1 inches). Vegetation is annual grasses, forbs, and scattered oaks. Los Osos-Los Gatos complex soils are not considered prime farmland.

- **MeG: Millsholm loam, 50 to 75 percent slopes.** The Millsholm loam series consists of well drained soils with a depth to a restrictive layer of 12 inches and depth to the water

table of more than 80 inches. Landform locations of this series are upland slopes at an elevation of 300 to 2,000 feet. This series is generally moist from November to May and is dry from June until October, and it is classified within Hydrologic Group D. Permeability is high and the available water capacity is very low (2.4 inches). Vegetation is annual grasses, forbs, and scattered oaks. Los Osos-Los Gatos complex soils are not considered prime farmland.

- **Re: Rocky Outcrop-Xerothents association.** The Rocky Outcrop-Xerorthents association series consists of parent rock and xeric soils. Landform locations of this series are upland slopes at an elevation of 100 to 3,850 feet. Permeability is high and the available water capacity is very low (2.4 inches). Vegetation is annual grasses, forbs, and scattered oaks. Rocky Outcrop-Xerorthents association soils are not considered prime farmland.

3.6.1 Soil Analysis of Paired Data Points for Wetland Determination

A total of 17 paired data points and one descriptive data point (35 total soil pits) were dug by shovel to a maximum depth of 12 inches at locations representative of various hydrogeomorphic surface conditions of the Wetland Study Area (Attachment 1; Figure 5). Nearly all the soils sampled in the wetland position were somewhat dark mineral soils with low chroma colors. Moist soil colors were fairly consistent with matrix values of 10YR 2/1, 2/2, and 3/2; and redox feature (mottles) values of 2.5YR 3/6, 4/6, 4/8, 5/6; 5YR 5/8, and 7.5YR 4/6. In soil test pits where redoximorphic conditions were present, mottles were present but and ranged from few and faint to many and prominent. Gleyed soils were observed in one sample point (5GY4/4).

4.0 AREAS POTENTIALLY REGULATED BY THE CORPS OF ENGINEERS

4.1 Areas Potentially Subject to Regulation (Wetlands/Waters of the U.S.)

The EPA and USACE regulations define wetlands as "those areas that are inundated or saturated by surface or groundwater at 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" (40 C.F.R. §230.3(t); 33 C.F.R. §328.3(b)).

The term "waters of the United States" are defined in 40 C.F.R. §328.3(a) as:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce.

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs [1-4] of this section;

(6) The territorial sea; and

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs [1-6] of this section (40 CFR §230.3(s); 33 CFR §328.3(a)).

4.1.1 Potential Wetlands

Based on information obtained during the July 1, 15, and 22, 2014 field delineation, it was determined that 35 seasonal wetlands totalling 9.312 acres occur within the boundaries of the Wetland Study Area; of these 34 seasonal wetlands totalling 9.186 acres are potentially jurisdictional (Attachment 1, Figure 5).

4.1.2 Potential Other Waters

Based on the information obtained during the July 1, 15, and 22, 2014 field delineation it was determined that 31 intermittent drainages, one perennial creek, and one pool totalling 1.903 acres (18,242 linear feet) occur within the Wetland Study Area. These "other waters" are potentially jurisdictional. Water lines and scouring were recorded in the intermittent drainages and perennial creek and met the USACE regulatory definition of "other waters" features. (Attachment 1, Figure 5).

4.1.3 Section 10 Navigable Waters

There are no features which qualify as Section 10 Navigable Waters.

4.2 Areas Potentially Excluded From Regulation under Section 404

4.2.1 Discretionary Exemptions

A number of exemptions from Section 404 Clean Water Act regulations exist for waters of the United States. These exemptions fall into two basic categories: (1) discretionary and (2) non-discretionary.

According to the preamble discussion of the USACE regulations in the November 13, 1986, *Federal Register*, certain areas which may meet the technical definition of a wetland are generally not regulated. Such areas include:

(a) Non-tidal drainage and irrigation ditches excavated on dryland.

(b) Artificially irrigated areas which would revert to upland if the irrigation ceased.

(c) Artificial lakes or ponds created by excavating and/or diking dryland to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.

(d) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dryland to retain water for primarily aesthetic reasons.

(e) Water filled depressions created in dryland incidental to construction activity and pits excavated in dryland for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).

This policy has been further clarified, and ratified, by:

1) a recent federal court opinion within the Ninth Circuit which highlighted the above-quoted section of the preamble to the USACE' regulations as a basis for the Court's affirmation that this sort of factual determination is precisely the sort of judgment call the USACE is entrusted to make;[7]

2) a decision by the Ninth Circuit Court of Appeals, which ruled in agreement with the USACE' position that such areas are legitimately exempt from USACE jurisdiction;[8]

4.2.2 Application of Discretionary Exemptions

It is our determination that one of the seasonal wetland features qualifies for a discretionary exemption. Seasonal wetland feature 29 is artificially irrigated by a leaky water tank and would revert to upland if the irrigation ceased.

4.2.3 Isolated Wetlands

The U.S. Supreme Court ruled that isolated, non-navigable wetlands and other waters are not subject to federal regulation even if they provide habitat for migratory birds and endangered

---

[7] See Golden Gate Audubon Society v. U.S. Army Corps of Engineers, 796 F.Supp. 1306, 1315 (N.D. Cal. 1992).

[8] See Leslie Salt Co. v. U.S., 896 F.2d 354, 359-60 (9th Cir. 1990).

species. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (hereinafter SWANCC) (No. 99-1178). The USACE has attempted to define isolated as "not having hydrological connectivity to other jurisdictional features." Based on this determination, the Court has eliminated the need to secure fill permits from the USACE under Section 404 of the Clean Water Act when isolated wetlands are encountered. Nevertheless, the decision is by no means a blanket repeal of Section 404. Every landowner's on-the-ground situation is unique, and must be analyzed individually. In the aftermath of this decision, each landowner must still carefully assess its situation to determine whether its Wetland Study Area contains features which qualify as "waters of the U.S." It is therefore recommended that a jurisdictional delineation be verified by the USACE rather than making an assumption regarding the potential regulation of a specific wetland/water feature.

The RWQCB has indicated that they intend to continue regulation of isolated wetlands under the Porter-Cologne Act (Water Code Section 13260). Their interpretation of the Court ruling indicates that the SWANCC decision has no bearing on the RWQCB's regulation of "waters of the state" and as such they will continue to issue waste discharge requirements (WDRs) in lieu of a Section 401 Certification which is required when the USACE issues a Section 404 permit.

4.2.4 Application of Isolated Waters Exemptions

Based on the description above, it appears that none of the seasonal wetland features qualifies for an exemption of isolated waters.

4.2.5 Significant Nexus

The geographic extent of jurisdiction under the Clean Water Act was further refined based on the U.S. Supreme Court's interpretation of the Act in Rapanos v. United States, 126 S. Ct. 2208 (2006) (Rapanos Case). In the EPA and USACE joint guidance of the Rapanos Case, issued in December of 2008, it was determined that the USACE generally will not assert jurisdiction over (1) swales or erosional features (e.g. gullies, small washes characterized by low volume, infrequent, or short duration flow) and (2) ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water. Non-navigable tributaries that are not relatively permanent and wetlands adjacent to such tributaries will be assessed on a case-by-case basis to determine whether they have a "significant nexus" to traditional navigable water. A "significant-nexus" will be determined through assessment of the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters.

According to the guidance, the USACE will continue to assert jurisdiction over traditional navigable waters; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and wetlands that directly abut such tributaries

4.2.6 Application of Significant Nexus

The intermittent drainage channels and seasonal wetlands mapped within the Wetland Study Area intercept direct precipitation and sheetflow runoff from surrounding upland areas. These features convey runoff into Indian Creek, which conveys flow into Upper San Leandro Reservoir. The outlet to Upper San Leandro Reservoir is San Leandro Creek, which conveys flow to Chabot Reservoir. San Leandro Creek continues as the outlet to Lake Chabot, conveying flow to San Francisco Bay (San Leandro Bay), a navigable water of the US.

5.0 CONCLUSIONS

Results of the field delineation conducted by Olberding Environmental and Marylee Guinon LLC on July 1, July 15, and 22, 2014 identified the presence of 34 seasonal wetlands, 31 intermittent drainages, one perennial drainage, and one pool that were determined to be potentially jurisdictional. These features total 11.089 acres. One non-jurisdictional seasonal wetland (0.126 acre) was also mapped within the Wetland Study Area. A summary of these features is provided in Table 4 below.

Table 4

Potentially Jurisdictional Wetlands and Waters

Seasonal Wetland	Acreage
SW1	3.907
SW2	0.220
SW3	0.199
SW4	0.190
SW5	0.298
SW6	0.385
SW7	0.033
SW8	0.105
SW9	0.095
SW10	0.011
SW11	0.011
SW12	0.005

Table 4 Potentially Jurisdictional Wetlands and Waters	
SW13	0.323
SW14	0.040
SW15	0.333
SW16	0.003
SW17	0.119
SW18	0.424
SW19	0.235
SW20	0.025
SW21	0.112
SW22	0.013
SW23	0.001
SW24	0.001
SW25	0.635
SW26	0.021
SW27	0.042
SW28	0.046
SW30	0.134
SW31	0.507
SW32	0.609
SW33	0.090
SW34	0.007
SW35	0.007
Total Seasonal Wetland Acreage	**9.186 acres**

Table 4 Potentially Jurisdictional Wetlands and Waters		
Intermittent Drainage	**Acreage**	**Linear Feet**
Indian Creek - ID1	0.651	5,675
ID2	0.005	109
ID2.1	0.001	31
ID3	0.005	104
ID4	0.005	116
ID5	0.007	156
ID6	0.009	186
ID7	0.013	281
ID7.1	0.002	43
ID8	0.012	262
ID9	0.039	858
ID10	0.024	349
ID10.1	0.008	180
ID11	0.096	1,399
ID11.1	0.005	225
ID12	0.009	200
ID13	0.057	830
ID13.1	0.014	199
ID14	0.075	817
ID14.1	0.003	43
ID15	0.170	1,350

Table 4 Potentially Jurisdictional Wetlands and Waters		
ID15.1	0.024	282
ID15.2	0.023	249
ID16	0.084	975
ID16.1	0.015	213
ID17	0.314	805
ID18	0.036	785
ID19	0.011	466
ID20	0.025	553
ID21	0.005	223
ID22	0.004	156
Total Intermittent Drainage Values	**1.751**	**18,120**
Perennial Drainage	**Acres**	**Linear Feet**
Moraga Creek (PD1)	0.137	122
Pool	**Acres**	
Pool	0.015	

6.0 LITERATURE CITED

Baldwin, B., Goldman, D., Keil D., Patterson, R., Rosatti, T. and Wilken, D. 2012. *The Jepson Manual: Vascular Plants of California* (2nd Edition) University of California Press, Berkeley, CA.

California Department of Fish and Wildlife. 2014. https://map.dfg.ca.gov/bios/

Code of Federal Regulation. Title 33 Part 328 "Navigation and Navigable Waters." U.S. Government Printing Office, Washington, D.C.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Fish and Wildlife Service, Office of Biological Services. Washington, D.C. Publ. No. FWS/OBS-79/31. 107 pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. plus appendices.

Hickman, James C., Ed. 1993. *The Jepson Manual, Higher Plants of California*. University of California Press. Berkeley, CA. 1400 pp.

Holland, R. F., 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* California Department of Fish and Game, San Francisco, CA. 156 pp.

Kollmorgen Instruments Corporation. 1975. Munsell soil color charts, revised edition (1990). Macbeth Division of Kollmorgan Instruments Corporation, Baltimore, Maryland National Technical Committee for Hydric Soils [NTCHS]. 1991. Hydric Soils of the United States, USDA, Soil Conservation Service Misc. Publ. 1491.

Lichvar, R.W. 2012. *The National Wetland Plant List*. ERDC/CRREL TR-12-11. Hanover, NH: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381

Sawyer J.O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation.* California Native Plant Society. Sacramento, CA. 471 pp

Sawyer J.O., Keeler-Wolf T. and Evens J.M.. 2009. *A Manual of California Vegetation*. (2nd Edition). California Native Plant Society. Sacramento. 1300 pp.

Sycamore Associates LLC. 2003. *Biological and Wetland Assessment for the Indian Valley Property, Moraga, Contra Costa County*. January 10, 2003. Revised December 31, 2003. Walnut Creek, CA.

U.S. Department of Agriculture, Soil Conservation Service. 1972. Soil Survey of Contra Costa County, California. Natural Resources Conservation Service.

U.S. Department of Agriculture, Soil Conservation Service. 1991. Hydric Soils of the United States. Natural Resources Conservation Service. Misc. Publ. No. 1491.

U.S. Department of Agriculture, Soil Conservation Service, 1992. List of Hydric Soil Map Units for Contra Costa County, California. Natural Resources Conservation Service.

U.S. Department of Agriculture, 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. EDRC/EL TR-08-28, Vicksburg, MS: U.S. Army Engineer Research and Development Center.

ATTACHMENTS

ATTACHMENT 1

FIGURES

Figure 1. **Project Location Map**

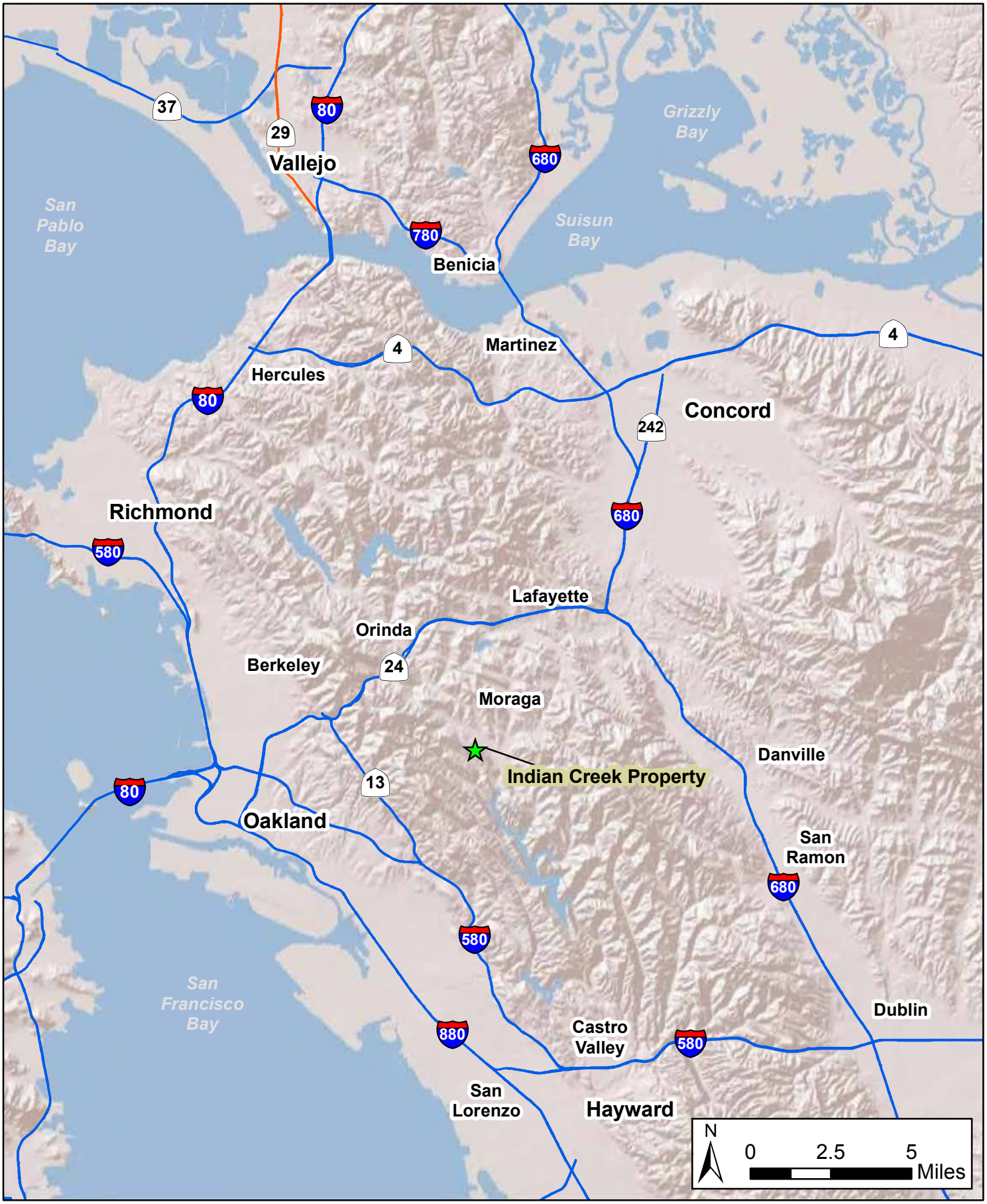
Figure 2. **Project Vicinity Map**

Figure 3. **USGS Topographic Map**

Figure 4. **Aerial Map**

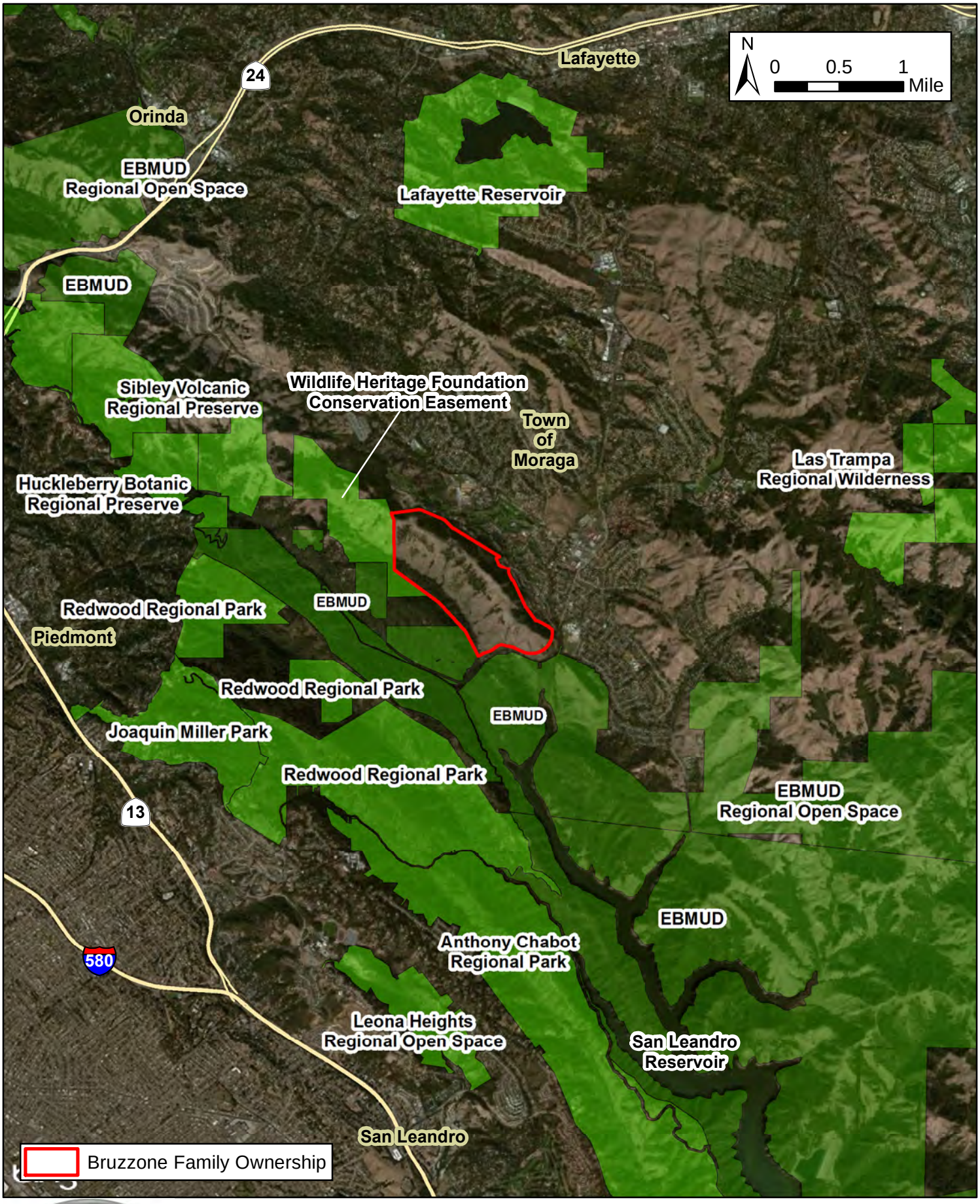
Figure 5. **Jurisdictional Wetland Delineation**

Figure 6. **Soils Map**



193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

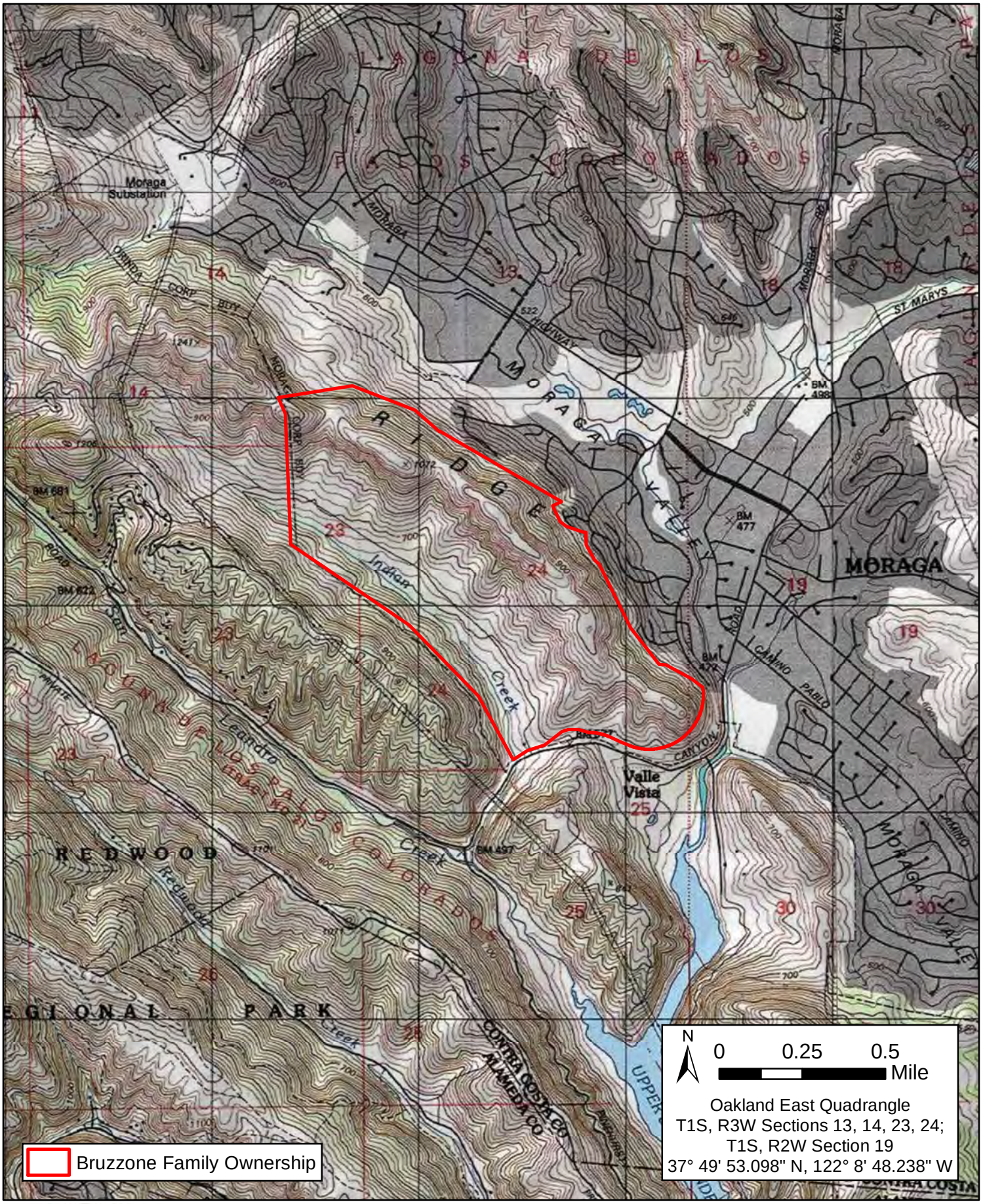
Figure 1: Regional Map
Indian Valley Project



193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

Figure 2: Project Vicinity
Indian Valley Project

Imagery Source and Date: ESRI/Bing; 11/02/2010



193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

Figure 3: USGS Topographic Map
Indian Valley Project

193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

Figure 4: Aerial Map
Indian Valley Project

Aerial Image Source and Date: Digital Globe; 06/09/2014

Jurisdictional Wetland	Acreage	Jurisdictional Wetland	Acreage	Jurisdictional Waters	Linear Foot	Acreage	Jurisdictional Waters	Linear Foot	Acreage
SW1	3.907	SW18	0.424	Indian Creek - ID1	5,675	0.637	ID13	830	0.056
SW2	0.220	SW19	0.235	ID2	109	0.005	ID13.1	199	0.013
SW3	0.199	SW20	0.025	ID2.1	31	0.001	ID14	817	0.073
SW4	0.190	SW21	0.112	ID3	104	0.005	ID14.1	43	0.003
SW5	0.298	SW22	0.013	ID4	116	0.005	ID15	1,350	0.167
SW6	0.385	SW23	0.001	ID5	156	0.007	ID15.1	282	0.023
SW7	0.033	SW24	0.001	ID6	186	0.008	ID15.2	249	0.022
SW8	0.105	SW25	0.635	ID7	281	0.013	ID16	975	0.082
SW9	0.095	SW26	0.021	ID7.1	43	0.002	ID16.1	213	0.014
SW10	0.011	SW27	0.042	ID8	262	0.012	ID17	805	0.307
SW11	0.011	SW28	0.046	ID9	858	0.039	ID18	785	0.035
SW12	0.005	SW30	0.134	ID10	349	0.023	ID19	466	0.010
SW13	0.323	SW31	0.507	ID10.1	180	0.008	ID20	553	0.025
SW14	0.040	SW32	0.609	ID11	1,399	0.094	ID21	223	0.005
SW15	0.333	SW33	0.090	ID11.1	225	0.005	ID22	156	0.004
SW16	0.003	SW34	0.007	ID12	200	0.009	Moraga Creek - PD1	122	0.137
SW17	0.119	SW35	0.007						
Non-Jurisdictional Wetlands	**Acreage**								
SW29	0.126								

- Property Boundary
- Survey Boundary
- Sample Points

Jurisdictional Wetlands (9.186 acres)

- Seasonal Wetlands (9.186 acres)

Non-Jurisdictional Wetlands (0.126 acre)

- Seasonal Wetlands (0.126 acre)

Jurisdictional Waters (18,242 linear feet; 1.866 acres)

- Pool (0.015 acre)
- Perennial Drainage (122 linear feet; 0.137 acre)
- Intermittent Drainage (18,120 linear feet; 1.714 acres)

193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

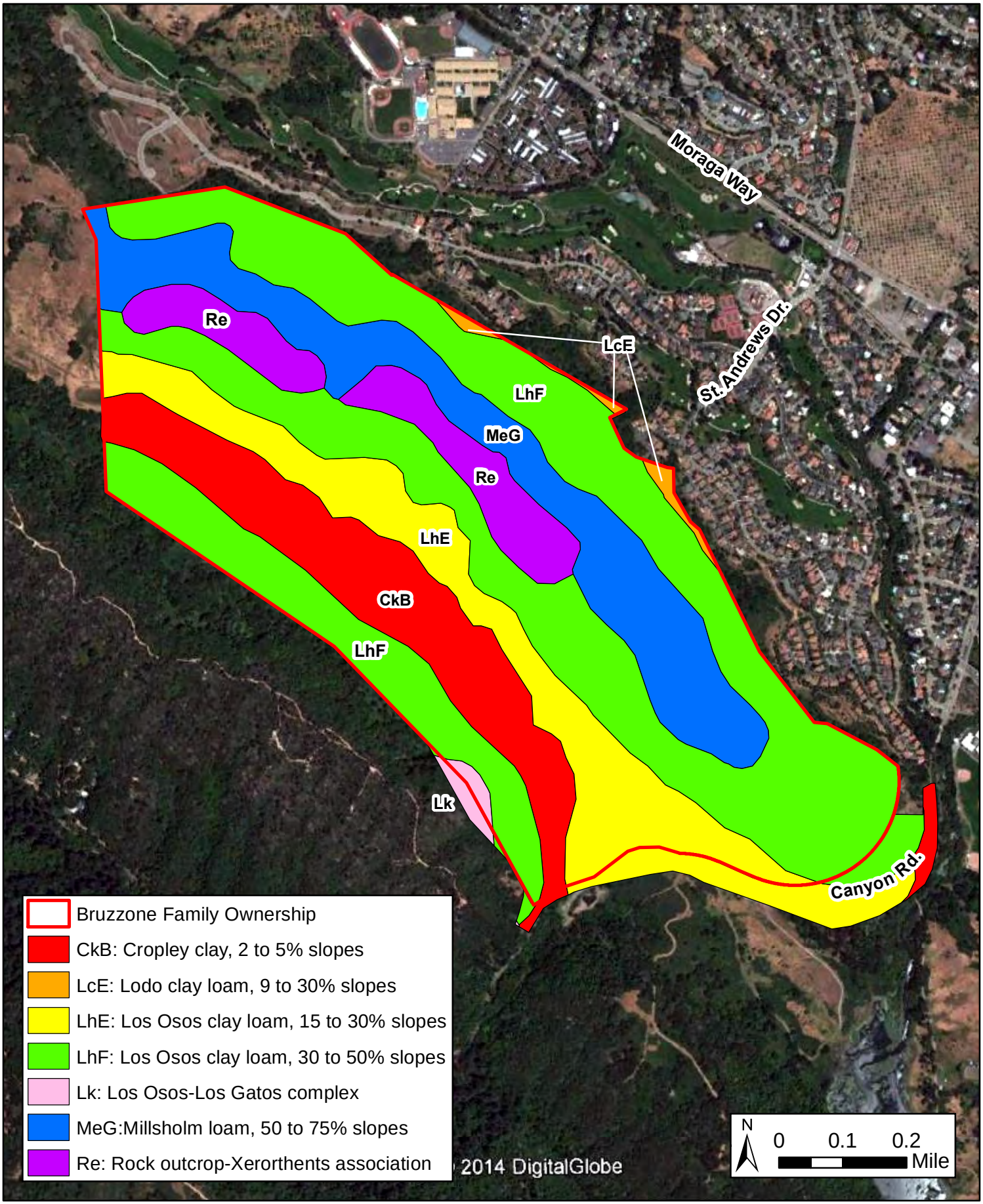
N

1 inch = 200 feet

Jurisdictional Delineation Map
Indian Valley Project
Moraga, California

Aerial Image Source and Date: USGS; 04/2011

APNs: 257-180-037; 257-180-073; 271-120-015; 257-180-040; 257-180-038; 257-180-041; 271-120-016; 257-180-034; 271-120-020



193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

Figure 6: Soils Map
Indian Valley Project

Aerial Image Source and Date: Digital Globe; 06/09/2014

ATTACHMENT 2

PLANT LIST

Attachment 2: Indian Valley Project Plant Species Observed (July 2014)

Taxon	Common Name	Wetland Status
Acer negundo	California box elder	FACW
Acmispon americanus var. americanus	Spanish-clover	UPL
Aesculus californica	California buckeye	-
Anthemis cotula	Mayweed	FACU
Arbutus menziesii	Madrone	-
Asclepias fascicularis	Narrow-leaf milkweed	FAC
Avena fatua	Wild oat	-
Baccharis pilularis subsp. pilularis	Baccharis	-
Brassica nigra	Black mustard	-
Briza minor	Small quaking grass	FAC
Bromus diandrus	Ripgut brome	-
Bromus hordeaceus	Soft chess	FACU
Bromus japonicus	Japanese brome	-
Bromus madritensis subsp. madritensis	Foxtail chess	-
Carduus pycnocephalus subsp. pycnocephalus	Italian thistle	-
Carex barbarae	Whiteroot sedge	FAC
Centaurea calcitrapa	Purple starthistle	-
Centaurea solstitialis	Yellow starthistle	-
Cirsium vulgare	Bull thistle	FACU
Clarkia rubicunda	Ruby chalice clarkia	-
Clarkia sp.	Clarkia	-
Conium maculatum	Poison hemlock	FACW
Convolvulus arvensis	Bindweed	-
Cotula coronopifolia	Common brass-buttons	OBL
Cyperus eragrostis	Tall flatsedge	FACW
Dipsacus sativus	Fuller's teasel	-
Dittrichia graveolens	Stinkwort	-
Eleocharis macrostachya	Creeping spikerush	OBL
Elymus caput-medusae	Medusahead	-
Elymus triticoides subsp. triticoides	Creeping wildrye	FAC
Equisetum hyemale subsp. affine	Common scouring-rush	FACW
Erodium botrys	Broad-leaf filaree	FACU
Festuca myuros	Rattail sixweeks grass	FACU
Festuca perennis	Italian ryegrass	FAC
Frangula californica subsp. californica	California coffeeberry	-
Genista monspessulana	French broom	-
Heliotropium curassavicum var. oculatum	Salt heliotrope	FACU
Helminthotheca echioides	Bristly ox-tongue	FACU

Taxon	Common Name	Wetland Status
Hemizonia congesta	Hayfield tarweed	-
Heteromeles arbutifolia	Toyon	-
Hordeum brachyantherum	Meadow barley	FACW
Hordeum marinum subsp. gussoneanum	Mediterranean barley	FAC
Hordeum murinum	Wall barley	FACU
Juglans hindsii	Northern California black walnut	FAC
Juncus bufonius	Toad rush	FACW
Juncus effusus	Soft rush	FACW
Juncus patens	Spreading rush	FACW
Juncus xiphioides	Iris-leaved rush	OBL
Lactuca saligna	Willow lettuce	UPL
Lactuca serriola	Prickly lettuce	FACU
Lotus corniculatus	Bird's-foot trefoil	FAC
Lupinus albifrons	Silver lupine	-
Lysimachia arvensis	Scarlet pimpernel	FAC
Lythrum hyssopifolia	Hyssop loosestrife	OBL
Madia gracilis	Slender tarweed	-
Medicago polymorpha	California burclover	FACU
Mentha pulegium	Pennyroyal	OBL
Mimulus guttatus	Common monkeyflower	OBL
Phalaris paradoxa	Paradox canary-grass	FAC
Pinus attenuata	Knobcone pine	-
Plantago lanceolata	English plantain	FAC
Polypogon monspeliensis	Annual beard grass	FACW
Polystichum munitum	Western sword fern	FACU
Prunus sp.	Prunus	-
Pyracantha angustifolia	Firethorn	-
Raphanus sativus	Wild radish	-
Ribes sp.	Gooseberry, currant	VARIES
Rosa californica	Califronia rose	FAC
Rubus armeniacus	Himalayan blackberry	FACU
Rubus ursinus	California blackberry	FACU
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	FAC
Salix exigua	Narrow-leaved willow	FACW
Sambucus nigra subsp. caerulea	Blue elderberry	FAC
Silybum marianum	Milk thistle	-
Sorghum halepense	Johnsongrass	FACU
Stachys ajugoides	Bugle hedge-nettle	OBL
Stipa cernua	Nodding needlegrass	-

Taxon	Common Name	Wetland Status
Symphoricarpos albus var. laevigatus	Common snowberry	FACU
Torilis arvensis	Field hedgeparsley	-
Toxicodendron diversilobum	Western poison-oak	-
Trifolium fragiferum	Strawberry clover	FACU
Trifolium hirtum	Rose clover	-
Trifolium sp.	Clover	VARIES
Umbellularia californica	California bay	FAC
Urtica dioica	Stinging nettle	FAC
Vicia sativa	Common vetch	FACU
Xanthium spinosum	Spiny cocklebur	FACU

ATTACHMENT 3

WETLAND DELINEATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP1A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	60	Yes	FACU
2. Festuca perennis	20	Yes	FAC
3. Convolvulus arvensis	2	No	-
4. Trifolium fragiferum	2	No	FACU
5. Cirsium vulgare	1	No	FACU
6. Helminthotheca echioides	1	No	FACU
7. Lotus corniculatus	1	No	FAC
8. Mentha pulegium	1	No	OBL
Total Cover:	88		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	99	2.5YR3/6	1	C	RC, M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP1B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes X	No _____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** _____
Wetland Hydrology Present?	Yes X	No _____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	85	Yes	FAC
2. Helminthotheca echioides	2	No	FACU
3. Rumex pulcher	1	No	FAC
4. Hordeum marinum	1	No	FACU
5. Mentha pulegium	1	No	OBL
6. Brassica nigra	1	No	-
7.			
8.			
Total Cover:	91		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	97	2.5YR3/6	3	C	RC, M	CL	Redox conc. distinct, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? Yes_____ No X____ Depth (inches): _____ **Wetland Hydrology Present?** **Yes** X____ **No**_____
(includes capillary fringe)

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP2A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	65	Yes	FACU
2. Festuca perennis	20	Yes	FAC
3. Helminthotheca echioides	5	No	-
4. Avena fatua	3	No	-
5. Carduus pycnocephalus	2	No	
6. Convolvulus arvensis	2	No	
7.			
8.			
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP2B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: ____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No ____		
Hydric Soil Present?	Yes X	No ____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	95	Yes	FAC
2. Helminthotheca echioides	1	No	FACU
3. Rumex pulcher	1	No	FAC
4. Bromus hordeaceous	1	No	-
5.			
6.			
7.			
8.			
Total Cover:	98		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	97	2.5YR3/6	3	C	RC, M	CL	Redox conc. distinct, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? Yes_____ No X____ Depth (inches): _____ **Wetland Hydrology Present?** **Yes** X____ **No**_____
(includes capillary fringe)

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP3A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 Soutt, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes	No X	**Is the Sampled Areas within a Wetland?**	**Yes** **No** X
Wetland Hydrology Present?	Yes	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Avena fatua	45	Yes	-
2. Vicia sativa	30	Yes	FACU
3. Convolvulus arvensis	5	No	-
4. Hordeum murinum	5	No	
5. Carduus pycnocephalus	1		
6.			
7.			
8.			
Total Cover:	86		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0
- ____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	99	2.5YR3/6	1	C	RC, M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP3B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): C Lat: 37° 49' 16" N Long: 122° 7' 37" W Datum: ____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No ____		
Hydric Soil Present?	Yes X	No ____	**Is the Sampled Areas**	
Wetland Hydrology Present?	Yes X	No ____	**within a Wetland?**	**Yes** X **No** ____

Remarks:
Annual rainfall for the 2013-2014 was below average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	80	Yes	FAC
2. Juncus effusus	3	No	FACW
3. Phalaris paradoxa	3	No	FAC
4. Hordeum marinum	2	No	FACU
5. Polypogon monspeliensis	2	No	FACW
6. Avena fatua	1	No	-
7. Rumex crispus	1	No	FAC
8. Rumex pulcher	1	No	FAC
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	98	2.5YR3/6	2	C	RC, M	CL	Redox conc. distinct, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
___High Water Table (A2)
___Saturation (A3)
___Water Marks (B1) (**Nonriverine**)
X___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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X_____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP4A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes	No X	**Is the Sampled Areas within a Wetland?**	**Yes** **No** X
Wetland Hydrology Present?	Yes	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 2.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Avena fatua	80	Yes	-
2. Bromus diandrus	15	No	-
3. Carduus pycnocephalus	3	No	-
4. Cirsium vulgare	2	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0
- ____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR3/2	97	7.5YR6/8	1	C	RC, M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP4B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes X	No	**Is the Sampled Areas within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 2.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	35	Yes	FAC
2. Juncus effusus	20	Yes	FACW
3. Briza minor	10	No	FAC
4. Mentha pulegium	5	No	OBL
5. Cyperus eragrostis	3	No	FACW
6. Cirsium vulgare	2	No	FACU
7. Polypogon monspeliensis	2	No	FACW
8. Rumex pulcher	2	No	FAC
Total Cover:	81		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
Prevalence Index is ≤3.0
Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	90	5YR4/8	10	C	RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
X__High Water Table (A2)
X__Saturation (A3)
X__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)
X__Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes X____ No_____ Depth (inches): 8
Saturation Present? (includes capillary fringe) Yes X____ No_____ Depth (inches): 2

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:
Ground water at 8 inches.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP4.1A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes	No X	**Is the Sampled Areas within a Wetland?**	**Yes** **No** X
Wetland Hydrology Present?	Yes	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	65	Yes	-
2. Festuca perennis	15	No	FAC
3. Convolvulus arvensis	7	No	-
4. Carduus pycnocephalus	5	No	FACU
5. Brassica nigra	1	No	-
6. Centaurea solstitialis	1	No	-
7.			
8.			
Total Cover:	94		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0
- ____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	99	2.5YR4/8	1	C	RC, M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP4.1B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W7' 37" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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	X
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Areas within a Wetland? **Yes** X **No**

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	50	Yes	FAC
2. Helminthotheca echioides	25	Yes	FACU
3. Bromus hordeaceous	5	No	-
4. Rumex pulcher	5	No	FAC
5. Mentha pulegium	1	No	OBL
6.			
7.			
8.			
Total Cover:	86		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	1	x 1 =	1
FACW species		x 2 =	
FAC species	2	x 3 =	6
FACU species	1	x 4 =	4
UPL species	1	x 5 =	5
Column Totals:	5 (A)		16 (B)

Prevalence Index = B/A = 3.1

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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)
X Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X Depth (inches): _____
Water Table Present? Yes_____ No X Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** X **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP5A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: ____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes ____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	60	Yes	-
2. Festuca perennis	15	No	FAC
3. Helminthotheca echioides	5	No	FACU
4. Plantago lanceolatum	3	No	FAC
5. Hemizonia congesta	2	No	-
6.			
7.			
8.			
Total Cover:	85		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP5B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** _____
Wetland Hydrology Present?	Yes X	No _____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 1.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	80	Yes	FAC
2. Helminthotheca echioides	5	No	FACU
3. Rumex pulcher	2	No	FAC
4. Bromus hordeaceous	1	No	-
5.			
6.			
7.			
8.			
Total Cover:	88		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
___High Water Table (A2)
___Saturation (A3)
___Water Marks (B1) (**Nonriverine**)
X__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)
X__Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP6A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: ____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes ____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	60	Yes	-
2. Cirsium vulgare	15	No	FACU
3. Festuca perennis	10	No	FAC
4. Carduus pycnocephalus	7	No	-
5. Convolvulus arvensis	5	No	-
6.			
7.			
8.			
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP6B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): C Lat: 37° 49' 16" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes X	No	**Is the Sampled Areas within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 3.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	95	Yes	FAC
2. Helminthotheca echioides	2	No	FACU
3. Bromus hordeaceous	2	No	FACU
4. Cirsium vulgare	1	No	FACU
5. Convolvulus arvensis	1	No	-
6. Trifolium hirtum	1	No	VAR
7.			
8.			
Total Cover:	101		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
Prevalence Index is ≤3.0
Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	95	2.5YR4/8	5		RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X_____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP7A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 4.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Avena fatua	85	Yes	-
2. Bromus diandrus	5	No	-
3. Cirsium vulgare	5	No	FACU
4. Festuca perennis	2	No	FAC
5. Centaurea solstitialis	1	No	-
6. Helminthotheca echioides	1	No	FACU
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 101 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 0 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP7B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes X	No	**Is the Sampled Areas within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 4.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	90	Yes	FAC
2. Carex barbarae	5	No	FAC
3. Vicia sativa	3	No	FACU
4. Juncus bufonius	2	No	FACW
5. Hordeum marinum	1	No	FACU
6.			
7.			
8.			
Total Cover:	103		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
Prevalence Index is ≤3.0
Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	98	2.5YR5/6	2		RC, M	CL	Redox conc. distinct, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP8A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes	No X	**Is the Sampled Areas within a Wetland?**	**Yes** **No** X
Wetland Hydrology Present?	Yes	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal wetland 6.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	75	Yes	FAC
2. Bromus hordeaceous	10	No	FACU
3. Convolvulus arvensis	2	No	-
4. Helminthotheca echioides	2	Yes	FACU
5.			
6.			
7.			
8.			
Total Cover:	89		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
Prevalence Index is ≤3.0
Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP8B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: ____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No ____		
Hydric Soil Present?	Yes X	No ____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 6.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	90	Yes	FAC
2. Bromus hordeaceous	5	No	FAC
3. Helminthotheca echioides	1	No	FACU
4. Hemizonia congesta	1	No	-
5.			
6.			
7.			
8.			
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	90	7.5YR4/5	10	C	RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X_____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP9A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas**	
Wetland Hydrology Present?	Yes _____	No X	**within a Wetland?**	**Yes** _____ **No** X

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 15.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	50	Yes	-
2. Festuca perennis	40	Yes	FAC
3. Convolvulus arvensis	5	No	-
4. Hemizonia congesta	1	No	-
5.			
6.			
7.			
8.			
Total Cover:	96		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP9B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes X	No _____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** _____
Wetland Hydrology Present?	Yes X	No _____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 15.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Polypogon monspeliensis	40	Yes	FACW
2. Juncus xiphoides	30	Yes	OBL
3. Juncus bufonius	5	No	FACW
4. Juncus effusus	5	No	FACW
5. Cyperus eragrostis	5	No	FACW
6. Lythrum hyssopifolia	2	No	OBL
7.			
8.			
Total Cover:	97		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	80	5YR5/6	20	C	RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
___High Water Table (A2)
___Saturation (A3)
___Water Marks (B1) (**Nonriverine**)
X___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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP10A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 15.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus hordeaceous	50	Yes	-
2. Festuca perennis	40	Yes	FAC
3. Carduus pycnocephalus	5	No	-
4. Cirsium vulgare	2	No	FACU
5. Convolvulus arvensis	1	No	-
6.			
7.			
8.			
Total Cover:	98		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP10B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes X	No _____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** _____
Wetland Hydrology Present?	Yes X	No _____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 15.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	80	Yes	FAC
2. Bromus hordeaceous	10	No	FACU
3. Cirsium vulgare	5	No	FACU
4. Polypogon monspeliensis	2	No	FACW
5. Raphanus sativus	1	No	-
6.			
7.			
8.			
Total Cover:	98		
Woody Vine Stratum			
1.			
2.			
Total Cover:	98		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	90	2.5YR4/8	10	C	RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
___High Water Table (A2)
___Saturation (A3)
___Water Marks (B1) (**Nonriverine**)
X___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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP11A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes	No X	**Is the Sampled Areas within a Wetland?**	**Yes** **No** X
Wetland Hydrology Present?	Yes	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 19.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	60	Yes	FAC
2. Bromus hordeaceous	30	Yes	FACU
3. Convolvulus arvensis	5	No	-
4. Helminthotheca echioides	2	No	FACU
5. Plantago lanceolatum	2	No	FAC
6.			
7.			
8.			
Total Cover:	99		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0
- ____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP11B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 15

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	
Hydric Soil Present?	Yes		No X	**Is the Sampled Areas within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes		No X	

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 19.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	75	Yes	FAC
2. Elymus caput-medusae	20	Yes	-
3. Brassica nigra	5	No	-
4. Convolvulus arvensis	2	No	-
5. Helminthotheca echioides	2	No	FACU
6.			
7.			
8.			
Total Cover:	99		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	1	x 3 =	3
FACU species	1	x 4 =	4
UPL species	3	x 5 =	15
Column Totals:	5 (A)		22 (B)

Prevalence Index = B/A = 4.4

Hydrophytic Vegetation Indicators:
____Dominance Test is >50%
____Prevalence Index is ≤3.0
____Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR2/1	99	7.5YR4/6	1	C	RC, M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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)
X Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X Depth (inches): _____
Water Table Present? Yes_____ No X Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP12A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 25.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	65	Yes	FAC
2. Bromus hordeaceous	25	Yes	FACU
3. Cirsium vulgare	5	No	FACU
4. Helminthotheca echioides	1	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	96		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP12B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes X	No	**Is the Sampled Areas within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 25.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	40	Yes	FAC
2. Trifolium species	20	Yes	VAR
3. Juncus xiphoides	15	No	OBL
4. Juncus effusus	10	No	FACW
5. Mentha pulegium	7	No	OBL
6. Bromus hordeaceous	5	No	FACU
7. Lotus corniculatus	2	No	FAC
8.			
Total Cover:	99		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	2	x 1 =	2
FACW species	1	x 2 =	2
FAC species	2	x 3 =	6
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	6 (A)		14 (B)

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:
- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12	10YR2/1	90	2.5YR4/6	10	C	RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
___High Water Table (A2)
X___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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes X____ No_____ Depth (inches): 12_____

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP13A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 28.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	70	Yes	FAC
2. Convolvulus arvensis	15	No	-
3. Anthemis cotula	5	No	FACU
4. Bromus hordeaceous5	5	No	FACU
5. Elymus caput-medusae	5		-
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 1 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR2/1	99	2.5YR4/6	1	C	M	CL	Redox conc. few, faint

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP13B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Los Osos clay loam, 9 to 30 percent NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes X	No _____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** _____
Wetland Hydrology Present?	Yes X	No _____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 28.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	75	Yes	FAC
2. Bromus hordeaceous	10	No	FACU
3. Convolvulus arvensis	10	No	-
4. Rumex pulcher	5	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 1 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12	10YR2/1	95	2.5YR4/6	5	C	RC, M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___Surface Water (A1)
___High Water Table (A2)
X__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)
X__Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes X____ No 12____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X_____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP14A

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 31.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Avena fatua	40	Yes	-
2. Centaurea solstitialis	35	Yes	-
3. Brassica nigra	1	No	-
4. Carduus pycnocephalus	1	No	-
5.			
6.			
7.			
8.			
Total Cover:	78		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6	10YR3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP14B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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	X
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Areas within a Wetland? **Yes** X **No** _____

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 31.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus japonicus	75	Yes	-
2. Dipsacus sativus	5	No	-
3. Vicia sativa	5	No	-
4. Lotus corniculatus	2	No	OBL
5. Lactuca saligna	1	No	UPL
6.			
7.			
8.			
Total Cover:	89		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	1	x 1 =	1
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species	4	x 5 =	20
Column Totals:	5 (A)		21 (B)

Prevalence Index = B/A = 4.2

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR3/1	75	5GY4/4	25	C	M	CL	Redox conc. distinct, many

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Loamy Gleyed Matrix (F2)
____Depleted Matrix (F3)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)

X__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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X_____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/22/2014

Applicant/Owner: State: CA Sampling Point: SP15A

Investigator(s): Jeff Olberding, Chad Aakre Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 33.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Avena fatua	45	Yes	-
2. Helminthotheca echioides	15	Yes	FACU
3. Brassica nigra	10	No	-
4. Carduus pycnocephalus	5	No	-
5.			
6.			
7.			
8.			
Total Cover:	75		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X_____

Remarks:

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 (2 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 X_____ Depth (inches): _____
Water Table Present? Yes_____ No X_____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X_____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP15B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes X	No	**Is the Sampled Areas within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 33.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Bromus japonicus	25	Yes	-
2. Polypogon monspeliensis	2	No	FACW
3. Carex barbarae	15	Yes	FAC
4. Juncus patens	2	No	FACW
5. Helminthotecha echiodes	15	Yes	FACU
6. Mentha pulegium	5	No	OBL
7. Briza minor	5	No	FAC
8. Festuca perennis	5	No	FAC
Total Cover:	74		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 26 % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	5	x 1 =	5
FACW species	4	x 2 =	8
FAC species	25	x 3 =	75
FACU species	15	x 4 =	45
UPL species	25	x 5 =	125
Column Totals:	74 (A)		258 (B)

Prevalence Index = B/A = 4.2

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- ____ Prevalence Index is ≤3.0
- ____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- x Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:
The dominant species is listed as a non-indicator species but is likely a FAC or FACW.

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR3/1	99	7.5YR4/6	1	C	M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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)
X___Redox Dark Surface (F6)
____Depleted Dark Surface (F7)
____Redox Depressions (F8)
____Vernal Pools (F9)

Indicators for Problematic Hydric Soils [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X___Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/22/2014

Applicant/Owner: State: CA Sampling Point: SP16A

Investigator(s): Jeff Olberding, Chad Aakre Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum:

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No		
Hydric Soil Present?	Yes X	No	**Is the Sampled Areas within a Wetland?**	**Yes** **No** X
Wetland Hydrology Present?	Yes	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Cirsium vulgare	25	Yes	FACU
2. Bromus hordeaceus	5	No	FACU
3. Festuca perennis	20	Yes	FAC
4. Helminthotheca echioides	2	No	FACU
5. Hordeum marinum	15	Yes	FAC
6. Elymus triticoides	5	No	FAC
7. Rumex pulcher	1	No	FAC
8.			
Total Cover:	73		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 26 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
Prevalence Index is ≤3.0
Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12	10YR2/1	99	7.5YR4/6	1	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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 (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa / Moraga Sampling Date: 07/22/2014

Applicant/Owner: State: CA Sampling Point: SP17A

Investigator(s): Jeff Olberding, Chad Aakre Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X		
Hydric Soil Present?	Yes _____	No X	**Is the Sampled Areas within a Wetland?**	**Yes** _____ **No** X
Wetland Hydrology Present?	Yes _____	No X		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 32.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Avena fatua	65	Yes	-
2. Centaurea solstitialis	1	No	-
3. Festuca perennis	7	No	FAC
4. Achellia millefolium	2	No	FACU
5. Bromus hordeaceaus	5	No	FACU
6. Vicia sativa	2	No	FACU
7.			
8.			
Total Cover:	82		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 18 % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12	10YR2/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes**_____ **No** X_____

Remarks:

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 (2 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 X_____ Depth (inches): _____
Water Table Present? Yes_____ No X_____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X_____ Depth (inches): _____

Wetland Hydrology Present? **Yes**_____ **No** X_____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Indian Valley City/County: Contra Costa/Moraga Sampling Date: 07/01/2014

Applicant/Owner: State: CA Sampling Point: SP17B

Investigator(s): Jeff Olberding, Chad Aakre, Marc Beccio Section, Township, Range: Section 24, Township 1 South, Range 24 West

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: 37° 50' 00" N Long: 122° 09' 02" W Datum: _____

Soil Map Unit Name: Cropley clay, 2 to 5 percent slopes NWI classification: Seasonal wetland

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 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 X	No _____		
Hydric Soil Present?	Yes X	No _____	**Is the Sampled Areas within a Wetland?**	**Yes** X **No** _____
Wetland Hydrology Present?	Yes X	No _____		

Remarks:
Regional rainfall total for the 2013-2014 water year was approximately 65% of annual average. Seasonal Wetland 32.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Festuca perennis	40	Yes	FAC
2. Bromus hordeaceus	30	Yes	FACU
3. Convolvulus arvensis	5	No	-
4. Cirsium vulgare	10	No	FACU
5. Juncus patens	2	No	FACW
6. Centaurea solstitialis	1	No	-
7. Lotus corniculatus	1	No	FAC
8. Avena fatua	1	No	-
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	41	x 3 =	123
FACU species	40	x 4 =	160
UPL species	7	x 5 =	35
Column Totals:	90 (A)		322 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL Sampling Point:_____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
10	10YR3/1	99	7.5YR4/6	1	C	M	CL	Redox conc. faint, few

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]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 [3]:

____1 cm Muck (A9) (**LRR C**)
____2 cm Muck (A10) (**LRR B**)
____Reduced Vertic (F18)
____Red Parent Material (TF2)
____Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:_____
Depth (inches): _____

Hydric Soil Present? **Yes** X_____ **No**_____

Remarks:

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)
X__Oxidized Rhizospheres along Living Roots (C3)
___Presence of Reduced Iron (C4)
___Recent Iron Reduction in Plowed Soils (C6)
___Other (Explain in Remarks)

Secondary Indicators (2 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 X____ Depth (inches): _____
Water Table Present? Yes_____ No X____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes_____ No X____ Depth (inches): _____

Wetland Hydrology Present? **Yes** X____ **No**_____

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

Remarks:

ATTACHMENT 4

SITE PHOTOGRAPHS

Wetland 1 SP1A (foreground) and SP1B facing west. Photograph date: July 1, 2014.

Wetland 2 SP4B (foreground) and 4A facing west. Photograph date: July 1, 2014.

Wetland 3 SP6B (foreground) and SP6A facing west. Photograph date: July 1, 2014.

Wetland 4 SP7B (foreground) and SP7A facing west. Photograph date: July 1, 2014.

Wetland 5 facing southwest. Photograph date: July 1, 2014.

Wetland 6 facing southwest. Photograph date: July 1, 2014.

Wetland 6 facing southwest. Photograph date: July 1, 2014.

Wetland 17 facing northeast. Photograph date: July 1, 2014.

Wetland 25 facing northeast. Photograph date: July 1, 2014.

Wetland 28 facing nortwest. Photograph date: July 1, 2014.

Wetland 31 facing west. Photograph date: July 1, 2014.

Drainage 8 Facing south. Photograph date July 1, 2014

Drainage 9 facing southwest. Photograph date: July 1, 2014.

Drainage 10 facing southeast. Photograph date: July 1, 2014.

Drainage 11 facing southeast. Photograph date: July 1, 2014

Drainage 13 facing southwest. Photograph date: July 1, 2014

Drainage 13.1 facing northeast. Photograph date: July 1, 2014

Drainage 14 facing northeast. Photograph date: July 1, 2014

Drainage 15 facing northeast. Photograph date: July 1, 2014

Drainage 16 facing northeast. Photograph date: July 1, 2014

Indian Creek at Pool Feature (west of Canyon Way). Photograph date: July 1, 2014

Moraga Creek (PD 1) at Canyon Road crossing facing southwest. Photograph date: July 15, 2014.

Seasonal wetland 29 and the leaky water tank that is supporting it facing east. Photograph date: July 1, 2014

Wetland 34 directly adjacent to Canyon Road facing southwest. Photograph date: July 22, 2014.

ATTACHMENT 5

SOILS DATA

LOCATION CROPLEY CA

Established Series
Rev. WCL/RCH/JJJ/KP/WRR
11/2009

CROPLEY SERIES

The Cropley series consists of very deep, moderately well and well drained soils that formed in alluvium from mixed rock sources. Cropley soils are on alluvial fans, floodplains and in small basins. Slopes range from 0 to 15 percent. The mean annual precipitation is about 16 inches and the mean annual temperature is about 60 degrees F.

TAXONOMIC CLASS: Fine, smectitic, thermic Aridic Haploxererts

TYPICAL PEDON: Cropley clay, 0 to 2 percent slopes, on a west facing 1 percent slope under a cover of annual grasses and forbs, at an elevation of 541 feet. When described on November 8, 2007, the soil was moist to 11 inches and dry below. (Colors are for dry soil unless otherwise noted).

A1--0 to 4 inches; very dark gray (10YR 3/1) broken face clay, black (10YR 2/1) broken face moist; 45 percent clay; strong coarse subangular blocky structure; hard, firm, very sticky, very plastic; common very fine roots; many very fine tubular pores; slightly acid, pH 6.2 by pH meter 1:1 water; clear smooth boundary.

A2--4 to 11 inches; very dark gray (10YR 3/1) broken face clay, black (10YR 2/1) broken face moist; 50 percent clay; strong coarse subangular blocky structure; hard, firm, very sticky, very plastic; common very fine roots; common very fine tubular pores; neutral, pH 6.9 by pH meter 1:1 water; clear smooth boundary. (combined A horizons 5 to 15 inches thick)

Bss1--11 to 24 inches; dark gray (2.5Y 4/1) broken face clay, black (2.5Y 2.5/1) broken face moist; 50 percent clay; strong coarse subangular blocky structure; hard, firm, very sticky, very plastic; common very fine roots; common very fine tubular pores; 20 percent pressure faces on slickensides and 70 percent clay films on all faces of peds; slightly alkaline, pH 7.6 by pH meter 1:1 water; gradual smooth boundary.

Bss2--24 to 33 inches; dark gray (2.5Y 4/1) broken face clay, black (2.5Y 2.5/1) broken face moist; 50 percent clay; strong coarse subangular blocky structure; hard, firm, very sticky, very plastic; common very fine roots; common very fine tubular pores; 30 percent pressure faces on slickensides; slightly alkaline, pH 7.8 by pH meter 1:1 water; gradual smooth boundary.

Bss3--33 to 51 inches; dark gray (2.5Y 4/1) broken face clay, very dark gray (2.5Y 3/1) broken face moist; 50 percent clay; strong coarse subangular blocky structure; hard, firm, very sticky, very plastic; few very fine roots; few very fine tubular pores; 40 percent pressure faces on slickensides; 10 percent irregular carbonate masses in matrix; very slight effervescence; slightly alkaline, pH 7.8 by pH meter 1:1 water; abrupt smooth boundary. (combined Bss horizons 14 to 38 inches thick)

BCk1--51 to 57 inches; brown (7.5YR 5/3) broken face sandy clay loam, brown (7.5YR 4/3) broken face moist; 32 percent clay; moderate medium subangular blocky structure; hard, firm, moderately sticky, moderately plastic; many very fine tubular pores; 10 percent clay films on all faces of peds; 10

percent irregular carbonate masses in matrix; strong effervescence; moderately alkaline, pH 8.0 by pH meter 1:1 water; clear smooth boundary.

BCk2--57 to 63 inches; brown (7.5YR 5/3) broken face sandy clay loam, brown (7.5YR 4/3) broken face moist; 28 percent clay; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky, slightly plastic; common very fine tubular pores; 10 percent clay films on all faces of peds; 1 percent subangular indurated 2 to 75 millimeter mixed rock fragments; strong effervescence; moderately alkaline, pH 8.0 by pH meter 1:1 water;

TYPE LOCATION: Santa Clara County, California, Ed Levin County Park, City of Milpitas, west of Sandy Wool lake, west of main road in field, west of curve in road to middle of field., in an unsectionized area of Township 5S, Range 1E, 4146038 UTM Northing, 600126 UTM Easting, Zone 10, NAD83 - U.S.G.S Quad: Calaveras Reservoir, California.

RANGE IN CHARACTERISTICS: Depth to segregated carbonate masses is 32 to 51 inches in most pedons, however some areas lack carbonates. The mean annual soil temperature at a depth of 20 inches is 59 to 64 degrees F. The particle size control section averages 40 to 60 percent clay, and 0 to 10 percent rock fragments, mostly gravel in size. Mineralogy is smectitic. Organic matter ranges from 1 to 3 percent to a depth of 10 inches. The soils usually are dry in the soil moisture control zone from May 1 to October 31, 180 days, and moist the rest of the year. Reversible surface- initiated cracks to 2 inches wide extend to a depth of 25 inches or more when the soil is not irrigated. Slickensides range from common to many in the Bss horizon from about 10 to 40 inches or more. Slopes are simple and are 0 to 15 percent.

The A horizons dry color is 10YR 4/2, 4/1, 3/2, 3/1, 2/1 or 5Y 3/1. Moist color is 10YR 3/2, 3/1, 2/2, 2/1 or N 2/. Texture is heavy clay loam, silty clay loam, silty clay or clay. Clay content ranges from 40 to 60 percent. Rock fragments range from 0 to 10 percent gravel. Reaction ranges from 5.6 to 8.4 and the horizon is non-calcareous. Some pedons have A/B horizons in which there is evidence of mixing of the A horizon and the Bss horizon soil material with small to large clumps of mixed soil material.

The Bss horizons dry color is 10YR 6/3, 6/2, 5/4, 5/3, 5/2, 4/3, 4/2, 4/1, 3/2, 3/1; 5Y 6/2, 3/1; 2.5Y 6/2, 5/2 or 4/1. Moist color is 10YR 4/4, 4/3, 4/2, 4/1, 3/3, 3/2, 3/1, 2/1; 5Y 4/2, 3/1; 2.5Y 4/2, 3/2, 3/1 or 2.5/1. Texture is clay loam, silty clay loam, silty clay or clay. Clay content ranges from 40 to 60 percent. Rock fragments range from 0 to 10 percent gravel. Reaction ranges from 6.1 to 8.4.

The BCk or Ck horizons dry color is 10YR 7/4, 7/2, 6/4, 6/3, 5/4, 5/3, 5/2, 4/4, 4/3, 4/2; 7.5YR 5/3, 4/2; 5Y 6/3, 5/2; 2.5Y 6/2, 5/3, 5/2, 4/3 or 4/2. Moist color is 10YR 6/4, 5/4, 5/3, 4/4, 4/3, 4/2, 3/4, 3/3, 3/2; 7.5YR 4/3, 4/2; 5Y 4/4, 4/2; 2.5Y 5/4, 4/4, 4/3, 4/2, 3/3 or 3/2. Texture is sandy clay loam, clay loam or clay. Some pedons have strata of loam or fine sandy loam below the depth of 40 inches. Clay content ranges from 27 to 60 percent. Rock fragments range from 0 to 10 percent gravel. Reaction ranges from 6.1 to 8.4.

COMPETING SERIES: These are the Aido, Alo, Altamont, Auld, Bonsanko, Cibo, Diablo, Myers, Porterville, Sehorn and Vaquero series. Aido, Alo, Auld, Bonsanko and Vaquero soils have a paralithic contact within a depth of 40 inches. Altamont soils have a paralithic contact within a depth of 60 inches. Cibo and Sehorn soils have a lithic contact within a depth of 40 inches. Diablo soils have a paralithic contact at depths of 40 to 80 inches and have chromas of 1.5 or less in the A horizon. Myers soils lack segregated carbonates in the subsoil, have moist color values of 4, 5 or 6 in the A horizon, and are located in MLRA 17 with greater than 30 degrees F. between mean summer and

mean winter temperatures. Porterville soils dominantly have hues of 5YR and 7.5YR and are located in MLRA 17 with greater than 30 degrees F. between mean summer and mean winter temperatures.

GEOGRAPHIC SETTING: Cropley soils are on alluvial fans, floodplains and in small basins. Slopes are smooth and are 0 to 15 percent. Cropley soils formed in fine textured alluvium weathered from shale, sandstone and mudstone. Elevation is 10 to 2100 feet. The climate is dry subhumid mesothermal with warm dry summers and cool moist winters. Mean annual precipitation is 12 to 30 inches. The mean annual temperature is 57 to 62 degrees F. Average January temperature is about 49 degrees F. in most areas, but is about 56 degrees F. close to the coast of California; average July temperatures is about 68 degrees f. Frost free season is 200 to 330 days and up to 360 days along the coast.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Alo, Altamont, Diablo soils, and the Antioch, Salinas and Sorrento soils. Antioch soils have a natric horizon, Salinas soils and Sorrento soils have less than 35 percent clay and do not crack when dry.

DRAINAGE AND PERMEABILITY: moderately well and well drained; medium to very high runoff; slow permeability. The soils are not flooded, flooding may be controlled in some areas.

USE AND VEGETATION: This soil is used for irrigated row and truck crops, irrigated and dry pasture, apricots, prunes and for urban development. Vegetation in uncultivated or undeveloped areas is annual grasses and forbs with some scattered live oak.

DISTRIBUTION AND EXTENT: The soils are moderately extensive and are mapped in MLRA?s 14 and 19.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: MO2 Davis, California

SERIES ESTABLISHED: Santa Clara County, California, Santa Clara Area, 1941.

REMARKS:

Official Cropley type location moved from existing site to new site near Milpitas, California, November, 2007 during soil survey of the Santa Clara area. Entire series description revised at that time. The Cropley series now includes some of the former Raynor soils more than 40 inches deep that were mapped on gentle smooth slopes.

Cropley series reclassified on September, 1994. Horizon designations and competing soils updated June 2001. Slope range expanded to 15 percent to accommodate observations in the Santa Monica Mountains October, 2001. Database search revealed well and moderately well drained components so well drained was added to the OSD for those components on floodplains, October 2004. Cropley soils mapped in Santa Cruz county near the Pacific Ocean do not open cracks until July and would not meet the criteria of 180 days dry for the Aridic subgroup.

ADDITIONAL DATA: NASIS SITE ID: 07ca085641468, NSSL Lab Data 69CA071026

National Cooperative Soil Survey
U.S.A.

LOCATION LODO CA

Established Series
Rev. GWH/RCH/RWK/ET
11/2009

LODO SERIES

The Lodo series consists of shallow, somewhat excessively drained soils that formed in material weathered from hard shale and fine grained sandstone. Lodo soils are on uplands and have slopes of 5 to 75 percent. The mean annual precipitation is about 20 inches and the mean annual air temperature is about 62 degrees F.

TAXONOMIC CLASS: Loamy, mixed, superactive, thermic Lithic Haploxerolls

TYPICAL PEDON: Lodo shaly clay loam - rangeland. (Colors are for dry soil unless otherwise noted.)

A--0 to 7 inches; grayish brown (2.5Y 5/2) shaly clay loam, very dark grayish brown (2.5Y 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial and tubular pores; about 15 percent by volume of distinct angular shale fragments; slightly acid; abrupt wavy boundary. (4 to 20 inches thick)

R--7 inches; shattered warped and folded dark grayish brown hard shale.

TYPE LOCATION: Glenn County, California; 2 1/4 miles south-southwest of Chrome; north of Hull Road, southwest 1/4 of section 5, T. 21 N., R. 6 W.

RANGE IN CHARACTERISTICS: Depth to a lithic contact is 4 to 20 inches. Mean annual soil temperature just above the bedrock is 59 degrees to 67 degrees F. and the soil temperature is below 47 degrees F. for only a few days in January. Soils below a depth of about 4 inches and above bedrock are usually moist in some or all parts all of the time from about November until April or May and are dry all the rest of the year. Texture throughout is sandy loam, loam, silt loam, sandy clay loam or clay loam with about 18 to 35 percent clay. Rock fragments, mostly angular or subangular pebbles, make up 5 to 35 percent of the soil.

The A horizon is dark brown, grayish brown, dark grayish brown, very dark grayish brown or brown in 2.5Y or 10YR hue. The moist chroma and moist value are 2 or 3. It has weak to strong granular or subangular blocky or angular blocky structure. In a few pedons some or all of the A horizon is massive, but the soil is only slightly hard when dry. Organic matter is 1 to 6 percent. This horizon is neutral or slightly acid in most pedons and some pedons are moderately acid in some or all parts. Base saturation is 75 to 100 percent.

In most pedons the A horizon rests abruptly on bedrock but in others a B horizon or a C horizon is present. These horizons have hue of 2.5Y, 10YR or 7.5YR, dry value of 6, moist chroma of 2 through 4 inclusive and less than 1 percent organic matter. All other properties are similar to the A horizon. This horizon is up to 5 inches thick.

COMPETING SERIES: There are the Friant and Zumaridge series. Friant soils are high in mica (less than 40 percent by weight) and have less than 18 percent clay., Zumaridge soils have less than 18 percent clay.

GEOGRAPHIC SETTING: Lodo soils are on mountainous uplands. Slopes are 5 to 75 percent. Elevations are 300 to 3,400 feet. The soils formed in material weathered from hard shale and hard fine grained sandstone. The climate is subhumid mesothermal with warm, dry summers and cool, moist winters. The mean annual temperature is about 59 degrees to 65 degrees F., average January temperature is about 42 degrees to 54 degrees F., and average July temperature is about 72 degrees to 77 degrees F. Frost-free season is about 200 to 280 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Escondido, Maymen, Millsap, Tehama, and Vallecitos soils. All of these soils have ochric epipedons. Also, Maymen soils have a mean annual soil temperature of 48 degrees to 58 degrees F. Millsap, Tehama, and Vallecitos soils have argillic horizons.

DRAINAGE AND PERMEABILITY: Somewhat excessively drained; medium to rapid runoff; moderate permeability.

USE AND VEGETATION: These soils are used principally for grazing, wildlife, and watershed. Native vegetation is buckwheat, scattered oak trees, Foothill pine, and chaparral. Naturalized vegetation is annual grasses and forbs.

DISTRIBUTION AND EXTENT: In the subhumid mountain ranges at lower elevations and foothills throughout California. The soils are extensive.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Davis, California MLRA's 15, 20

SERIES ESTABLISHED: Glenn County, California, 1957.

REMARKS: The activity class was added to the classification in February of 2003. Competing series were not checked at that time. - ET
Competing series checked 11/2009. Lodo soils are mapped from Riverside County to Shasta County, this should be reviewed during MLRA updating.

National Cooperative Soil Survey
U.S.A.

LOCATION LOS OSOS CA

Established Series
Rev. DJE/LCL/RWK/AW
10/2001

LOS OSOS SERIES

The Los Osos series consists of moderately deep, well drained soils that formed in material weathered from sandstone and shale. Los Osos soils are on uplands and have slopes of 5 to 75 percent. The mean annual precipitation is about 25 inches and the mean annual air temperature is about 60 degrees F.

TAXONOMIC CLASS: Fine, smectitic, thermic Typic Argixerolls

TYPICAL PEDON: Los Osos loam - grazed range grass. (Colors are for dry soil unless otherwise noted.)

A--0 to 14 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; moderately acid (pH 6.0); clear smooth boundary. (10 to 16 inches thick)

Btss1--14 to 24 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; very hard, very firm, sticky and plastic; few very fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; few slickensides; moderately acid (pH 6.0); gradual wavy boundary. (6 to 12 inches thick)

Btss2--24 to 32 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, sticky and plastic; few very fine roots, common very fine tubular pores; many moderately thick clay films lining pores; few slickensides; few manganese concretions; slightly acid (pH 6.5); gradual wavy boundary. (4 to 8 inches thick)

C--32 to 39 inches; pale yellow (2.5Y 7/4) sandy loam, light olive brown (2.5Y 5/4) moist; massive; hard, friable, nonsticky and nonplastic; few manganese stains; neutral (pH 7.0); gradual wavy boundary. (0 to 7 inches thick)

Cr--39 to 43 inches; yellowish brown (10YR 5/4) sandstone, brown (10YR 4/3) moist; many moderately thick clay films and few manganese stains coat fracture faces that are less than 10cm apart and less than 1mm in width.

TYPE LOCATION: San Luis Obispo County, California; on the Cal-Poly University campus, approximately 2,000 feet west and 1,500 feet south of the northeast corner of section 23, T. 30 S., R. 12 E., MDB&M; Latitude 35 degrees, 18 minutes, 18 seconds north and Longitude 120 degrees, 39 minutes, 23 seconds west; San Luis Obispo Quadrangle.

RANGE IN CHARACTERISTICS: Depth to a paralithic contact of sandstone or shale is 20 to 40 inches. The mean annual soil temperature at a depth of 20 inches is 60 degrees to 67 degrees F. and the coldest temperature is warmer than 41 degrees F. All of the soil between depths of about 4 and 12

inches is continuously dry after some time in May until some time in October. Some or all of the soil between these depths is moist all the rest of the time. There is 6 to 15 percent clay increase (absolute) from the A horizon to the B2t horizon and the soil lacks an abrupt A/B horizon boundary.

The A1 horizon is grayish brown, dark grayish brown, brown, or dark brown in 10YR or 7.5YR hue and has moist value of 3 or 2. It is loam, silt loam, clay loam, or silty clay loam and it has weak to strong structure. This horizon has 2 to 4 percent organic matter. It is medium acid to neutral.

The B2t horizon is brown, dark brown, grayish brown, dark grayish brown, light yellowish brown, yellowish brown, dark yellowish brown, brownish yellow, pale brown, light olive brown, light brown, or light brownish gray in 10YR, 7.5YR, or 2.5Y hue. In most pedons it has one unit higher value and one or two units brighter chroma than the A horizon. This horizon is heavy clay loam, clay, or silty clay and averages 35 to 50 percent clay. It has weak to strong angular or subangular blocky structure or is prismatic in the upper part and is massive in the lower part in some pedons. The B2t horizon is moderately acid to neutral. Some pedons have a C horizon consisting of a weathering front. The C horizon is sandy loam, loam, or clay loam.

COMPETING SERIES: These are the Fagan, Gabino, Gridley, Marcum, Sespe, Sween, and Todos series. Fagan and Todos are underlain by soft sandstone or shale at depths of 40 to 60 inches. Gabino soils have 5YR hue in the argillic horizon and have 10 to 30 percent pebbles and cobbles. Gridley soils are moderately well drained and are neutral to moderately alkaline. Marcum soils have paralithic horizons at 40 to 80 inches and are neutral to moderately alkaline. Sespe soils have hue of 5YR or 2.5YR in the argillic horizon. Sween soils have 10 to 15 percent (absolute) increase in clay from the A horizon to the B horizon, and have a lithic contact at a depth of 20 to 40 inches.

GEOGRAPHIC SETTING: Los Osos soils are at elevations of 100 to 3,500 feet. They formed in material weathered from firm to hard sandstone and shale. Slopes are 5 to 75 percent. The climate is dry subhumid mesothermal with warm, dry, somewhat foggy summers and cool, moist winters. Mean annual precipitation is 14 to 40 inches. Average annual temperature is 56 degrees to 63 degrees F., average January temperature is about 51 degrees F., and average July temperature is about 65 degrees F. The average freeze-free season is 200 to 320 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Altamont, Arnold, Diablo, Gaviota, Millsap, San Benito, Santa Lucia, and Vallecitos soils. Altamont and Diablo soils are of clay texture throughout. Gaviota, Millsap, and Vallecitos soils have a lithic contact at a depth of less than 20 inches. San Benito and Santa Lucia soils lack an argillic horizon.

DRAINAGE AND PERMEABILITY: Well drained; very high runoff; slow permeability.

USE AND VEGETATION: Used mostly for range, limited areas are cropped to grain and sudan grass pasture. Vegetation is mostly annual grasses and forbs with some perennial grasses, coastal sagebrush, and live oak.

DISTRIBUTION AND EXTENT: Central part of the Coast Range in California. The soils are of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Davis, California

SERIES ESTABLISHED: San Luis Obispo County (San Luis Obispo Area), California, 1928.

LOCATION MILLSHOLM CA

Established Series
Rev. DWH/SBJ/SBS/CAF/MAV
02/2003

MILLSHOLM SERIES

The Millsholm series consists of shallow, well drained soils that formed in material weathered from sandstone, mudstone and shale. Millsholm soils are on hills and mountains and have slopes of 5 to 75 percent. The mean annual precipitation is about 25 inches and the mean annual temperature is about 60 degrees F.

TAXONOMIC CLASS: Loamy, mixed, superactive, thermic Lithic Haploxerepts

TYPICAL PEDON: Millsholm light clay loam, rangeland. (Colors are for dry soil unless otherwise stated.)

A1--0 to 0.5 inches; pale brown (10YR 6/3) light clay loam, brown (10YR 4/3) moist; weak medium platy structure; slightly hard, friable, nonsticky and nonplastic; common fine roots; common fine pores; slightly acid; abrupt smooth boundary. (0 to 1 inch thick)

A2--0.5 to 6 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; moderate coarse subangular blocky structure; hard, friable, moderately sticky and nonplastic; common fine roots; common fine pores; few shale fragments; neutral; clear smooth boundary. (4 to 10 inches thick)

Bt--6 to 16 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; moderate coarse subangular blocky structure; hard, friable, moderately sticky and slightly plastic; few fine, many medium and coarse roots; common medium and fine pores; few thin discontinuous clay films; few shale fragments; neutral; clear wavy boundary. (4 to 10 inches thick)

R--16 to 20 inches; brown and grayish brown fractured shale and fine-grained sandstone.

TYPE LOCATION: Glenn County, California; 12 miles west of Willows, north of Fruto and north of Nye Creek, in the NW 1/4 of section 17, T. 20 N., R. 5 W.; between Latitude 39 degrees, 35 minutes, 25 seconds and 39 degrees, 35 seconds, 47 seconds north and between Longitude 122 degrees, 26 minutes, 48 seconds and 122 degrees, 27 minutes, 09 seconds west; USGS Fruto Topographic Quadrangle, NAD 27.

RANGE IN CHARACTERISTICS: Thickness of solum and depth to lithic contact bedrock are about 10 to 20 inches. There are up to 35 percent shale fragments throughout the soil. The mean annual soil temperature is about 59 to 64 degrees F. and soil temperature is above 47 degrees F. from February 10 to January 1. The soils are moist between depths of 4 and 12 inches in some or all parts between November and May. The soil is dry the rest of the year. Reaction is moderately acid to slightly alkaline and in most pedons there is not much change from top to bottom. Texture is clay loam, silty clay loam, silt loam, loam, gravelly clay loam or gravelly sandy clay loam and may have up to 35 percent rock fragments.

The A horizon has color of 10YR 7/4, 7/3, 6/3, 6/2, 6/4, 5/3, 5/4, 4/2, 4/3; 7.5YR 5/4, 4/6, 4/4, 4/3; 2.5Y 5/2 or 5/4. Moist color is 10YR 4/2, 4/3, 4/4, 3/4, 3/3, 5/4 or 7.5YR 3/4. Some pedons have thin surfaces with color of 10YR 3/2 or 3/3. Moist values are 4 or more or the epipedon is too thin to qualify for a mollic epipedon. Organic matter content is about 1 to 3 percent.

The Bt horizon has color of 10YR, 2.5Y and or 7.5YR 4/2, 4/3, 4/4, 4/6, 5/2, 5/3, 5/4, 5/6, 6/2, 6/3, or 6/4. Some pedons are 10YR 7/4 and moist color commonly of 3/3, 4/2, 4/3, 4/4, 5/4 or 6/4 in same hues and 5YR 4/4 and 3/4 moist. This horizon has about 18 to 30 percent clay but the increase from the A horizon to the Bt horizon is not sufficient to qualify the B horizon as an argillic horizon. A few thin clay films are present in most pedons. The Bt horizon has weak or moderate subangular blocky structure or weak angular blocky structure.

COMPETING SERIES: This is the Auburn, Toomes and Witherell series. Auburn soils (MLRA 15, 18), on foothills, are formed in material weathered from metabasic or metasedimentary rock, have color hue of 5YR and 7.5YR. Toomes soils (MLRA 15, 18), on ridges and plateaus of volcanic flows and on foothills of volcanic uplands, formed in material weathered from tuff breccia, basalt and andesite and contain some vitreous material. Witherell soils (MLRA 15), on hills and mountains, have mean annual precipitation of 35 to 70 inches with occasional snow above 3,000 feet and have a moisture control section that is dry in all parts for less than 140 days.

GEOGRAPHIC SETTING: Millsholm soils are on mountains. Elevation is 180 to 4,570 feet. Slope is 5 to 75 percent. These soils formed in material weathered from sandstone and shale. The climate is subhumid with hot dry summers and cool moist winters. Mean annual precipitation is 10 to 50 inches. Mean annual temperature is 57 degrees to 63 degrees F; mean January temperature is about 43 degrees F; and mean July temperature is about 78 degrees F. The frost-free season is about 130 to 330 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Altamont, Contra Costa, Gaviota, Gazos, Lodo, Los Osos, Millsap and Sehorn soils. Altamont soils, on uplands, are deep and have a fine particle-size control section. Contra Costa soils, on foothills and mountains, have an argillic horizon. Gaviota soils, on hills and mountains, do not have a cambic horizon. Gazos soils, on hills, have a lithic contact at a depth of 20 to 40 inches. Lodo soils, on uplands, do not have a cambic horizon. Los Osos soils, on mountains, are moderately deep and have an argillic horizon. Millsap soils, on foothill toe slopes, have a lithic contact at a depth of 20 to 40 inches and have a fine particle-size control section. Sehorn soils, on foothills, have a lithic contact at a depth of 20 to 40 inches.

DRAINAGE AND PERMEABILITY: Well drained; low to very high runoff; moderate permeability.

USE AND VEGETATION: Used mainly for livestock grazing. Principal native plants are annual grasses with blue oak, manzanita, ceanothus, and Foothill pine. Chamise is common in some areas.

DISTRIBUTION AND EXTENT: Foothills of the eastern slopes of the northern Coast Range, California and the hills and mountains of the Diablo Range in the California Coast Ranges. The soils are extensive. MLRA 15, 20.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Davis, California

SERIES ESTABLISHED: Glenn County, California, 1957.

REMARKS: In published soil surveys where Millsholm soils have sandy loam textures with or without rock fragments, these soils would now be excluded from the series. The concept is to keep Millsholm soils with clay contents of 20 to 30 percent.

Medium to very rapid runoff terminology adjusted 9/96 to adjective criteria low to very high of the Soil Survey Manual, 10/93

ADDITIONAL DATA: Three pedons sampled by UC-Berkeley in 1956 and NSSL pedons SCA59-001-005 and SCA72-013-004.

National Cooperative Soil Survey
U.S.A.