Jurisdictional Delineation Report
for the
Mace Ranch Innovation Center Project

Yolo County, CA

Prepared by:

Sycamore Environmental Consultants, Inc.
6355 Riverside Blvd., Suite C
Sacramento, CA 95831
Phone: 916/ 427-0703
Contact: Mike Bower, M.S., PWS #2230

Prepared for:

Yolo 101 JV
c/o ***The Buzz Oates Group of Companies***
8615 Elder Creek Road
Sacramento, CA 95828
Phone: 916/ 379-3838
Contact: Alisha Olson, Development Project Manager

3 February 2015

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I. INTRODUCTION

A. Purpose

Sycamore Environmental Consultants, Inc., conducted a jurisdictional delineation of the Mace Ranch Innovation Center Project study area (PSA) in Yolo County, CA. The purpose of the delineation was to identify wetlands and waters in the PSA. Jurisdictional delineations are preliminary until verified by the U.S. Army Corps of Engineers (Corps).

B. Project Location

The 263.09-ac PSA is located east of Mace Blvd., north of Interstate 80, east of the City of Davis, CA, in the Central Valley. The PSA is on the Davis USGS topographic quad (T8N, R2E, Sections 1 & 12 and T8N, R3E, Sections 6 & 7, Mt. Diablo Base & Meridian; Figure 1) and is in the Lower Sacramento Hydrologic Unit (Hydrologic Unit Code 18020163). The geographic coordinates of the PSA are 38.56085º north, 121.689075º west (WGS84), and the UTM coordinates are 614,216 meters east, 4,268,860 meters north, Zone 10N (WGS84). Figure 2 is a 2 February 2012 aerial photo of the PSA and surrounding area.

To access the PSA from Sacramento, take Interstate 80 west approximately 11 mi to the Mace Blvd exit in Davis. Exit and turn right (north). The PSA is located northeast of the first traffic light intersection (Mace Blvd and 2nd Street), approximately 0.2 mi north of Interstate 80.

C. Applicant

Yolo 101 JV, c/o The Buzz Oates Group of Companies
8615 Elder Creek Road
Sacramento, CA 95828
916/ 379-3838
Contact: Alisha Olson, Development Project Manager

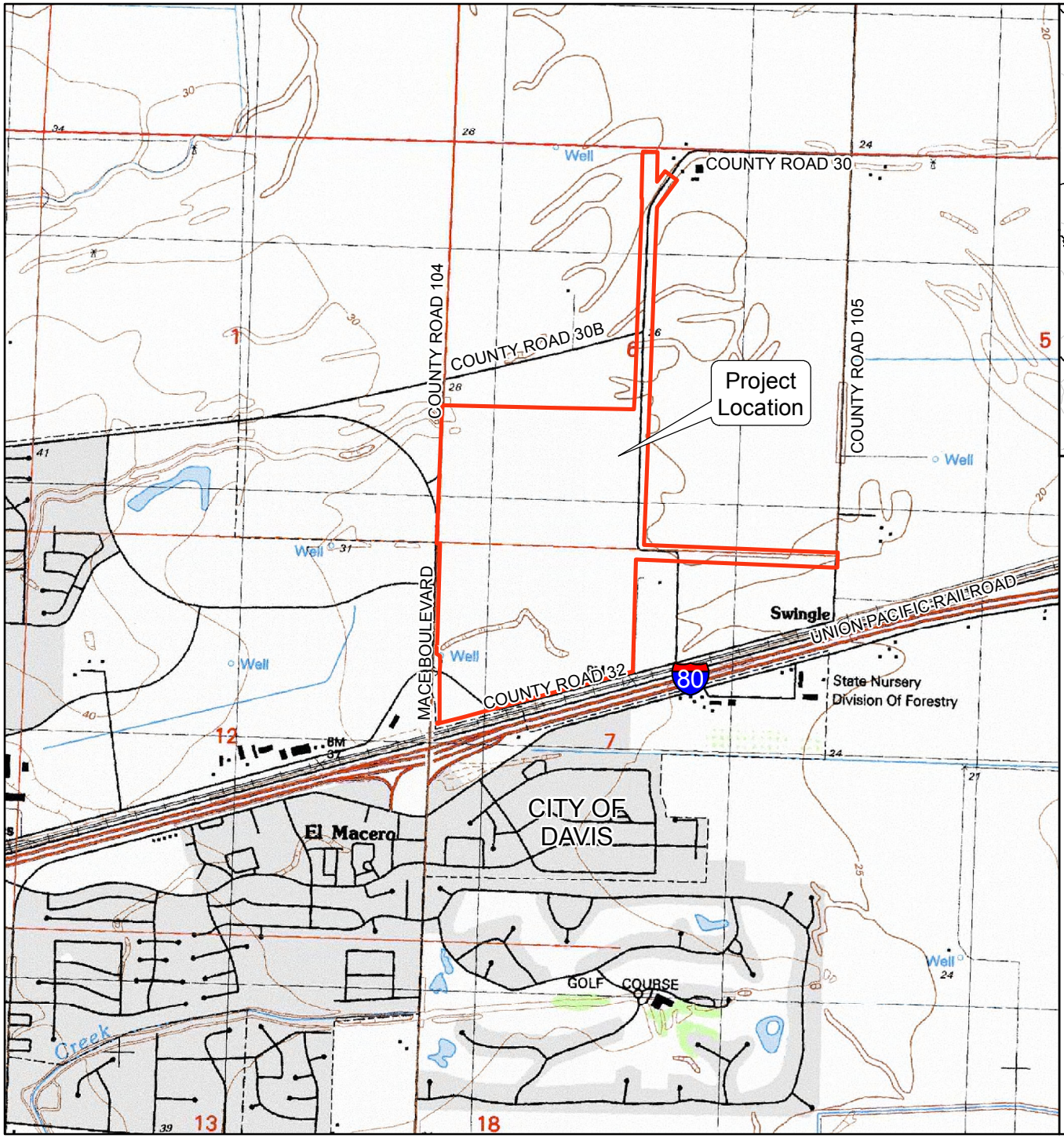
D. Project Description

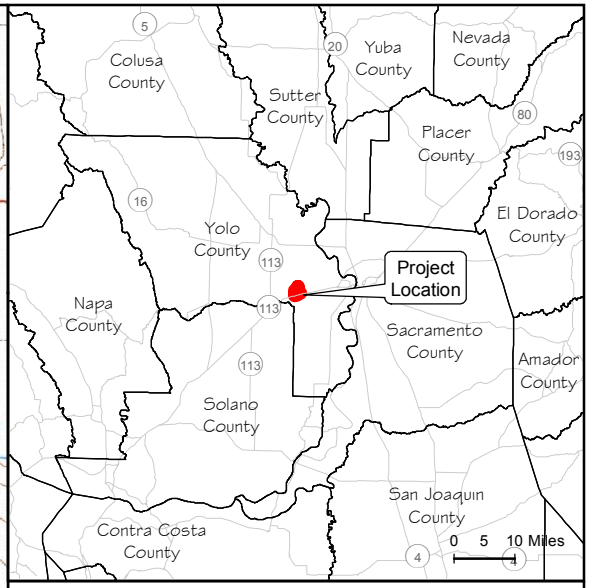
Yolo 101 JV, "the Applicant," is seeking to develop an innovation and technology park known as the Mace Ranch Innovation Center (MRIC; the "Project"). The Project is located immediately east of the City of Davis city limits, near the "Mace Curve," in Yolo County, approximately 2.5 mi east of downtown Davis (see Figure 1). Regional access to the Project site is provided by the Interstate 80/Mace Blvd interchange, located southwest of the Project site. The MRIC will be an area where leading-edge technology institutions cluster and connect with start-ups, businesses incubators, and accelerators as well as the University of California, Davis. The MRIC will offer a mix of building types and uses including office, research and development, prototyping, light manufacturing, flex space and support retail. The Project will provide for construction of approximately 2.6 million square feet of industrial research office and development space, of which there may be up to 260,000 square feet (10%) of supportive commercial. The Project is proximate to a Yolo Bus stop at the park-and-ride lot, from which landscaped pedestrian connection will be improved to the site and its primary north-south pedestrian promenade.

Offsite, two alternative sewer line connections are being evaluated: one which extends from the northeast side of the site, northward approximately 0.6 mi, along Road 104, and another which extends from the east side of the site, eastward approximately 0.5 mi, along a farm road, to Road 105.

The 263.09-ac Project Study Area (PSA) is larger than the 228-ac Project site because it includes the offsite sewer line connection alternatives. The PSA consists of:

- The MRIC site (212 ac) north of CR 32A, identified by Assessor's Parcel Numbers (APNs) 033-630-009; 033-650-009, and -026, currently in row crop agriculture,
- The Annexation Area (16 ac) area south of CR 32A consisting of APNs 033-630-011 (Ikeda's Market), 033-630-006 (a City-owned water tank and Caltrans District 3 Park-and-Ride lot), and 033-630-012 (agricultural uses, currently fallow). The Annexation Area is included in the Project to avoid creation of County "Island" property.
- A buffer around two proposed offsite sewer line connection alternatives located north and east of the MRIC site respectively. The eastern sewer line alternative crosses APN 033-290-04 (row crop agriculture). The northern sewer line alternative crosses APN 033-290-02, -04, -82, and -83; 033-650-027; and 042-130-03 (all in row crop agriculture).





Mace Ranch Innovation Center
Yolo County, CA
8 January 2015

Figure 1. Location Map

Project Location

2,000 1,000 0 2,000 Feet

Scale: 1 inch = 2,000 feet

N

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Consultants, Inc.

Davis, CA (1992)
USGS 7.5' Quadrangle Topographic DRG
7.5 Minute (C) Series, Albers Nad83 Mosaics (MrSID)
CA Spatial Library (CASIL)
o_nw0201.sid

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Mace Ranch Innovation Center
Yolo County, CA
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Project Study Area (PSA)

SYCAMORE Environmental Consultants, Inc.

Figure 2. Aerial Photograph

Aerial Photograph: 2 February 2010
US-CA-Sacramento, UC-G Microsoft Imagery
ESRI World Imagery Arcmap Service Layer

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II. STUDY METHODS

A. Data Sources

Table 1 is a list of data sources used for report preparation and itemized by the Corps and EPA (2007) as supporting data for jurisdictional determinations.

Table 1. Data Sources

Data Requested	Source
Maps, plans, plots or plat submitted by or on behalf of the applicant	Figures 1-4
Data sheets prepared/submitted by or on behalf of the applicant	Appendix A
Corps navigable waters study	Corps (2014)
U.S. Geological Survey Hydrologic Atlas. 1. USGS NHD data 2. USGS 8 and 12 digit HUC maps	Lower Sacramento (18020163) Tule Canal-Toe Drain (180201630302)
U.S. Geological Survey map(s)	Davis USGS quad (photo revised 1981; 1:24,000) And others (1907-1992) available on USGS Historical Topographic Map Explorer
USDA Natural Resources Conservation Service Soil Survey	NRCS (1972), NRCS (2014)
National Wetlands Inventory map(s)	USFWS (2014, 1990)
State/Local wetland inventory map(s)	None known
FEMA/FIRM maps.	Yolo County, CA and Unincorporated Areas; FEMA Map Numbers 06113C0604 G , 06113C0610 G, 06113C0612 G, 06113C0620 G; Panels 604 of 785, 610 of 785, 612 of 785, 620 of 785 Effective Date: 18 June 2010
100-year Floodplain Elevation is: (e.g., North American Vertical Datum of 1988).	Zone X: Areas outside the 0.2% annual chance floodplain
Photographs: 1. Aerial (Name & Date) 2. Other (Name & Date)	Figure 2. ESRI ArcGIS Basemap Service Layer: Image dated 2 February 2012. Reference aerial photographs from Google Earth: Dated 16 June 1993 to present. Reference aerial photograph reproductions, from Ramcon (2003): Dated 1937, 1952, 1964, 1971, 1984, 1993.
Previous determination(s). File no. and date of response letter	None known

B. Survey Dates and Personnel

A reconnaissance survey was conducted by Mike Bower, M.S., PWS #2230, on 7 October 2014. Fieldwork for the jurisdictional delineation was conducted by Mr. Bower and Noosheen Pouya on 10 December 2014. A second reconnaissance survey was conducted by Chuck Hughes, M.S., PWS #2029, on 23 December 2014.

C. Survey Methods

This jurisdictional delineation report has been prepared in accordance with the Sacramento District minimum standards (Corps 2001), U.S. Army Corps of Engineers Wetland Delineation Manual (Corps 1987), Regulatory Guidance Letter 05-05 (Corps 2005), South Pacific District Procedures for Irrigated Lands (Corps 2012), and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Arid West Supplement; Corps 2008a). Regional supplements are intended to bring the Corps Manual (Corps 1987) up to date with current knowledge and practice in specific regions. The Arid West Supplement is applicable to the PSA because it is located in California's Central Valley, which experiences long, hot summers typical of Mediterranean California (Corps 2008a). All wetland and water features were identified and mapped. Hydrophytic classifications of plants were determined from the U.S. Fish and Wildlife Service national list of plant species that occur in wetlands (Lichvar, et al. 2014). Plant nomenclature follows Baldwin et al., ed. (2012).

D. Jurisdictional Data

The jurisdictional delineation was conducted using the Routine On-Site Determination Method (Corps 1987). Jurisdictional data were recorded using the Wetland Determination Data Form for the Arid West Region (Corps 2008a). Soil, vegetation, and hydrology data were recorded at the data points. Plant species were identified by Mike Bower. Wetland data sheets are in Appendix A. Photographs are in Appendix B. Appendix C is a list of plant species recorded at the data points.

E. Mapping and Calculation of Acreages

Features observed in the PSA were mapped using a Trimble Geo-XT sub-meter accurate global positioning system (GPS). The GPS data were exported to ArcMap and Google Earth, where feature boundaries were completed. Acreages were calculated using ESRI ArcMap functions.

F. Definitions

The U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency regulate the discharge of dredge and fill material into "waters of the United States" under Section 404 of the Clean Water Act (33 U.S.C. 1344). The Corps issues permits for certain dredge and fill activities in waters of the U.S. pursuant to the regulations in 33 CFR 320-330. The lateral limits of jurisdiction in those waters may be divided into three categories. The categories include the territorial seas, tidal waters, and non-tidal waters (see 33 CFR 328.4 (a), (b), and (c), respectively). The term "waters of the U.S." is defined at 33 CFR 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 (a)(1)-(4) of this section;
6. The territorial seas;

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.
8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

The term "adjacent" is defined at 33 CFR 328.3(c):

> The term *adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are ''adjacent wetlands.''

The limits of jurisdiction are identified in 33 CFR 328.4 as:

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. (See 33 CFR 329.12)
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 paragraph (c) of this section.
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 mark, or
    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 wetland.

The term "ordinary high water mark" is defined at 33 CFR 328.3(e):

> The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Wetlands, as defined by the Corps for regulatory purposes, are identified using a three-parameter test that considers whether hydrophytic vegetation, hydric soils, and hydrology are present (Corps 1987). Wetlands are "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 (33 CFR 328.3, 40 CFR 230.3). Wetlands also include less conspicuous wetland types such as vernal pools and other seasonal wetlands.

An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow (66 FR 42099).

III. SETTING

The PSA is located at an urban/rural interface, on the east side of the City of Davis, CA, within the unincorporated area of Yolo County, in an agricultural area in California's Central Valley. Upland row crops and agricultural ditches for irrigation and drainage are present in the surrounding, unincorporated area. The PSA is at the northeast corner of the intersection of Mace Boulevard and 2nd Street, bordered to the west by Mace Boulevard, and across the street from existing commercial uses. The Union Pacific Railroad and Interstate-80 are located to the south, and agricultural lands protected by a permanent conservation easement surround the PSA to the north and east. Tall, dense, and dry weed grasses occur along the perimeter of the MRIC site and along a City drainage ditch that runs from west to east through the central portion of the MRIC site.

A. Topography

Elevation in the PSA ranges from approximately 20 to 30 ft above sea level. The PSA is essentially flat with the exception of the Mace Drainage Channel (MDC), which flows west to east under Mace Blvd and across the center of the PSA. A roughly 5-ft deep (relative to earthen basin walls) detention basin occurs just south of the MDC along the eastern boundary of the PSA.

B. Existing Field Conditions

Field work for the jurisdictional delineation was conducted on 10 December 2014. Hydrologic observations were also made on 7 October 2014 and 23 December 2014. Precipitation in California is typically reported for the period from 1 July through 30 June of the next calendar year. Precipitation recorded from 1 July 2014 through 7 October, 10 December, and 23 December 2014 was 107%, 124%, and 190% of normal, respectively, according to observed daily precipitation and historical averages for the same periods (Sacramento Executive Airport Gauge; NOAA 2014). The PSA had wetter than average hydrologic conditions during the delineation.

Drought conditions were present during the preceding (2013-2014) water year, but the drought was unlikely to have influenced conditions during delineation fieldwork. Vegetation data was based on new growth from the 2014-2015 growing season (new seedlings and resprouting perennial plants, a function primarily of precipitation received after 1 July 2014). Hydrologic conditions were strongly influenced by recent major rains and not by the lack of rain that was observed 6-18 months prior. Hydric soils are a result of many years of periodic saturation and persist through periods of drought.

C. Vegetation

Most of the PSA consists of tilled upland row crop agriculture. No vegetation was present in recently tilled areas during fieldwork. Roadsides and field edges are dominated by ruderal weeds including mustard (*Brassica* sp.), Russian thistle (*Salsola tragus*), yellow-star thistle (*Centaurea solstitialis*), field bindweed (*Convolvulus arvensis*), and perennial pepperweed (*Lepidium latifolium*). A few trees approximately 30-60 ft tall occur in the detention basin and along the MDC. Vegetation associated with the MDC is described in Section IV.C.1.

D. Existing Level of Disturbance

The vast majority of the PSA has experienced recent soil disturbance due to typical agricultural operations, including tilling. Unpaved agricultural access roads travel along the Mace Drainage Channel's north side, along agricultural field edges, and through fallow fields located south of Road 32A. Mace Blvd, Road 32A and Road 104 are paved roads in or adjacent to the PSA. The Mace Drainage Channel, the detention basin, minor irrigation ditches, and minor roadside ditches are all man-made features that have disturbed the soil in the PSA.

E. Soils

Soil pits were dug to observe the chroma, texture, degree of saturation, and other characteristics. Mapped soil units in the PSA are Capay Silty Clay Loam, 0 to 1 Percent Slopes; Marvin Silty Clay Loam, 0 to 1 Percent Slopes; Sycamore Silt Loam, Drained, 0 to 1 Percent Slopes; Sycamore Complex, Drained, 0 to 1 Percent Slopes; Tyndall Very Fine Sandy Loam, Drained, 0 to 1 Percent Slopes; Willows Clay, 0 to 1 Percent Slopes; and Willows Clay, Alkali, Drained, 0 to 1 Percent Slopes (Figure 3; NRCS 2006). The following description is summarized from NRCS (2006). Reported colors are for moist soil.

Capay Silty Clay Loam, 0 to 1 Percent Slopes:
These soils occur on alluvial fans, alluvial flats, interfan basins, and basin rims. They formed in moderately fine and fine textured alluvium from mostly sandstone and shale. A typical profile is very hard, very firm, sticky, very plastic very dark grayish brown clay from 0 to 21 inches; very hard, very firm, sticky, very plastic dark brown clay from 21 to 32 inches; and hard, firm, sticky, very plastic yellowish brown clay from 32 to 62 inches. This soil is slightly acid from 0 to 5 inches, neutral from 5 to 21 inches, and moderately alkaline from 21 to 62 inches. Permeability is slow to very slow. Runoff is negligible to high. .

Marvin Silty Clay Loam, 0 to 1 Percent Slopes:
These soils occur on nearly level flood plains at elevations of 10 to 100 ft under annual grasses and forbs. They formed in fine textured alluvium from mixed sources. A typical profile is hard, friable, slightly sticky, plastic, very dark grayish brown silty clay loam from 0 to 13 inches; very hard, fium, sticky, plastic dark to very dark grayish brown heavy silty clay loam or silty clay from 13 to 42 inches; and hard, friable, sticky, plastic, dark brown silty clay loam from 42 to 60 inches. This soil is neutral to slightly acidic from 0 to 13 inches, and mildly alkaline from 13 to 60 inches. Permeability is slow. Runoff is slow.

Sycamore Silt Loam and Sycamore Complex, Drained, 0 to 1 Percent Slopes:
These soils occur on nearly level flood plains at elevations of 10 to 100 ft. They formed in in mixed sedimentary alluvium. A typical profile is hard, friable, sticky, plastic very dark grayish brown silty clay loam from 0 to 14 inches; slightly hard, friable, slightly sticky, slightly plastic dark grayish brown silt loam from 14 to 42 inches; and slightly hard, friable, slightly sticky, slightly plastic pale brown loam from 42 to 60 inches. This soil is slightly acid from 0 to 14 inches, and mildly to moderately alkaline from 14-60 inches. Permeability is moderate to moderately slow. Runoff is slow to very slow.

Tyndall Very Fine Sandy Loam, Drained, 0 to 1 Percent Slopes:
These soils occur on nearly level alluvial fans at elevations of 0 to 70 ft. They formed in sedimentary alluvium low in clay. A typical profile is soft, very friable, slightly sticky, slightly plastic dark to very dark grayish brown heavy very fine sandy loam to very fine sandy loam from 0 to 24 inches; soft, very friable, slightly sticky, slightly plastic light brownish gray to olive fine to very fine sandy loam from 24 to 46 inches; soft, friable, slightly sticky, slightly plastic dark grayish brown to pale olive sandy loam to very fine sandy loam from 46 to 52 inches. This soil is slightly to moderately alkaline from 0 to 41 inches, and strongly alkaline from 41-52 inches. Permeability is moderately rapid. Runoff is slow. The use of levees and other artificial means have improved natural drainage.

Willows Clay, and Willows Clay, Alkali, Drained, 0 to 1 Percent Slopes:
These soils occur on nearly level basins in intermountain valleys and large valleys at elevations of 20 feet to as much as 1,700ft. They formed in fine-textured mixed alluvium. A typical profile is extremely to very hard, very firm, sticky, very plastic very dark gray clay from 0 to 38 inches; and hard to very hard, very firm, sticky and very plastic olive gray clay from 38 to 72 inches. This soil is neutral from 0 to 4 inches, slightly alkaline from 4 to 13 inches, and strongly alkaline from 13 to 72 inches. Permeability is very slow. Runoff is slow.

Sycamore Silt Loam, Sycamore Complex (drained), Willows Clay, and Willows Clay (Alkali, Drained) are classified as hydric soils by NRCS (2012). Capay Silty Clay, Marvin Silty Clay Loam, Tyndall Very Fine Sandy Loam (Drained), are not hydric soils, but may have hydric soil inclusions (NRCS 2012).

F. National Wetlands Inventory Map

The online NWI map (USFWS 2014) does not identify any wetlands or waters in the PSA (USFWS 2014). The Mace Drainage Channel is not identified on either NWI map (USFWS 1990, 2014).

The 1990 National Wetlands Inventory (NWI) map identifies an isolated feature in the southwest corner of the PSA, north of County Road 32A (USFWS 1990), which is no longer present. The 1,850 ft long palustrine, emergent, seasonally flooded wetland (PEMC) occurred entirely on APN 033-630-009. No other wetland or drainage features are shown nearby on the NWI map. See discussion of Mace Drainage Channel for additional discussion of this isolated feature.

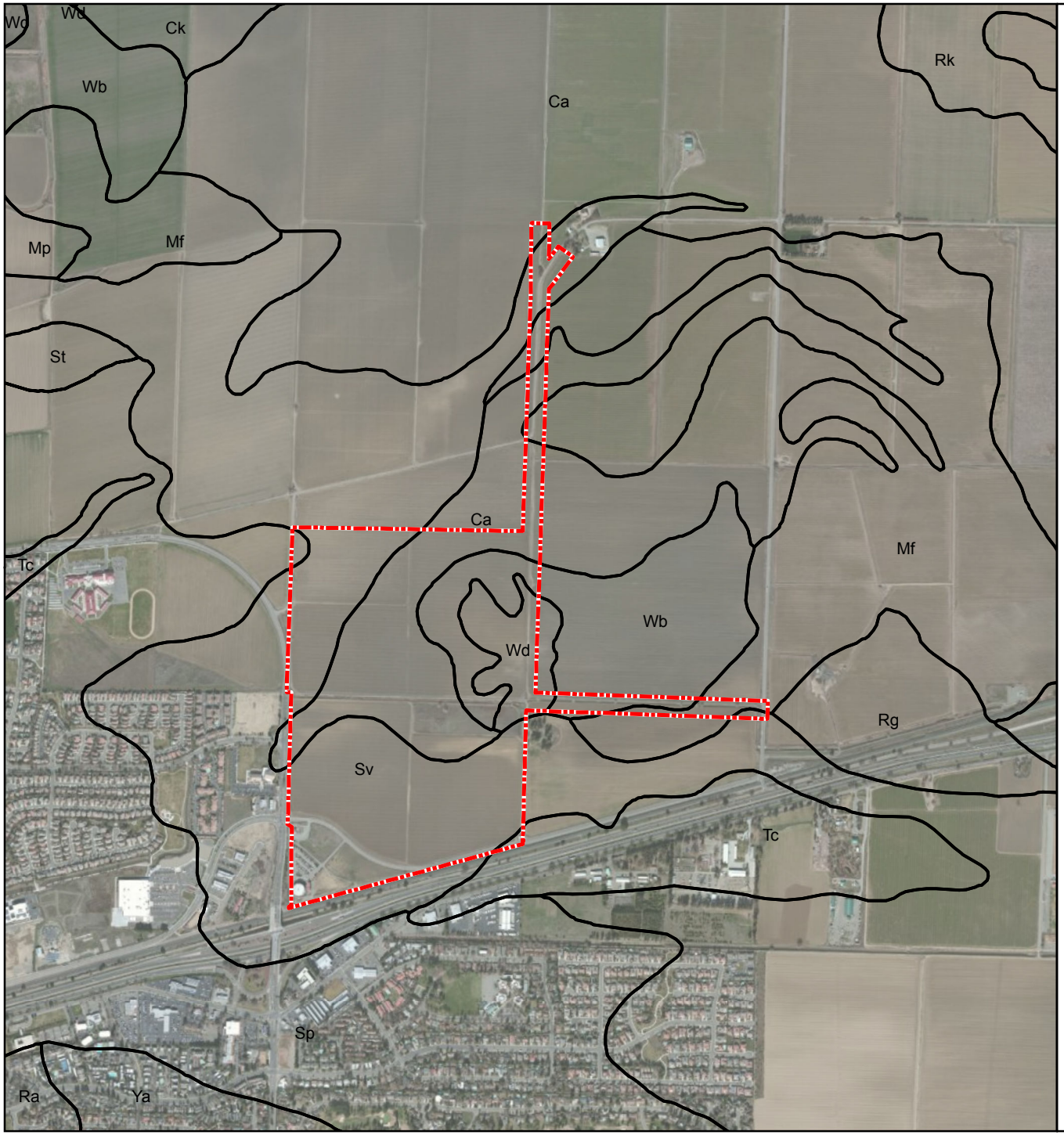

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Figure 3. Soils Map

Project Study Area (PSA)

Soil Boundary

Soil Types:

Ca Capay silty clay, 0 to 1 percent slopes

Mf Marvin silty clay loam, 0 to 1 percent slopes

Sp Sycamore silt loam, drained, 0 to 1 percent slopes

Sv Sycamore complex, drained, 0 to 1 percent slopes

Tc Tyndall very fine sandy loam, drained 0 to 1 percent slopes

Wb Willows clay 0 to 1 percent slopes

Wd Willows clay, alkali, drained 0 to 1 percent slopes

1,500 0 1,500 Feet

N

Scale: 1 inch = 1,667 feet

Soil Survey Geographic (SSURGO) Yolo County, California (27 February 2007)
Hydric Soils National List (March 2014), USDA NRCS

Aerial Photograph: 2 February 2012
US-CA-Sacramento, UC-G Microsoft Imagery
ESRI World Imagery Arcmap Service Layer

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IV. WETLANDS AND WATERS

On 2 December 2008, the Corps and EPA issued a memorandum providing guidance on implementation of the Supreme Court's decision in the consolidated cases of *Rapanos v. United States and Carabell v. United States* (Corps and EPA 2008). An evaluation of features relative to their potential jurisdiction under Section 404 of the Clean Water Act (33 U.S.C. 1344) in light of the December 2008 Rapanos guidance is in Section V.

A. Waters

There are no potentially jurisdictional waters in the PSA.

B. Wetlands

There are no potentially jurisdictional wetlands in the PSA.

C. Ditches

1. Mace Drainage Channel

The Mace Drainage Channel (MDC) is a storm water drainage ditch that transports urban runoff from the Mace Ranch Drainage Basin in the City of Davis east through the center of the PSA, to the Railroad Channel, which drains to the Yolo Bypass approximately 2.5 air miles east of the PSA. The Mace Ranch Drainage Basin and the MDC are shown on the City's stormwater drainage map (City of Davis 2011). The MDC is maintained by the City. The portion of the MDC in the PSA occupies 1.66 acres, has a total length of 5,175 ft, and has an average width of 13.9 ft (Figure 4; Appendix B, Photos 7-9, 15-16).

Within the PSA, the MDC has been excavated in uplands. Based on the historical aerial photos, from 1937, 1952, 1964, 1971, 1984 (Ramcon 2003), many aerial photos from 1993 to present (Google Earth 2014), and historic USGS topographic maps from 1907 to 1992, the MDC is not part of a realigned natural drainage. The MDC was historically an agricultural irrigation ditch that was widened and improved for storm drainage in approximately 1992.

Hydrology: The watershed for the portion of the MDC in the PSA is about 730 ac and is entirely within the City of Davis, in areas dominated by urban development (Watermark Engineering, Inc. 2014; City of Davis 2011; PMC 2008). Hydrology for the portion of the MDC in the PSA is provided by stormwater and residential/ commercial irrigation runoff from within the City of Davis. Based on drainage maps (City of Davis 2011; PMC 2008), aerial photographs (Ramcon 2003; Google Earth 2014), and field inspection, there are no groundwater sources and no natural channel realignments associated with the MDC in or upstream of the PSA. No ditches or channels drain to the MDC on the MRIC site. A small irrigation ditch along the west side of Road 105 drains to the MDC at the eastern edge of the PSA, near Road 105. Agricultural irrigation runoff is not a substantial source of hydrology for the portion of the MDC in the PSA.

The MDC enters the PSA through a double culvert under Mace Blvd, along the western edge of the PSA (Appendix B, Photo 7). West of Mace Blvd, the MDC is culverted for approximately 1,000 ft. Farther upstream, the channel is open. Within the PSA, the MDC is straight. There is one culvert crossing in the MRIC site. At the eastern edge of the MRIC site, the MDC passes under a dirt farm road through one or two culverts. The MDC passes under two arch culvert crossings approximately

130 ft and 530 ft east of the MRIC site, along the eastern sewer alignment alternative. From the east side of the MRIC site, the MDC flows ±1.1 mi to the Railroad Channel, which then flows ±1.5 mi to the Yolo Bypass. The Railroad Channel drains through a 170-ft wide levee into the Yolo Bypass through a box culvert with a one-way metal flap gate. The following hydrological observations of MDC were made during fieldwork:

- On 7 October 2014, the MDC was dry except for 0-12 inches of standing water in the western half of the MRIC site. The channel was dry in the center of the MRIC site and to the east along the eastern sewer line alternative. At the Yolo Bypass, the Railroad Channel was dry.
- On 10 December 2014, after 3.5 inches of rain in the preceding 12 days, the MDC was dry except for 0-12 inches of standing water in the western half of the MRIC site. The channel was dry in the center of the MRIC site and to the east along the eastern sewer line alternative. Downstream and east of the PSA, the channel was dry in all portions visible from Road 105. The only water observed in the MDC was in the western half of the MRIC site, near Mace Blvd.
- On 23 December 2014, after additional major rain events, the MDC was dry except for 0-16 inches of standing water in the western half of the MRIC site (deeper than on 10 December because some debris was obstructing drainage). The only water observed in the MDC was in the western half of the MRIC site, near Mace Blvd.
- In May 2014, based on Google Street View photos, the portions of the MDC visible from Road 105 (between the PSA and the Yolo Bypass), were dry.
- In May 2012, based on Google Street View photos, the portions of the MDC visible from Road 105 (between the PSA and the Yolo Bypass), were dry.

Hydrology of the portion of the MDC in the PSA is artificial and ephemeral. Based on drainage maps, aerial photographs, and field observations, the portion of the MDC in the PSA is anticipated to flow only during and immediately after precipitation events and in association with artificial input due to urban irrigation or other urban runoff within the City of Davis.

At the eastern edge of the MRIC site, flow within the MDC appears to be constricted by an undersized and/or partially blocked culvert that passes flow beneath a farm road crossing. This flow constriction likely contributed to a back-up within the MDC which filled the detention basin with an estimated two to three feet of water sometime prior to 10 December 2014 (see discussion of detention basin below).

Vegetation: On the MRIC site, vegetation in the MDC is dominated by cattail (*Typha* sp.) and bulrush (*Schoenoplectus acutus* var. *occidentalis*). East of the MRIC site, the MDC is dominated by perennial pepperweed. Almost no bulrush and cattail occur in the segment of the MDC between the MRIC site and Road 105. A few young nonnative sycamores (*Platanus* sp.), one young nonnative Chinese tallow tree (*Triadica sebifera*), one Fremont's cottonwood (*Populus fremontii*) and one young native Goodding's black willow (*Salix gooddingii*) occur along the MDC on the MRIC site. A few more cottonwoods/willows occur along MDC between the MRIC site and Road 105, along the eastern sewer line alternative. The riparian trees that occur along the MDC are widely spaced and do not form a riparian corridor. The banks of the MDC are dominated by ruderal weeds such as mustard (*Brassica* sp.), milk thistle (*Silybum marianum*) and poison hemlock (*Conium maculatum*). Vegetation in the MDC is periodically removed by the City of Davis (City of Davis 2011; pers. comm., D. Ramos). On 7 October 2014 it was observed that vegetation had recently been cleared. Piles of recently removed cattail, bulrush, and other herbaceous wetland species were observed in the detention basin located

south of the MDC along the eastern edge of the MRIC site (see Section IV.C.4 for discussion of the detention basin).

Bed and Banks: The bed and banks of MDC are earthen and vegetated in the PSA. On the MRIC site, the bed is vegetated with freshwater marsh species (regularly removed as described above) and the banks are vegetated with ruderal species. East of the MRIC site, both the bed and banks are vegetated with ruderal species. The bed is roughly 6-8 ft below the top of the banks. An ordinary high water mark (OHWM) caused by the fluctuations of water is present within the MDC in the PSA. The OHWM was identified by the following indicators (Corps 2005): presence of litter and debris, wracking, vegetation matted down, leaf litter disturbed or washed away, and change in plant community.

Mace Drainage Channel History and Improvements

Prior to widening and deepening of the MDC in 1992, a smaller agricultural irrigation ditch was present in approximately the same alignment (Ramcon 2003; pers. comm., P. Stiehr, Watermark Engineering). This ditch was likely functioning in a stormwater drainage capacity at that time. The PSA has been part of a large area of farmed land since at least 1937 (Ramcon 2003). Historic aerial photographs do not clearly show whether or not an irrigation ditch was present at the location of the MDC.

Just east of the detention basin (described below), along the eastern edge of the MRIC site, on locally elevated ground, is a small concrete structure that includes an outfall for water, an approximately 17 ft long, concrete-lined portion of a ditch, and metal pipes rising from the ground. Associated with the Mace Ranch development, this structure was constructed in approximately 1993 as an interim solution to phased MDC improvements. The structure was designed to pump water from the detention basin, south across the MRIC site, then east to the MDC further downstream, around an unimproved portion of the MDC. Because the phased MDC improvements were completed shortly after construction of the concrete structure/pump, the structure/pump was never used (pers. comm., Patrick Stiehr, Watermark Engineering). The structure is non-functional. Interim improvements include a culvert with a concrete apron at the southeast corner of the MRIC site, which was to pass water through the concrete outlet underneath Road 32A. No ditch was observed delivering water to this apron/culvert. Today, an approximately 250-ft long, 1-ft wide earthen ditch connects the concrete structure back to the detention basin at its southeast corner. The ditch has no OHWM, is excavated in uplands, is higher elevation than the detention basin and MDC, and is dominated by weedy upland vegetation. Its watershed is negligible and it appears to convey only precipitation runoff from immediately adjacent uplands to the detention basin. The non-operational concrete structure/pump and the associated 250-ft ditch are not potentially jurisdictional waters.

No channels, ditches or other potential water features occur at the location of the MDC on any of the historic topographic maps (1907, 1915, 1952, 1954, 1968, 1981, and 1992; USGS Historical Topographic Map Explorer, http://historicalmaps.arcgis.com/usgs/) or on either of the NWI maps (USFWS 1990, 2014). An isolated, linear depression is shown approximately 1,000 ft south of the MDC on historical topographic maps from 1915 to 1992, and it is discussed in detail in Section IV.D.2. There is no evidence that the isolated feature was ever connected to the MDC.

Galloway Consulting, Inc. conducted a wetland delineation field assessment on 5 July 2005 for the nearby Second Street Crossing (Target Store) Project. Their report (Galloway Consulting, Inc. 2006)

concluded that the nearby portion of the MDC (approximately 0.5 mi upstream of the MRIC site) was excavated in an upland area for the purpose of receiving drainage from the Mace Ranch Park Project and that the MDC was not regulated by the U.S. Army Corps of Engineers. The City of Davis incorporated Galloway's findings in Chapter 4.7 of the DEIR.

2. Minor Roadside Drainage Ditches

Roadside drainage ditches roughly 1-2 ft wide occur along the east side of Mace Blvd, along both sides of Road 32A, along both sides of the Park and Ride driveway, and along portions of an unnamed dirt road that travels from the Ikeda's Market Parking Lot southeast to the southern edge of the PSA. These features are manmade, excavated in uplands, and drain only uplands. They are dominated by upland ruderal weeds. No OHWM was observed in these features. The roadside ditches drain into existing storm drains that likely drain to the MDC outside the PSA. Ditches excavated wholly in and draining only uplands are not jurisdictional under the CWA (Corps and EPA 2008).

3. Minor Irrigation Ditches

One irrigation ditch roughly 1-2 ft wide occurs along the eastern edge of the MRIC site north of the MDC. This ditch appears to drain irrigation runoff from fields north of the site. It drains to the MDC just east of the MRIC site. Irrigation ditches also occur on both sides of Road 105 at the eastern end of the PSA. These ditches may also drain runoff from along Road 105, but their primary purpose appears to be irrigation drainage. These ditches drain to the MDC. The irrigation ditch on the west side of Road 105 drains to the MDC via a pipe beneath the dirt road adjacent and north of the MDC as the MDC turns south at the eastern edge of the PSA. The irrigation ditches in the PSA are man-made and excavated in uplands. They are dominated by upland ruderal weeds. They do not drain wetlands or potential Waters of the U.S. and they are not realigned natural features. An OHWM was not observed in these features. Irrigation ditches excavated wholly in and draining only uplands are not jurisdictional under the CWA (Corps and EPA 2008). Waters, including wetlands, created as a result of irrigation are not considered Waters of the U.S. even when augmented on occasion by precipitation (Corps 2007).

D. Other Features

1. Detention Basin

An approximately 1,200 ft long x 330 ft wide detention basin occurs adjacent to and south of the MDC near the eastern boundary of the MRIC site. The basin was constructed in 1992 to attenuate peak flow in the MDC while waiting for MDC improvements east of the MRIC property (Watermark Engineering, Inc. 2014). No wetlands occur within the detention basin based on 7 data points taken in this 9-acre feature (Figure 4; Data Points #1-7 in Appendix A). The basin is separated from the MDC by an approximately 23 ft wide, 5 ft tall earthen berm. A concrete weir located between the basin and the MDC near the eastern edge of the MRIC site allows high water from the MDC to flow into the detention basin during extreme high water events. Two one-way metal flap gates in the weir allow water in the detention basin to flow back into the MDC as water in the MDC recedes.

Prior to 2014, the detention basin had never been observed with standing water (pers. comm., D. Ramos). None of the aerial photographs available in Google Earth show standing water in this feature. On 10 December 2014, wracking was observed along the northern and eastern sides of the detention basin at an elevation indicating that two to three feet of water had recently inundated the basin. The wracking was not observed along the edge of the basin on 7 October 2014 and most likely originated

from the piles of vegetation that were removed from the MDC and placed in the basin earlier in 2014. A partially blocked culvert just downstream of the spillway in the MDC at the eastern edge of the MRIC site could have caused water levels in the ditch to overtop the spillway, which would have flooded the basin.

No surface water or saturated soils were observed in the detention basin on 10 December 2014 despite over 3.5 inches of rain within the 12 preceding days (NOAA 2014), and evidence of 2-3 ft of inundation. Soil pits excavated throughout the basin showed that much of the basin is underlain by permeable sand and silt. Vegetation in the detention basin was dominated by perennial pepperweed, prickly lettuce (*Lactuca serriola*), milk thistle, poison hemlock, yellow star-thistle, hairy hawkbit (*Leontodon saxatilis*), curly dock (*Rumex crispus*), clover (*Trifolium* sp.), redstem filaree (*Erodium cicutarium*), and immature grass seedlings (most likely nonnative annual grasses). The detention basin does not contain wetlands or waters.

2. Historical Isolated Feature

An isolated linear depression is visible on the 1990 NWI map (USFWS 1990), on historical USGS quadrangle maps from 1915 to 1992, and on aerial photographs dated 1970 and earlier. This feature was analyzed to determine whether it was a natural feature and whether it was realigned to form any of the features present on the site today. This feature was located approximately 1,000 ft south of the present day MDC and does not appear to have been hydrologically connected to any other features. No tributaries to or outlets from the feature are shown on any of the historical maps and aerial photographs. This feature was likely used for irrigation purposes (pers. comm., Patrick Stiehr, Watermark Engineering). A well (no longer present) is shown along the east side of Mace Blvd, immediately adjacent to this isolated feature on the 1968 and 1992 Davis topographic maps. The isolated feature was filled and graded in approximately 1993.

Table 2. Feature Summary

Feature	Hydrology	Length in PSA (ft)	Avg. Width in PSA (ft)	Area (ac) [1]
Mace Drainage Channel	Artificial	5,175	13.9	1.66
Total:	**--**	**5,175**	**--**	**1.66**

[1] Acreages were calculated with ESRI ArcMap functions.

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COUNTY ROAD 30
COUNTY ROAD 104A
COUNTY ROAD 30B
COUNTY ROAD 104
COUNTY ROAD 105
DP14
DP13
SEE INSET 2
SHEET 2 of 2
MACE DRAINAGE
CHANNEL
DP7
DP2
DP8
DP6
DP5
DP1
FLOW
(to Yolo Bypass)
ALHAMBRA
DR
DP3
DP4
SEE INSET 1
SHEET 2 of 2
DP11
MACE BLVD
Ikeda's
Market
SECOND ST
DP9
DP10
DP12
COUNTY ROAD 32A
UNION PACIFIC RAILROAD
YOLO COUNTY
DAVIS CITY LIMITS
Park &
Ride
CHILES RD
INTERSTATE 80
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

Mace Ranch Innovation Center
Yolo County, CA
8 January 2015

Arch culvert crossing
Project Study Area (PSA)
Mace Drainage Channel (1.66 acres in PSA)
Data Point (DP)
Photopoint Location and Direction

600 400 200 0 600 Feet
Scale: 1 inch = 600 feet
N

Date	Submittal	Delineators	Agency/Company
	Original	M. Bower, N. Pouya	Sycamore Environmental

SYCAMORE Environmental Consultants, Inc.

Basemap: Topographic Survey map of Mace Ranch Innovation Park (Oct. 2014) by Morrow Surveying, Land Surveyors
Aerial Photograph: 2 February 2012 US-CA-Sacramento, UC-G Microsoft Imagery ESRI World Imagery Arcmap Service Layer

Figure 4.
Jurisdictional Delineation Map
Sheet 1 of 2

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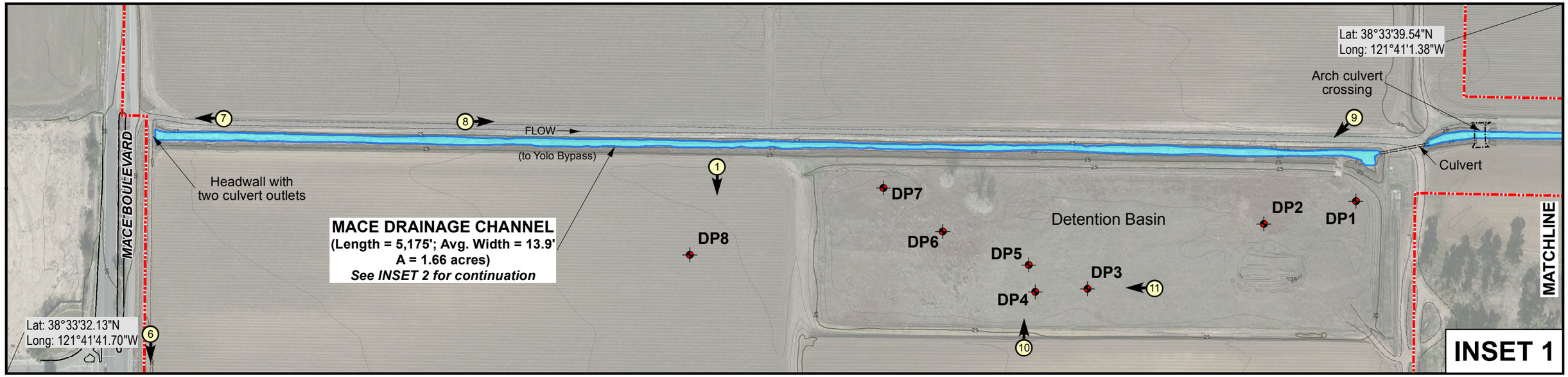

Mace Ranch Innovation Center
Yolo County, CA
8 January 2015

Project Study Area (PSA)
Mace Drainage Channel (1.66 acres in PSA)
Data Point (DP)
P1 Photopoint Location and Direction

200 100 0 200 Feet
Scale: 1 inch = 200 feet
N

Date	Submittal	Delineators	Agency/Company
	Original	M. Bower, N. Pouya	Sycamore Environmental

SYCAMORE Environmental Consultants, Inc.

Basemap: Topographic Survey map of
Mace Ranch Innovation Park (Oct. 2014)
by Morrow Surveying, Land Surveyors
Aerial Photograph: 2 February 2012
US-CA-Sacramento, UC-G Microsoft Imagery
ESRI World Imagery Arcmap Service Layer

Figure 4.
Jurisdictional Delineation Map
Sheet 2 of 2, INSETS 1 & 2

14087MaceInnovation_Fig4Delin_Sheet2of2_v3.mxd

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V. REGULATORY ANALYSIS AND DISCUSSION

On 2 December 2008, the Corps and EPA issued a memorandum providing guidance on implementation of the Supreme Court's decision in the consolidated cases of *Rapanos v. United States and Carabell v. United States* (2008). These two cases address the scope of the Corps' jurisdiction over waters of the United States under the Clean Water Act. The guidance distinguishes among traditional navigable waters (TNW), relatively permanent waters (RPW), and non-relatively permanent waters (non-RPW). The Corps will routinely exercise jurisdiction over TNWs, RPWs, wetlands abutting these waters, and wetlands adjacent to TNWs. The jurisdictional determination for non-relatively permanent waters, their adjacent wetlands (if any), and wetlands adjacent to RPWs not considered traditionally navigable will be based on whether there exists a significant nexus with a TNW. Factors evaluated by the Corps during the significant nexus evaluation will include ecology, hydrology, and the influence of the water on the "chemical, physical, and biological integrity of downstream traditional navigable waters" (Corps 2008). The Corps may exert jurisdiction if the findings of the significant nexus evaluation indicate that "the tributary and its adjacent wetlands are likely to have an effect [on downstream traditional navigable waters] that is more than speculative or insubstantial" (Corps and EPA 2008). Finally, the guidance provides that the Corps will not generally assert jurisdiction over ditches (including roadside ditches) which are excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water. The guidance recognizes that these features, by their very nature, do not have a significant nexus to downstream traditional navigable waters.

The Rapanos memorandum (Corps and EPA 2008) does not affect the Court's decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, No. 99-1178 (January, 2001; "SWANCC") which involved statutory and constitutional challenges to the assertion of CWA jurisdiction over isolated, non-navigable, intrastate waters used as habitat by migratory birds. Isolated wetlands and waters are not subject to Clean Water Act jurisdiction.

The following is an assessment of Corps jurisdiction over the features identified within the PSA in Section IV, pursuant to the Corps/EPA guidance memorandum:

A. TNWs and Adjacent Wetlands

No TNWs or wetlands adjacent to TNWs occur in the PSA.

B. RPWs that flow directly or indirectly into TNWs

No RPWs that flow directly or indirectly into TNWs occur in the PSA.

C. Non-RPWs that flow directly or indirectly into TNWs

No non-RPWs that flow directly or indirectly into TNWs occur in the PSA.

D. Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

No wetlands directly abutting RPWs occur in the PSA.

E. Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

No wetlands adjacent but not directly abutting RPWs occur in the PSA.

F. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

No wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs occur in the PSA.

G. Impoundments of waters

There are no impoundments of water in the PSA. The detention basin is a man-made structure excavated in uplands. It does not meet the three-parameter wetlands criteria. It is not an impoundment of water, nor is water ordinarily present within the basin under normal conditions. Based on these factors, the detention basin is not jurisdictional.

H. Isolated (interstate or intrastate) waters, including isolated wetlands

Wetlands that are isolated and lack an interstate or foreign commerce connection, but otherwise meet the 3-parameter test for wetlands, are considered "isolated wetlands" and are not regulated by the Corps. No isolated waters or wetlands occur in the PSA.

I. Non-jurisdictional features

The Mace Drainage Channel is a non-navigable, man-made storm water drainage ditch maintained by the City of Davis (see detailed discussion in Section IV.C). It is excavated in uplands and drains only uplands. It is not a realigned natural channel. There is no relatively permanent flow of water within this feature. The Mace Drainage Channel is not jurisdictional.

The roadside drainage ditches and irrigation ditches in the PSA are non-navigable, man-made ditches excavated in uplands and draining only uplands. These features have no OHWM. None of these features carry a relatively permanent flow of water. These features are not jurisdictional.

J. Summary of Jurisdictional Acreages

No potentially jurisdictional waters occur in the PSA.

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Patrick Stiehr, PE, President, Watermark Engineering, Inc. 30 December 2014. Telephone conversation and emails regarding Mace Channel Improvements, detention basin, and site drainage.

VII. REPORT PREPARERS

Jeffery Little, A.A., Sacramento City College, Sacramento, CA. Over 20 years experience with preparation of NES, BA, and NEPA/CEQA compliance documents, impact analysis, agency formal and informal consultations and permitting. Project management, conducts special-status species surveys, jurisdictional delineations, and prepares mitigation and monitoring plans. CAD/ GIS Manager responsible for data collection, map creation, impact analyses, and report preparation. He holds a CDFW Plant Collecting Permit (2081(a)-12-17-V), and is an authorized individual on the CDFW Scientific Collecting Permit (SC-7617).
Responsibilities: Project manager.

Michael Bower, M.S., Ecology, University of California, Davis, CA. Over 7 years of experience as a professional biologist. Performs wetland delineations and conducts surveys for special-status plants and wildlife. Prepares reports used in the CEQA/NEPA process that document resources, identify impacts, and recommend mitigation measures. Prepares restoration, weed management, and monitoring plans. Leads plant identification workshops at UC Davis. Holds a CDFW Plant Collecting Permit (2081(a)-09-14-V) and is an authorized individual on a CDFW Scientific Collecting Permit (SC-7617). Certified Ecologist and a Professional Wetland Scientist (2230). His B.S. degree from Saint Mary's College is in environmental science.
Responsibilities: Fieldwork, plant identification, and report preparation.

Chuck Hughes, M.S., Plant Biology, Michigan State University, East Lansing, MI. Over 13 years experience preparing biological/botanical resource evaluations, wetland delineations, arborist reports, impact analyses, and mitigation and restoration plans. Professional Wetland Scientist (#2029), ISA Certified Arborist (WE-6885A), holds a CDFW Plant Voucher Collecting Permit (2081(a)-14-072-V), CDFW Scientific Collecting Permit (SC-7617), authorized individual on a USFWS recovery permit for listed vernal pool branchiopods (TE799564-4). His B.S. degree from UC Davis is in environmental horticulture and urban forestry, with an emphasis in plant biodiversity.
Responsibilities: Field work, plant identification, and report preparation.

Noosheen Pouya, B.S., Environmental Science and Management, University of California, Davis, CA. Assists with plant and wildlife surveys and with preparation of biological resource evaluations, Natural Environment Study reports, permit applications, and other documents used in the CEQA/NEPA process. She serves as both field biologist, technical report writer, and GIS analyst. She holds a CDFW Plant Collecting Permit (2081(a)-13-096-V), and is an authorized individual on the CDFW Scientific Collecting Permit (SC-7617).
Responsibilities: Fieldwork, report preparation, and figure preparation.

Aramis Respall, GIS Analyst/ CAD Operator. Over 20 years experience in drafting and spatial analysis using AutoCAD map and ArcGIS for public and private projects. Prepares figures for biological and permitting documents such as project location maps, biological resource maps, wetlands/waters delineation maps, impact analysis maps, and other supporting graphics. Primary experience evolved from surveying and civil engineering practices to advanced GPS/GIS technology.
Responsibilities: Figure preparation and spatial analysis.

Cynthia Little, Principal, Sycamore Environmental.
Responsibilities: Senior editor, quality control.

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Appendix A.

Wetland Data Sheets

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WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **1**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Willows clay, alkali, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			

Sapling/Shrub Stratum: (Plot size:_____)

1.			
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum: (Plot size:____10' radius_____)

1. *Lepidium latifolium*	1	D	FAC
2. *Epilobium ciliatum*	2	D	FACW
3. *Leontodon saxatilis*	1	D	FACU
4. *Carduus pycnocephalus* ssp. *pycnocephalus*	1	D	UPL
5. *Silybum marianum*	1	D	UPL
6. *Lactuca* sp. likely *serriola*	1	D	FACU
7. Unknown annual grass seedlings	1	D	--
8.			
Total Cover:	8		

Woody Vine Stratum: (Plot size:_____)

1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (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[1]
- ☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: **1**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10 YR 3/2	100					Clay loam	
1-12	2.5 Y 5/4	100					Clay loam	
12-16	10 YR 4/3	100					Sandy loam	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:
No redox in soil. No redox along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible-Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks:
No inundation visible on Google Earth images. Drift deposits considered riverine because they were associated with extreme high water in Mace Drainage Channel.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **2**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Willows clay, alkali, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Rumex crispus*	10	D	FAC
2. *Carduus pycnocephalus* ssp. *pycnocephalus*	1		UPL
3. *Leontodon saxatilis*	5	D	FACU
4. *Trifolium* sp. (possibly *Medicago* sp.)	3		FAC
5. *Lepidium latifolium*	3		FAC
6. *Geranium molle*	1		UPL
7. *Sonchus* sp. likely *oleraceus*	1		UPL
8. *Galium aparine*	2		FACU
9. Unknown annual grass seedlings	5	D	--
Total Cover:	31		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

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%
☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: **2**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10 YR 3/2	100					clay loam	
1-4	2.5 Y 4/2	100					clay loam	
4-14	2.5 Y 4/3	100					silty loam	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:
No redox in soil. No redox along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible-Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks:
No inundation visible on Google Earth images. Drift deposits considered riverine because they were associated with extreme high water in Mace Drainage Channel.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **3**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Capay silty clay NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Trifolium* sp. (possibly *Medicago* sp.)	7	D	FAC
2. *Leontodon saxatilis*	4		FACU
3. *Erodium cicutarium*	1		UPL
4. *Centaurea solstitialis*	1		UPL
5. *Silybum marianum*	7	D	UPL
6. Unknown annual grass seedlings	4		--
7. *Senecio vulgaris*	1		FACU
8. *Lepidium latifolium*	1		FAC
9. *Carduus pycnocephalus* ssp. *pycnocephalus*	5	D	UPL
10. *Convolvulus arvensis*	1		UPL
Total Cover:	32		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

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: 33% (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[1]
☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: **3**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5 Y 4/2	100					Silt	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

No redox in soil. No redox along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible-Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? Yes ☐ No ☒ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks:

No inundation visible on Google Earth images. Drift deposits considered riverine because they were associated with extreme high water in Mace Drainage Channel. Drift deposits observed nearby to the south.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **4**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Capay silty clay NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			

Sapling/Shrub Stratum: (Plot size:_____)

1.			
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum: (Plot size:_____ 10' radius _____)

1. *Leontodon saxatilis*	30	D	FACU
2. Unknown annual grass seedlings	15		--
3. *Erodium cicutarium*	15		UPL
4. *Trifolium* sp. (possibly *Medicago* sp.)	1		FAC
5. *Lepidium latifolium*	1		FAC
6.			
7.			
8.			
Total Cover:	62		

Woody Vine Stratum: (Plot size:_____)

1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: **4**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-32	2.5 Y 4/2	100					sand	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:
No redox in soil. No redox along living roots. Soil appears highly permeable.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks:
No inundation visible on Google Earth images.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **5**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Capay silty clay NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Leontodon saxatilis*	30	D	FACU
2. *Erodium cicutarium*	15	D	UPL
3. Unknown annual grass seedlings	15	D	--
4. *Trifolium* sp. (possibly *Medicago* sp.)	1		FAC
5.			
6.			
7.			
8.			
Total Cover:	62		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			
% Bare Ground in Herb Stratum 40	% Cover of Biotic Crust 0		

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[1]
☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: 5

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5 Y 4/2	100					Sandy loam	
4-32	2.5 Y 4/2	100					Sand	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:
No redox in soil. No redox along living roots. Soil appears highly permeable.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks:

No indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **6**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Capay silty clay NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			

Sapling/Shrub Stratum: (Plot size:_____)

1.			
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum: (Plot size:_____ 10' radius _____)

1. *Rumex crispus*	4	D	FAC
2. *Carduus pycnocephalus* ssp. *pycnocephalus*	5	D	UPL
3. *Centaurea solstitialis*	3		UPL
4. Unknown annual grass seedlings	2		--
5. *Lepidium latifolium*	2		FAC
6. *Trifolium* sp. (possibly *Medicago* sp.)	1		FAC
7. *Geranium dissectum*	1		UPL
8.			
Total Cover:	18		

Woody Vine Stratum: (Plot size:_____)

1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: **6**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5 Y 3/2	100					Silty clay loam	
1-14	2.5 Y 4/3	100					Silty clay loam	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:
Live roots present, but no redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible-Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☐

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

Remarks:
No inundation visible on Google Earth images. Drift deposits considered riverine because they were associated with extreme high water in Mace Drainage Channel.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: 7
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Capay silty clay NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:____ 10' radius _____)			
1. *Conium maculatum*	3		FACW
2. *Leontodon saxatilis*	1		FACU
3. *Silybum marianum*	2		UPL
4. *Lepidium latifolium*	5	D	FAC
5. Unknown annual grass seedlings	1		--
6. *Trifolium* sp. (possibly *Medicago* sp.)	1		FAC
7. *Lactuca serriola*	5	D	FACU
8.			
Total Cover:	18		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

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[1]
☐ 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 ☒

Remarks:
Only live vegetation from 2014-2015 growing season recorded. Previous season's vegetation mowed, mostly dead. Unknown grass seedlings with unknown wetland indicator status recorded, but excluded from analysis.

SOIL Sampling Point: **7**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	2.5 Y 3/2	100					Clay	
7-14	2.5 Y 4/4	100					Clay	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

No redox in soil. No redox along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ 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
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **8**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Capay silty clay NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☒ Soil ☒, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks: Data point located in recently tilled agricultural field.

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Convolvulus arvensis*	1	D	UPL
2. *Silybum marianum*	1	D	UPL
3. *Brassica* sp.	1	D	UPL
4. *Triticum aestivum*	2	D	UPL
5.			
6.			
7.			
8.			
Total Cover:	5		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			
% Bare Ground in Herb Stratum 95	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (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[1]
- ☐ 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 ☒

Remarks: Vegetation based on seedlings sprouting in recently tilled agricultural field. Nearby areas in similar topographic position, outside cultivation, dominated by upland ruderal plants.

SOIL Sampling Point: **8**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	2.5 Y 3/2	75					clay	
0-15	2.5 Y 4/2	25					clay	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:
Tilled agricultural field; soil mixed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **9**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Tyndall very fine sandy loam, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Lepidium latifolium*	5	D	FAC
2. *Brassica* sp.	1	D	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	6		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☐

Remarks:
Dead plants from last season cover half of the ground.

SOIL Sampling Point: **9**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 4/3	100					silty loam	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:
No redox in soil. No redox along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **10**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Sycamore complex, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of this year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☒ Soil ☒, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks: Data point located in recently tilled agricultural field.

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____10' radius _____)			
1. *Triticum aestivum*	4	D	UPL
2. *Silybum marianum*	1		UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	5		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☒

Remarks:
Vegetation based on seedlings sprouting in recently tilled agricultural field. Nearby areas in similar topographic position, outside cultivation, dominated by upland ruderal plants.

SOIL Sampling Point: **10**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5 Y 3/2							
14-30	2.5 Y 4/3							

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:
Soil recently tilled. Appears mixed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **11**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Linear concave Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Sycamore complex, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			

Sapling/Shrub Stratum: (Plot size:_____)

1.			
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum: (Plot size:___5 x10 ft_____)

1. *Distichlis spicata*	90	D	FAC
2. *Hordeum murinum*	3		FACU
3. *Rumex crispus*	1		FAC
4. *Brassica* sp.	1		UPL
5. *Erodium cicutarium*	1		UPL
6. *Bromus hordeaceus*	2		FACU
7. *Asparagus officinalis* ssp. *officinalis*	1		FACU
8.			
Total Cover:	99		

Woody Vine Stratum: (Plot size:_____)

1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 1 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☐

Remarks:

SOIL Sampling Point: **11**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5 Y 4/4						Silty loam	
12-16	2.5 Y 4/4						Silt	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:
No redox in soil. No redox along living roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **12**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Linear concave Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Sycamore complex, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of this year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			

Sapling/Shrub Stratum: (Plot size:_____)

1.			
2.			
3.			
4.			
5.			
Total Cover:			

Herb Stratum: (Plot size:_____ 10' radius _____)

1. *Triticum aestivum*	4		UPL
2. *Festuca perennis*	10	D	FAC
3. *Brassica* sp.	10	D	UPL
4. *Silybum marianum*	2		UPL
5. *Centaurea solstitialis*	2		UPL
6. *Epilobium ciliatum*	1		FACW
7.			
8.			
Total Cover:	29		

Woody Vine Stratum: (Plot size:_____)

1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☒

Remarks:

SOIL Sampling Point: **12**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5 Y 3/3	100					silty loam	
3-16	2.5 Y 3/3	100					sand	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **13**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Willows clay, alkali, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of the year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☒ Soil ☒, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Triticum aestivum*	2	D	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	2		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust 0

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[1]
- ☐ 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 ☒

Remarks: Vegetation based on seedlings sprouting in recently tilled agricultural field. Nearby areas in similar topographic position, outside cultivation, dominated by upland ruderal plants.

SOIL Sampling Point: **13**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5 Y 3/2	100					clay	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:
Recently tilled agricultural field. High clay content, low permeability soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks:
Small amount of standing water from recent rain present in row depressions tilled into field for future irrigation purposes.

WETLAND DETERMINATION DATA FORM – Arid West Region
Routine Wetland Determination
(September 2008 V2.0 COE Arid West Wetlands Delineation Manual)

Project/Site: Mace Ranch Innovation Center City/County: Yolo County Sampling Date: 10 Dec 2014
Applicant/Owner: Yolo 101 JV, c/o The Buzz Oates Group of Companies State: CA Sampling Point: **14**
Investigator(s): Mike Bower, Noosheen Pouya Section, Township, Range: See Report
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: See Report Long: Datum:
Soil Map Unit Name: Sycamore complex, drained NWI classification: None
Are climatic/hydrologic conditions on the site typical for this time of this year? Yes ☒ No ☐ (If no, explain in remarks.)
Are Vegetation ☒ Soil ☒, Or Hydrology ☐ Significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, Or Hydrology ☐ Naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	Is the Sampled Area		
Wetland Hydrology Present?	Yes ☐	No ☒	within a Wetland?	Yes ☐	No ☒

Remarks:

VEGETATION

Tree Stratum: ((Plot size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum: (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum: (Plot size:_____ 10' radius _____)			
1. *Triticum aestivum*	20	D	UPL
2. Unknown annual grass seedlings	20	D	--
3. *Trifolium* sp. (possibly *Medicago* sp.)	5		FAC
4. *Malvella leprosa*	1		FACU
5. *Sonchus* sp. likely *oleraceus*	1		UPL
6. *Brassica* sp.	2		UPL
7. *Lactuca serriola*	1		FACU
8. *Convolvulus arvensis*	1		UPL
Total Cover:	51		
Woody Vine Stratum: (Plot size:_____)			
1.			
2.			
Total Cover:			
% Bare Ground in Herb Stratum 50	% 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[1]
☐ 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 ☒

Remarks: Vegetation based on seedlings sprouting in recently tilled agricultural field. Nearby areas in similar topographic position, outside cultivation, dominated by upland ruderal plants.

SOIL Sampling Point: **14**

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

Depth	Matrix		Redox Features					
Inches	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 3/2	100					Clay loam	

[1]Type : C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, 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, unless disturbed or problematic.

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

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:
Tilled agricultural field; soil mixed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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 Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

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

Remarks:

Appendix B.

Photographs

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Photo 1. View south from near the center of the PSA. The PSA is dominated by tilled uplands. Arrow indicates approximate location of Data Point 8. 10 December 2014.

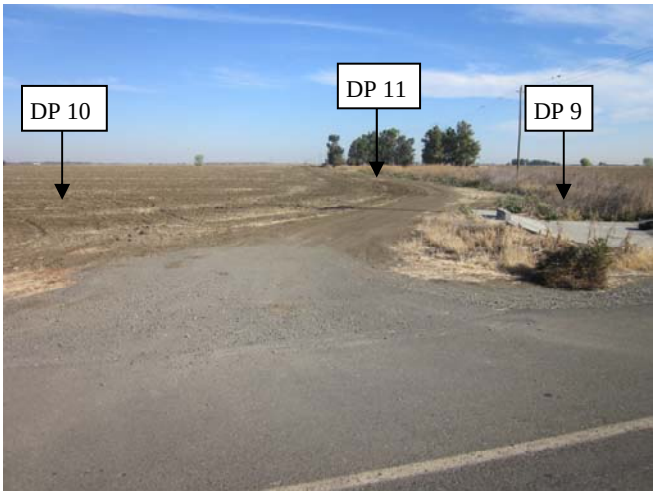

Photo 2. View north from Road 32A at southeast corner of the PSA. Approximate locations of Data Points 10, 11, and 9 at arrows, from left to right, respectively. 7 October 2014.

Photo 3. View north along the Davis Park and Ride driveway, in the southern portion of the PSA. Ruderal weeds occur on either side of the driveway. 7 October 2014.

Photo 4. View north along Road 104 along alternative sewer line extension in north part of PSA. Agricultural fields occur along both sides of the road. 7 October 2014.

Photo 5. View east along the north side of Road 32A in southern portion of the PSA. 10 December 2014.

Photo 6. View south along Mace Blvd. in western portion of the PSA. 10 December 2014.

Photo 7. View west toward Mace Drainage Channel in western portion of the PSA. One of two culverts that pass water beneath Mace Blvd visible in distance. 7 October 2014.

Photo 8. View east (looking downstream) from the bed of Mace Drainage Channel in the central portion of the PSA. 10 December 2014.

Photo 9. View southwest toward the detention basin. Mace Drainage Channel in foreground. Vegetation recently removed from Mace Channel has been deposited in detention basin in background. 7 October 2014.

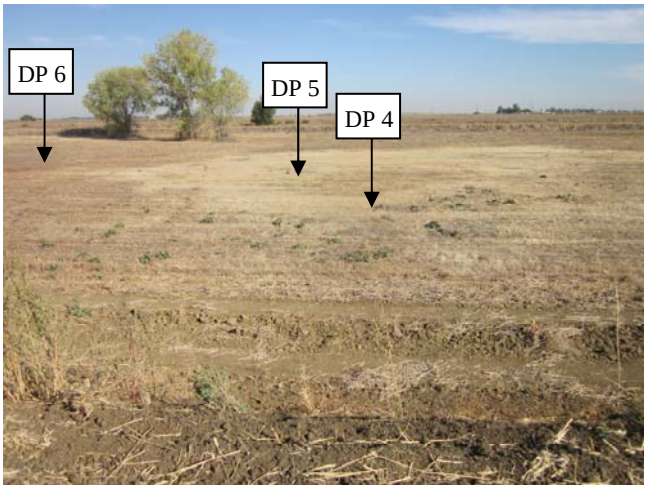

Photo 10. View north toward the detention basin. Three Fremont's cottonwoods occur in the basin in the distance. Arrows show approximate locations of Data Points 6, 5, and 4, from left to right, respectively. 7 October 2014.

Photo 11. View west from near the center of the detention basin. The arrow shows the location of Data Point 3. 10 December 2014.

Photo 12. View north along untilled eastern edge of the PSA. The arrow shows the location of Data Point 11. 10 December 2014.

Photo 13. View west toward Data Point 13 in the northeastern portion of the PSA. 10 December 2014.

Photo 14. View east from near the northwest corner of the PSA. Grain row crops on left. 7 October 2014.

Photo 15. View east from the eastern edge of the MRIC site toward the Mace Drainage Channel (looking downstream) along the sewer line alternative. An open bottom arch crossing visible in distance. 7 October 2014.

Photo 16. View east toward the Mace Drainage Channel from the eastern arch crossing, in the eastern portion of the PSA along the sewer line alternative. Ruderal weeds dominate the bed and banks of the channel. 10 December 2014.

Appendix C.

Plant Species Recorded at Data Points

Family [1]	Scientific Name	Common Name	Stratum	Indicator [2]
DICOTS				
Apiaceae	*Conium maculatum*	Poison hemlock	Herb	FACW
Asparagaceae	*Asparagus officinalis* ssp. *officinalis*	Asparagus	Herb	FACU
Asteraceae	*Carduus pycnocephalus* ssp. *pycnocephalus*	Italian thistle	Herb	UPL
	Centaurea solstitialis	Yellow star-thistle	Herb	UPL
	Lactuca serriola	Prickly lettuce	Herb	FACU
	Leontodon saxatilis	Hairy hawkbit	Herb	FACU
	Senecio vulgaris	Common groundsel	Herb	FACU
	Silybum marianum	Milk thistle	Herb	UPL
	Sonchus sp. (likely *oleraceus*)	Sow thistle	Herb	UPL
Brassicaceae	*Brassica* sp.	Mustard	Herb	Assumed UPL
	Lepidium latifolium	Perennial pepperweed	Herb	FAC
Convolvulaceae	*Convolvulus arvensis*	Field bindweed	Herb	UPL
Fabaceae	*Trifolium* sp. (possibly *Medicago* sp.)	Clover	Herb	Assumed FAC
Geraniaceae	*Erodium cicutarium*	Redstem filaree	Herb	UPL
	Geranium molle	Cranesbill, geranium	Herb	UPL
	Geranium dissectum	Cranesbill, geranium	Herb	UPL
	Malvella leprosa	Alkali-mallow	Herb	FACU
Onagraceae	*Epilobium ciliatum*	Willowherb	Herb	FACW
Polygonaceae	*Rumex crispus*	Curly dock	Herb	FAC
Rubiaceae	*Galium aparine*	Goose grass	Herb	FACU
MONOCOTS				
Poaceae	*Bromus hordeaceus*	Soft chess	Herb	FACU
	Distichlis spicata	Salt grass	Herb	FAC
	Festuca perennis	Rye grass	Herb	FAC
	Hordeum murinum ssp. *leporinum*	Hare barley	Herb	FACU
	Triticum aestivum	Wheat, goat grass	Herb	UPL

[1] Taxonomy and nomenclature follow Baldwin, et al. (2012).
[2] Indicator status from Lichvar, et al. (2014).

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