REQUEST FOR AQUATIC RESOURCES DELINEATION VERIFICATION

OR JURISDICTIONAL DETERMINATION

A separate jurisdictional determination (JD) is not necessary to process a permit. An Approved Jurisdictional Determination (AJD) is required to definitively determine the extent of waters of the U.S. and is generally used to disclaim jurisdiction over aquatic resources that are not waters of the U.S., in cases where the review area contains no aquatic resources, and in cases when the recipient wishes to challenge the water of the U.S. determination on appeal. Either an Aquatic Resources Delineation Verification or a Preliminary Jurisdictional Determination (PJD) may be used when the recipient wishes to assume that aquatic resources are waters of the U.S. for the purposes of permitting. In some circumstances an AJD may require more information, a greater level of effort, and more time to produce. If you are unsure which product to request, please speak with your project manager or call the Sacramento District's general information line at (916) 557-5250.

I am requesting the product indicated below from the U.S. Army Corps of Engineers, Sacramento District, for the review area located at:

Street Address: 4904 Manzanita Avenue City: Carmichael County: Sacramento
State: California Zip: 95608 Section: _____ Township: 9 North Range: 6 East
Latitude (decimal degrees): 38.653664 Longitude (decimal degrees): -121.326965
The approximate size of the review area for the JD is 1.929 acres. **(Please attach location map)**

Choose one:
- (•) I own the review area
- ( ) I hold an easement or development rights over the review area
- ( ) I lease the review area
- ( ) I plan to purchase the review area
- ( ) I am an agent/consultant acting on behalf of the requestor
- ( ) Other: _____

Choose one product:
- ( ) I am requesting an Aquatic Resources Delineation Verification
- ( ) I am requesting an Approved JD
- (•) I am requesting a Preliminary JD
- ( ) I am requesting additional information to inform my decision about which product to request

Reason for request: (check all that apply)
- [ ] I need information concerning aquatic resources within the review area for planning purposes.
- [x] I intend to construct/develop a project or perform activities in this review area which would be designed to avoid all aquatic resources.
- [ ] I intend to construct/develop a project or perform activities in this review area which would be designed to avoid those aquatic resources determined to be waters of the U.S.
- [ ] I intend to construct/develop a project or perform activities in this review area which may require authorization from the Corps; this request is accompanied by my permit application.
- [ ] I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district's list of navigable waters under Section 10 of the Rivers and Harbors Act of 1899 and/or is subject to the ebb and flow of the tide.
- [ ] My lender, insurer, investors, local unit of government, etc. has indicated that an aquatic resources delineation verification is inadequate and is requiring a jurisdictional determination.
- [ ] I intend to contest jurisdiction over particular aquatic resources and request the Corps confirm that these aquatic resources are or are not waters of the U.S.
- [ ] I believe that the review area may be comprised entirely of dry land.
- [ ] Other: _____

Attached Information:
- [x] Maps depicting the general location and aquatic resources within the review area consistent with Map and Drawing Standards for the South Pacific Division Regulatory Program (Public Notice February 2016, http://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-References/Article/651327/updated-map-and-drawing-standards/)
- [x] Aquatic Resources Delineation Report, if available, consistent with the Sacramento District's Minimum Standards for Acceptance (Public Notice January 2016, http://1.usa.gov/1V68IYa)

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the review area. Your signature shall be an affirmation that you possess the requisite property rights for this request on the subject property.

*Signature: _____ Date: _____
Name: Nick Parashchak Company name: MP Brothers LLC
Address: 4408 Bijan Court
Fair Oaks, CA 95628
Telephone: (916) 616-9817 Email: kotermack@gmail.com

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Aquatic Resource Delineation Report
for
Verde Cruz Townhomes Project
Sacramento County, California



Prepared for:
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May 2018

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Appendix B Ordinary High Water Mark Data Form
Appendix C List of Vascular Plant Species Observed
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Appendix E Aquatic Resources
Appendix F WETS Table

Exhibit A Aquatic Resources Delineation Map

List of Acronyms

AWE	Area West Environmental, Inc.
CFR	Code of Federal Regulations
CWA	Clean Water Act
FAC	facultative plants
FACU	facultative upland plants
FACW	facultative wetland plants
HUC	USGS Hydrologic Unit Code
I	Interstate
NAD83	North American Datum 1983
NRCS	Natural Resources Conservation Service
NOAA	National Oceanic and Atmospheric Administration
--	not listed
NWI	National Wetland Inventory
NWPL	National Wetlands Plant List
OBL	obligate wetland plants
OHWM	ordinary high water mark
PJD	Preliminary Jurisdictional Determination
Project	Verde Cruz Townhomes Project
Survey Area	Parcel Boundary and Adjacent Roadway Improvements
TNW	Traditional Navigable Water
UPL	obligate upland plants
Corps	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WETS	Wetlands Climate Table
WRCC	Western Regional Climate Center

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1.0 SUMMARY OF FINDINGS

This report provides the results of an aquatic resources delineation study. The purpose of the study was to determine if there are potential waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act (CWA) present at the Verde Cruz Townhomes Project (Project) located at 4904 Manzanita Avenue, Carmichael, California. This delineation has been conducted following guidance in the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (Corps 2008a). The ordinary high water mark (OHWM) of potential other waters of the U.S. was delineated following guidance in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2008b), and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2010). This Aquatic Resources Delineation indicates that waters of the U.S. are present in the Survey Area. The 1.929-acre Survey Area includes the Project parcel (APN 236-0254-009) and an adjacent area where roadway or sidewalk improvements may occur. Acreages presented in this report are considered preliminary, subject to review by the Corps during the verification process.

A total of 0.088 acre of aquatic resources were identified within the Survey Area (Exhibit A), comprised of W-1, a 0.088 acre potential other waters of the U.S. (Intermittent Stream). A total of 277 feet of W-1 is present within the Survey Area.

2.0 INTRODUCTION

Area West Environmental, Inc. (AWE) was retained by the Project proponent to conduct an aquatic resources delineation at 4904 Manzanita Avenue in Carmichael, in Sacramento County, California and prepare an aquatic resources delineation report.

The Project is located in the Carmichael in Sacramento County approximately 12 miles northeast of Sacramento, California. The Survey Area is approximately 1.929 acres, and consists of one parcel, which the Project proposes to develop into 17 townhomes, and an area where roadway or sidewalk improvements may occur.

2.1 Project Location

The Project is located in northeast Sacramento County, California, at 4904 Manzanita Avenue, Carmichael, California, 95608 (Figure 1). Specifically, the Project is located on the Citrus Heights U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic map in Township 9 North, and Range 6 East. The approximate center coordinates of the site are Longitude -121.326965 east and Latitude 38.653664 north of the North American Datum 1983 (NAD83) datum (Figure 2).

2.2 Site Description

The Survey Area is an undeveloped parcel that is surrounded by urban and residential development. On the western boundary lies Manzanita Avenue, a busy local roadway, and to the south of the area is Bourbon Drive, a residential street (Figure 3). Another undeveloped parcel lies to the north, and along the eastern side of the Survey Area boundary, there are large residential lots. Within the Survey Area, the dominant vegetation community consists of Blue Oak Woodland with an understory comprised of non-native grassland species. The topography of the area is gradually sloped to the northeast where an intermittent waterway, Verde Cruz Creek, lies along the northern property boundary. The creek transverses the northern portion of the site, running east-west until it continues through a box culvert underneath Manzanita Avenue.

2.3 Driving Directions

From Interstate 80 Business (I-80B) East in Sacramento: Continue on I-80B for 7.5 miles and merge onto Interstate 80 (I-80) East, then take Exit 96 for Madison Avenue. Continue east on Madison Avenue for 1.6 miles and turn south onto Manzanita Avenue. Continue on Manzanita Avenue for 0.5 mile and turn east onto Bourbon Drive. The Project is located on the northeast corner of Manzanita Avenue and Bourbon Drive at 4904 Manzanita Avenue.

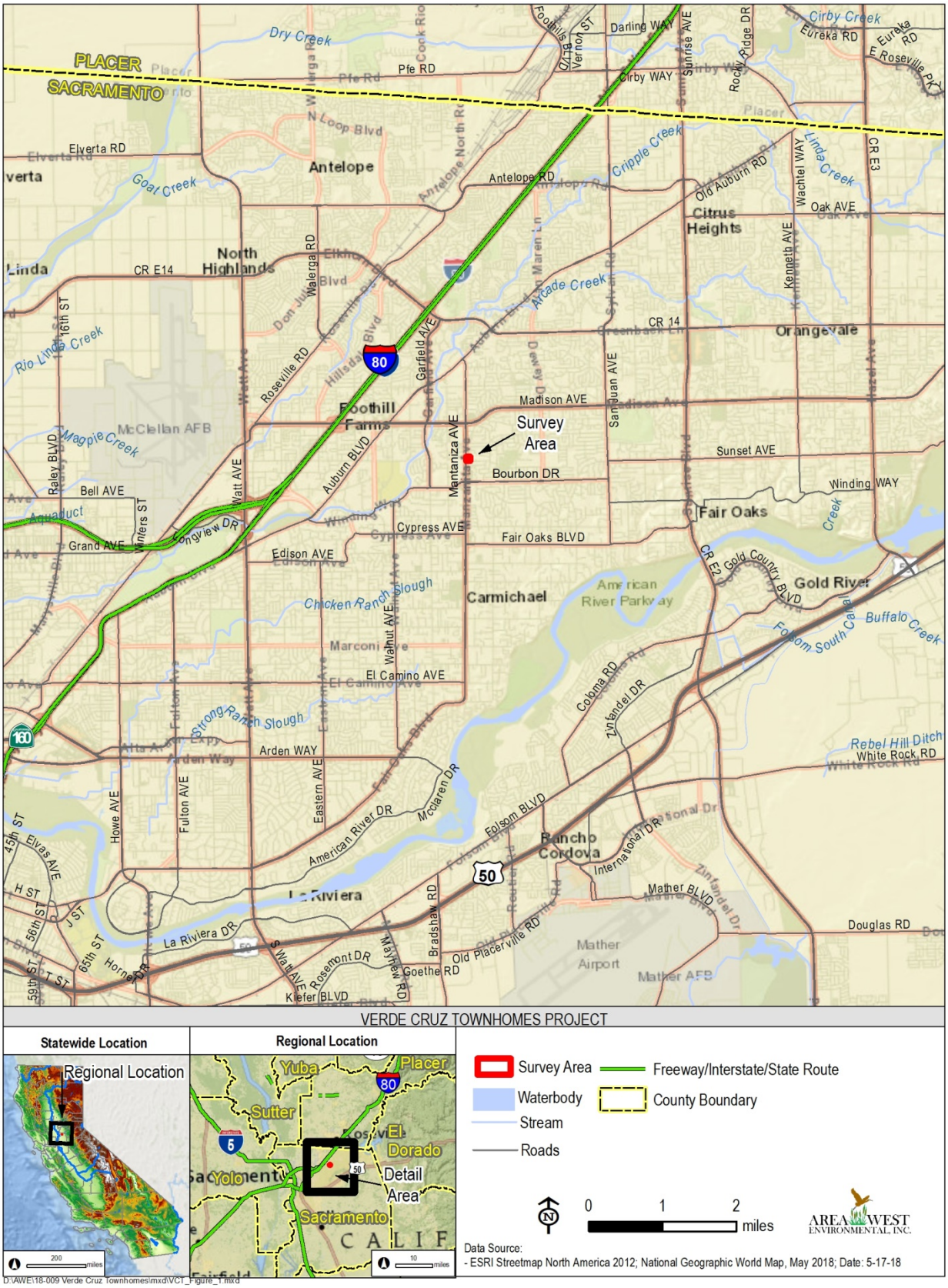


Figure 1. Project Vicinity

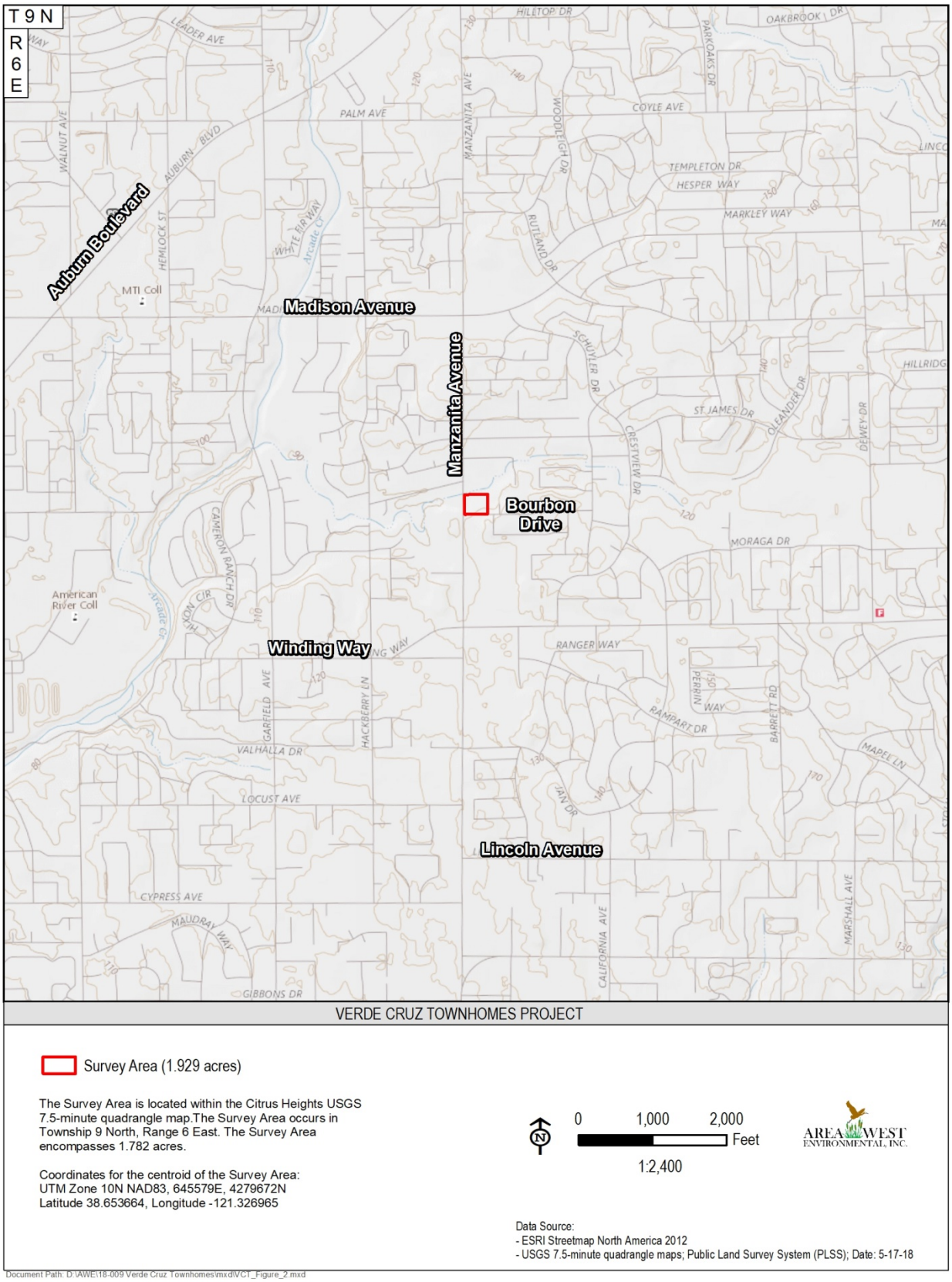


Figure 2. Project Location



Figure 3. Project Overview

3.0 DEFINITIONS

Certain terms used throughout this report have specific meanings that relate to the wetland delineation process, as specified by the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008a). These terms are described briefly below.

3.1 Waters of the U.S.

"Waters of the U.S." is the encompassing term for areas that qualify for federal regulation under Section 404 of the CWA. Waters of the U.S. include "wetlands" and "other waters of the U.S." For regulatory purposes, wetlands are defined as:

> 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 (Code of Federal Regulations [CFR] 328.3, 230.3).

3.2 Wetlands

Wetlands under Corps jurisdiction must have the following field indicators:

1. A prevalence of hydrophytic vegetation (i.e., "water loving" species with "obligate," "facultative wetland," or "facultative" wetland indicator status [Lichvar et al. 2016]);

   Wetland indicator status from The National Wetland Plant List: 2016 Update of Wetland Ratings (NWPL) (Lichvar, et al. 2016) is abbreviated as follows:

   - OBL = Obligate wetland plants. Almost always occur in wetlands.
   - FACW = Facultative wetland plants. Usually occur in wetlands, but may occur in non-wetlands.
   - FAC = Facultative plants. Occur in wetlands and non-wetlands.
   - FACU = Facultative upland plants. Usually occur in non-wetlands, but may occur in wetlands.
   - UPL = Obligate upland plants. Almost never occur in wetlands.
   - For species not listed in the NWPL "Not Listed" (--) is used to indicate their absence in the list. These species can be assumed to be upland species.

2. Hydric soils (soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper

part) (Natural Resources Conservation Service [NRCS] 2017); and

3. Wetland hydrology (areas that are periodically inundated or have soils saturated to the surface at some time during the growing season; where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively [Environmental Laboratory 1987]).

In the Arid West Region, growing season dates are determined through onsite observations of the following indicators of biological activity in a given year: (1) above-ground growth and development of vascular plants, and/or (2) soil temperatures. Season dates may be approximated by using Wetlands Climate Tables (WETS) available from NRCS National Water and Climate Center to determine the median dates of 28 °F (-2.2 °C) air temperatures in spring and fall based on long-term records gathered at the nearest appropriate National Weather Service meteorological station (Corps 2008a).

3.3 Other Waters of the U.S.

For this report, other waters of the U.S. refer to waterways and other water bodies with a defined bed and bank, such as drainages, ditches, creeks, rivers, and lakes. This translates to the bank-to-bank portion of water bodies, up to the OHWM. Other waters of the U.S. may lack hydrophytic vegetation and/or evidence of hydric soils.

In 33 CFR Part 329.1, the OHWM for non-tidal rivers is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; and the presence of litter and debris. The OHWM for a stream is usually determined through an examination of the recent physical evidence of surface flow in the stream channel. In dry land fluvial systems typical of the desert areas, the most common physical characteristics indicating the OHWM for a channel usually include, but are not limited to, a clear, natural scour line impressed on the bank; recent bank erosion; destruction of native terrestrial vegetation; and the presence of litter and debris (Corps 2008b, 2010).

4.0 METHODS

Wetlands were delineated using the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Corps 2008a). An area must meet criteria for hydrophytic vegetation, hydric soils, and wetland hydrology to be identified as a potential wetland under Corps jurisdiction.

Water bodies that did not meet the wetland criteria (i.e. did not exhibit hydrophytic vegetation, hydric soils, and wetland hydrology) were reviewed to determine if they met the definition of other waters of the U.S. (i.e., had evidence of an OHWM). The OHWM of potential other waters of the U.S. were delineated using *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (Corps 2008b), and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2010; Appendix B).

Specific details of the delineation methods are described below.

4.1 Preliminary Review

Before field surveys were conducted, the following information was reviewed:

- General topography was obtained from the *Citrus Heights*, California USGS 7.5-minute topographic quadrangle map (Figure 2).
- Soil information was obtained from the NRCS Web Soil Survey (NRCS 2018b) (Figure 4, Appendix A).
- Site hydrology was gathered from visual interpretations of aerial photographs and topography at a scale of 1 inch = 100 feet (Exhibit A).
- National Wetland Inventory (NWI) maps were reviewed (Figure 5) (U.S. Fish and Wildlife Service [USFWS] 2017).
- Regional hydrology was obtained from visual observations and aerial photographic evidence of hydrologic connections to Traditional Navigable Waters (TNW) (Figure 6).
- USGS Hydrologic Unit Code (HUC) data for California watershed boundaries (Figure 7).

4.2 Field Survey Dates and Methods

Aquatic resource delineation fieldwork was conducted by AWE biologists Sara Cortez and Cory Brinkman on May 10, 2018. The purpose of the fieldwork was to gather data on the vegetation, soils, and hydrology of the Survey Area to determine what areas; if any, met the Corps three mandatory criteria for wetlands (i.e., exhibited positive indicators of wetland vegetation, soils, and hydrology).

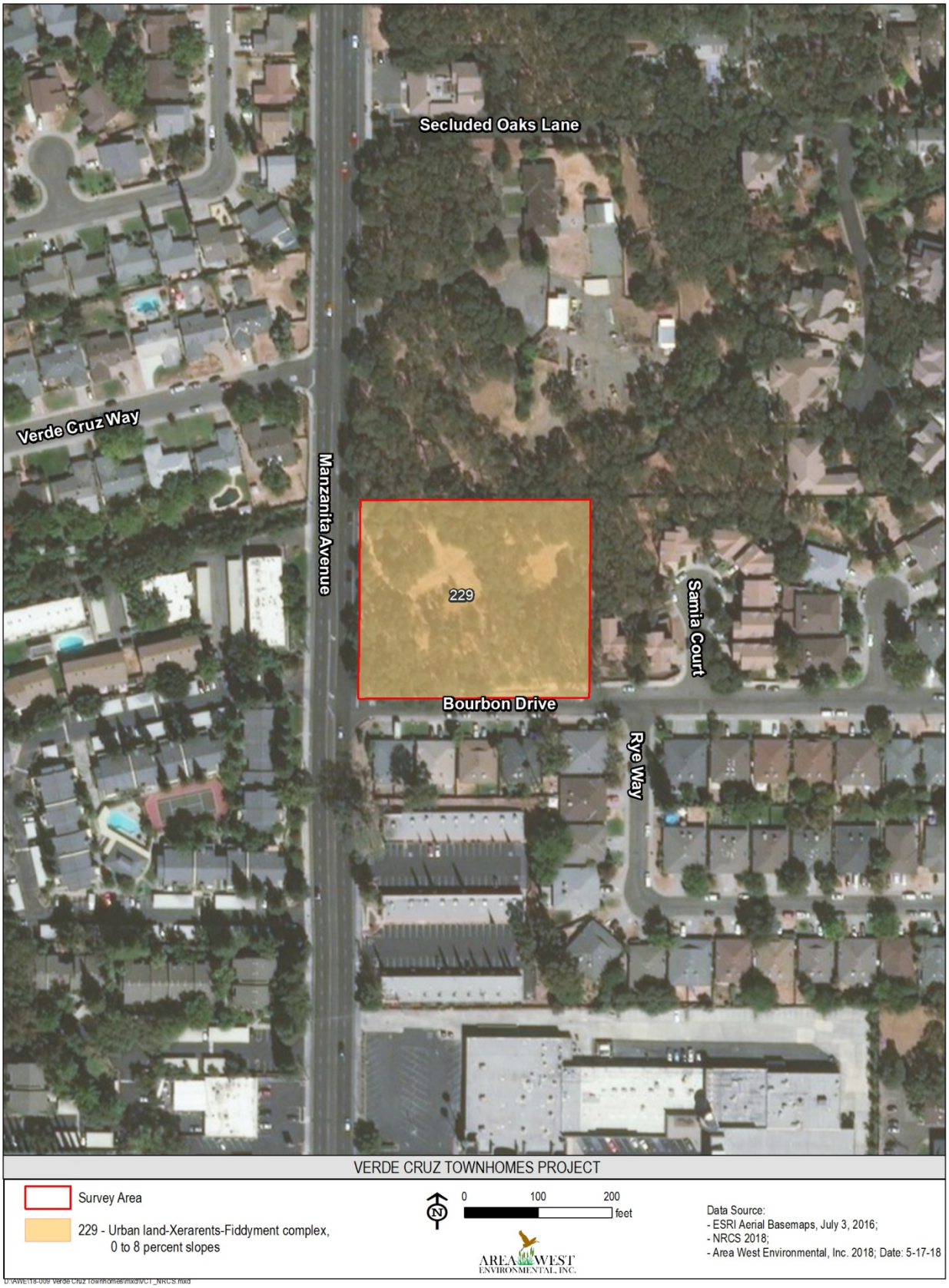


Figure 4. Project Soils

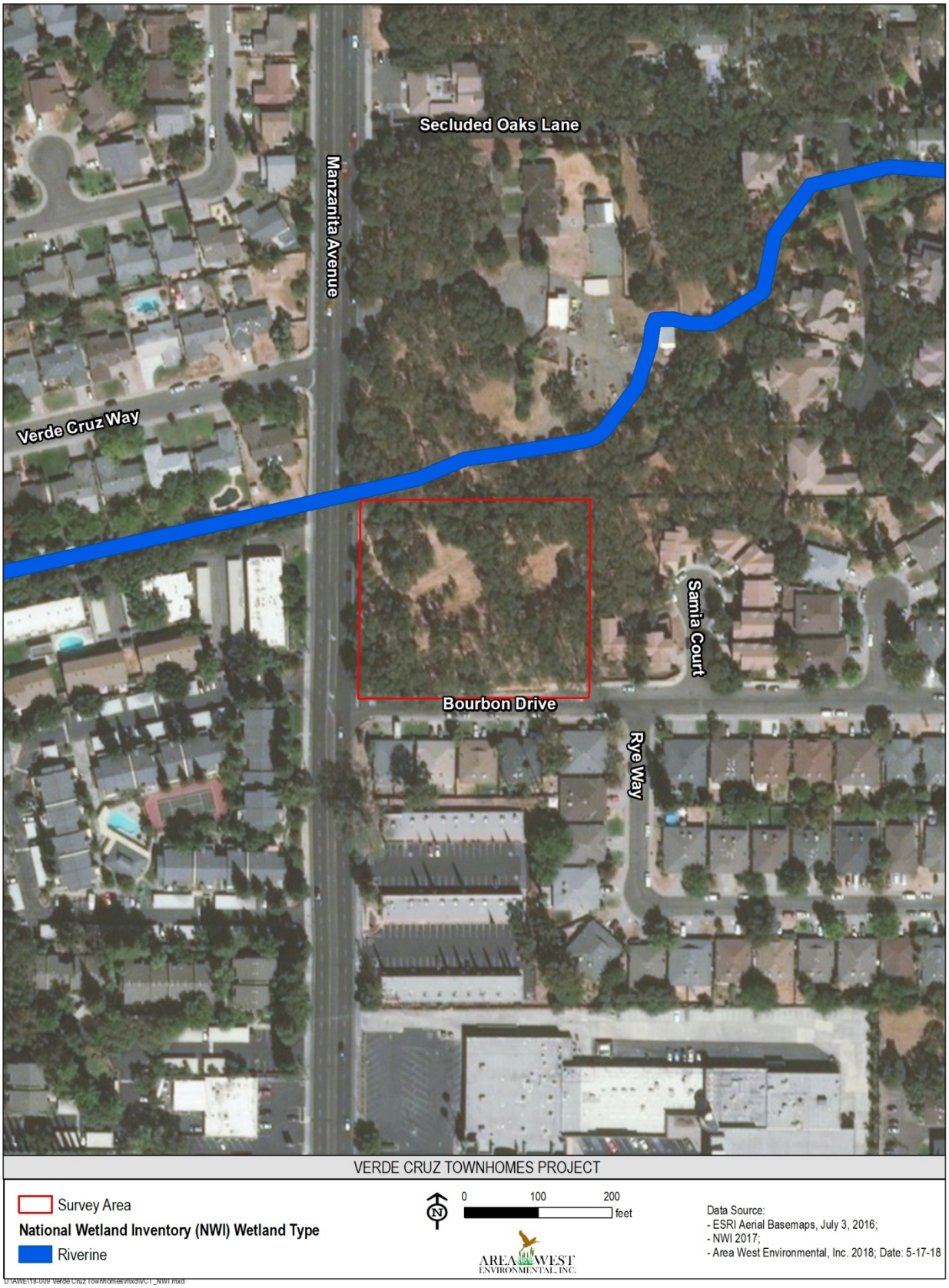


Figure 5. National Wetlands Inventory



Figure 6. Project Distance to Traditional Navigable Water

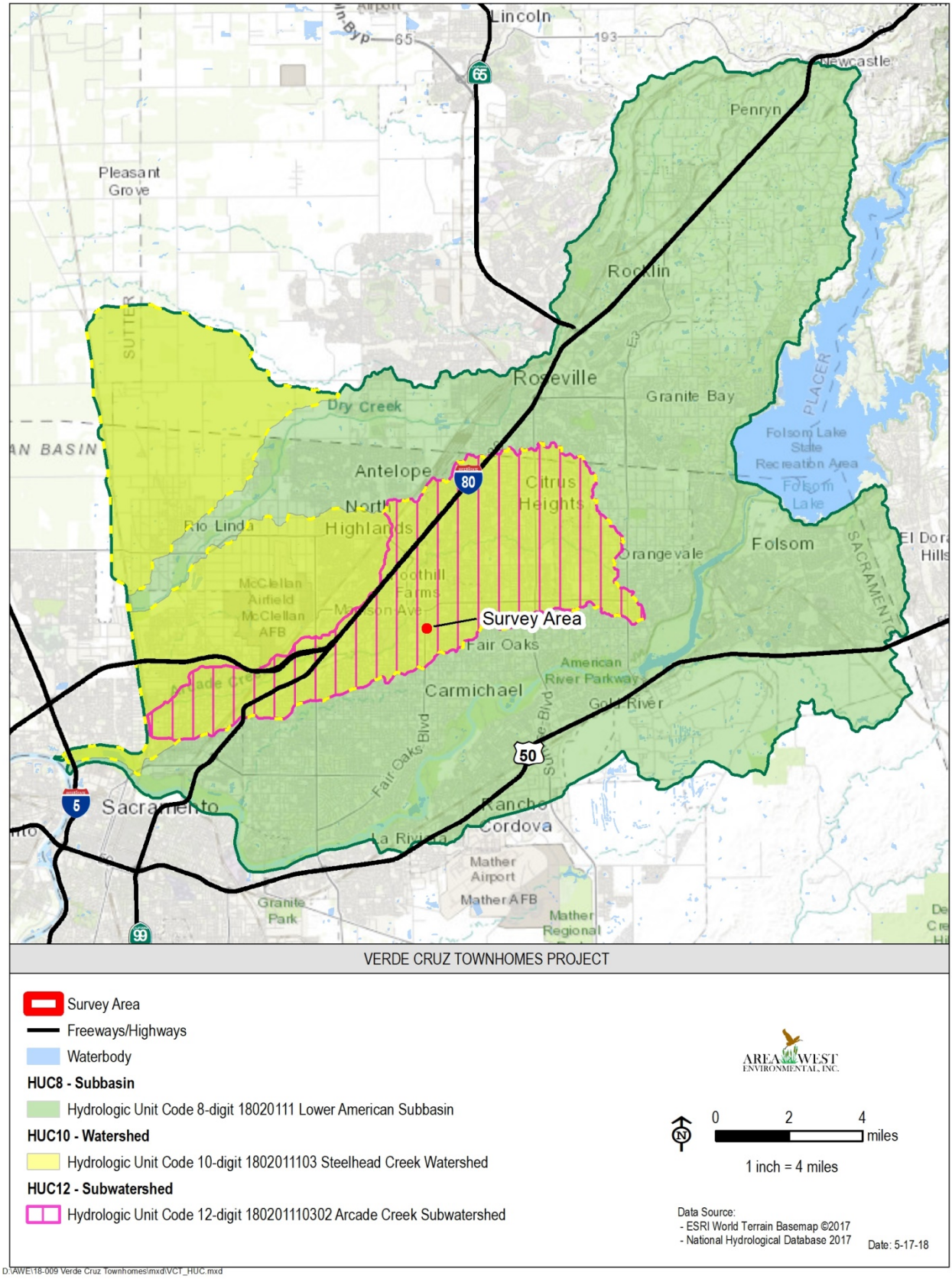


Figure 7. Project Hydrologic Unit

4.2.1 Vegetation

Vegetation types observed during the field survey were recorded and a list of all plant species observed are summarized in Appendix C. Plant species not readily identifiable in the field were determined based on the *Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al. 2012). The wetland indicator status of plant species was based on *The National Wetland Plant List: 2016* (Lichvar et al. 2016).

4.2.2 Soils

No areas dominated by hydrophytic vegetation were identified within the Survey Area, therefore no soil pits were excavated.

4.2.3 Hydrology

Hydrology information was determined through field observations in order to determine the presence/absence of primary and/or secondary hydrological indicators (i.e., surface water, saturation, sediment debris or drift deposits, watermarks, soil cracks, oxidized root channels, biotic or salt crusts, or other hydrologic indicators). Wetland hydrology was also determined based on the presence of ponding (inundation) or saturation, aerial photographic signature, landscape positions, or the presence of other field indicators such as scour marks.

The Survey Area was also surveyed for water bodies (e.g., streams and ponds). A "water body" is defined as any area that in a normal year has water flowing or standing above ground to the extent that evidence of an OHWM is established (Federal Register Volume 67, Number 10, Tuesday January 15, 2002). Water bodies are not required to be dominated by hydrophytic vegetation or to have positive hydric soil indicators to be considered Corps-jurisdictional.

4.3 Data Collection

Data was collected on the general habitats within the Survey Area, categorized by dominant vegetation and hydrology. Representative photographs of these habitats and the potentially jurisdictional feature within the Survey Area taken and are provided in Appendix D.

Drainages exhibiting or potentially exhibiting an OHWM were further characterized using forms provided in the *Updated Datasheet for Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2010) (Appendix B). One OHWM Datasheet was completed for the intermittent drainage (Verde Cruz Creek) in the Survey Area. No additional data points were collected due to the lack of potentially jurisdictional wetland features in the Survey Area.

4.4 Mapping and Acreage Calculations

The boundaries of potentially jurisdictional features were recorded using a handheld Trimble GeoXT Global Positioning System unit with sub-meter accuracy. Data was collected in latitude/longitude in the NAD83 datum. Acreages for these features within the Survey Area were calculated using polygon size in ArcView Geographic Information System.

5.0 RESULTS

A total of 0.088 acre of potential waters of the U.S. were identified in the 1.929-acre Survey Area (Exhibit A). Vegetation communities in the Survey Area are discussed further in Section 5.4.

Acreages and Corps-jurisdictional boundaries are preliminary and subject to review and modification by the Corps. A data form is included in Appendix B. A list of vascular plant species observed in the Survey Area is included in Appendix C. Representative photographs are provided in Appendix D. An aquatic resources table for the mapped potential waters of the U.S. is included in Appendix E.

5.1 Limitations to Survey

There were no limitations encountered during the survey.

5.2 Overview of Site Conditions

The Survey Area is located in Sacramento County with elevations ranging from approximately 95 feet to 115 feet above mean sea level.

One feature, Verde Cruz Creek, meeting the criteria for a Waters of the U.S. was identified in the NWI adjacent to the Survey Area boundaries (Figure 5).

Climate details for the Survey Area are based on historical data collected by the Western Regional Climate Center (WRCC) at the Sacramento 5ESE monitoring station located approximately 8.4 miles southwest of the Survey Area. Temperatures range from an average high temperature of 94.6 degrees Fahrenheit (°F) in July to an average low of 40.5 °F in December according to the WRCC (NOAA 2018). The average annual high temperature in the Survey Area is approximately 75.8 °F. The Survey Area receives an average of approximately 21.75 inches of annual precipitation (rain) from October through May. Prior to the survey date on May 10, 2018, 18.21 inches of rain had fallen in the region between October 1 and April 30 (NOAA 2018) (Appendix F).

During rain events, runoff water from streets and adjacent residential neighborhoods flows into Verde Cruz Creek, and then continues north and west to Arcade Creek approximately 0.8 miles northwest of the Survey Area (Figure 6). Arcade Creek flows southwest for another 8.5 miles, to its confluence with Steelhead Creek, which flows 3.6 miles southwest to the Sacramento River, a TNW. The Survey Area is located within the central portion of the HUC 8-digit Lower American subbasin (HUC 18020111) (Figure 7).

5.3 Soils

One soil map unit, Urban Land-Xerarents-Fiddyment complex, 0 to 8 percent slopes (229), is present within the Survey Area (Figure 4). The soil unit present in the Survey Area is described in detail in the NRCS Web Soil Survey, including landform position, horizon textures, depth to restrictive layer, and drainage class (Appendix A). This soil map unit is not listed in the National Hydric Soil List (NRCS 2018). No other soil map units are present in the Survey Area.

5.4 Vegetation Community Types

A total of two vegetation community types were identified at the Survey Area, including:

- Blue Oak Woodland; and
- Verde Cruz Creek – Intermittent Channel

The boundaries of the vegetation community determined to be Corps-jurisdictional is mapped in Exhibit A, and the following sections describe each community observed at the Survey Area.

5.4.1 Blue Oak Woodland

The Blue Oak Woodland vegetation community consists of open canopy blue oak woodland with an understory dominated by annual grasses and forbs and some scattered shrubs. This community typically occurs in the foothills surrounding the Central Valley in well-drained soils with a rocky component to the soil.

Vegetation. The overstory of this community consists of blue oaks (*Quercus douglasii*) (--) as the dominant species, with some scattered Northern California black walnut (*Junglans hindsii*) (FAC), interior live oak (*Quercus wislizeni*) (--), and broad-leaf privet (*Ligustrum lucidum*) (--) in the mid-canopy and shrub layers. The understory supports vegetation consistent with non-native annual grassland species dominated by slender oats (*Avena barbata*) (--), wild oats (*Avena fatua*) (--), ripgut brome (*Bromus diandrus*) (--), soft brome (*Bromus hordeaceus*) (FACU), and Italian ryegrass (*Festuca perennis*) (FAC). Dominant annual forbs primarily included non-native species such as field hedge-parseley (*Torilis arvensis*) (--), spring vetch (*Vicia sativa*) (FACU), and Italian thistle (*Carduus pycnocephalus*) (--), as well as one dominant native forb, bedstraw (*Galium aparine*) (FACU). There is also a small portion within this vegetation type (the eastern section along Manzanita Avenue) which has several ornamental and horticultural species within the overarching woodland including; river she-oak (*Casuarina cunninghamiana*) (--), coast redwood (*Sequoia sempervirens*) (--), white mulberry (*Morus alba*) (FACU), olive (*Olea europaea*) (--), and blueberry shrub (*Vaccinium* sp.) (--). Given that upland species were dominant in this habitat, no hydrophytic vegetation was determined to be present.

Soils. Due to the dominance and prevalence of upland vegetation in this habitat type, soils were not examined for indicators of hydric soils.

Hydrology. No indicators of wetland hydrology were observed in this community.

Justification for Non-jurisdictional Status. Blue Oak Woodland represents an upland vegetation community dominated by upland tree and herbaceous species. Furthermore, no indicators of hydric soils or wetland hydrology were observed in this vegetation community. This vegetation community is not considered a wetland or an Other Waters of the U.S., and is not subject to jurisdiction by the Corps.

5.4.2 Verde Cruz Creek – Intermittent Channel

Verde Cruz Creek is located in the northern portion of the Survey Area and conveys urban and residential runoff from the east through the Survey Area before running under Manzanita Avenue through a box culvert. A total of 0.088 acre of Intermittent Channel was mapped within the Survey Area.

The text below and the OHWM Data Sheet 1 in Appendix B provide additional information regarding this Intermittent Channel community.

Vegetation. Open water within the Intermittent Channel is devoid of vegetation throughout its extent within the Survey Area. Vegetation observed growing adjacent to the open water are located primarily along the northern side at the base of the bank and are dominated by white-flowered onion (*Allium triquetrum*) (--), and Himalayan blackberry (*Rubus armeniacus*) (FAC). Additional non-dominant species present within the channel also include, tall flatsedge (*Cyperus eragrostis*) (FACW), wild grape (FACU), Mexican fan palm (*Washingtonia robusta*) (FACW), English plantain (*Plantago landeolata*) (FAC), and smartweed (*Polygonum* sp.) (--). The southern side of the channel is highly eroded and has a steep bank that does not support any vegetation below the OHWM. Overall, the Intermittent Channel community was not dominated by wetland vegetation.

Soils. Soils within the Intermittent Channel community onsite are subject to frequent inundation for long to very long durations during the growing season, hydric soils with hydric soil indicator Sandy Redox (S5) were assumed to be present.

Hydrology. Primary indicators of wetland hydrology in the Survey Area include: surface water (A1) and saturation (A3). Secondary indicators include: water marks (B1), and sediment deposits (B2).

Justification for Jurisdictional Status. Verde Cruz Creek is an intermittent channel with a well-defined OHWM. Since Verde Cruz Creek has an OHWM, possesses a well-defined bed and bank, and, and has connectivity to a TNW, it is expected to qualify as other waters of the U.S.

5.4.2 Developed

Developed portions of the Study Area are situated within upland areas and characterized by anthropogenic features including paved roads, sidewalks, and roadside pull-offs. The Developed community is located in the southern portion of the Study Area along and within Bourbon Drive.

Vegetation. Vegetation, when present, is sparse and consists primarily of scattered upland annual grasses and forbs. Vegetation within this habitat is mowed and/or sprayed with herbicides.

Soils. Due to the dominance and prevalence of upland vegetation in this habitat, soils were not examined for indicators of hydric soils.

Hydrology. No indicators of wetland hydrology were observed in this habitat.

Justification for Non-jurisdictional Status. The areas classified as Developed are dominated by upland herbaceous species, bare ground, and/or areas that are paved. Furthermore, no indicators of wetland hydrology were observed in this habitat. This habitat is not considered a wetland or other waters of the U.S., and is not subject to jurisdiction by the Corps.

6.0 CITATIONS

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Corps. See U.S. Army Corps of Engineers.

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Appendix A.
National Resource Conservation Service Web Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sacramento County, California



May 3, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

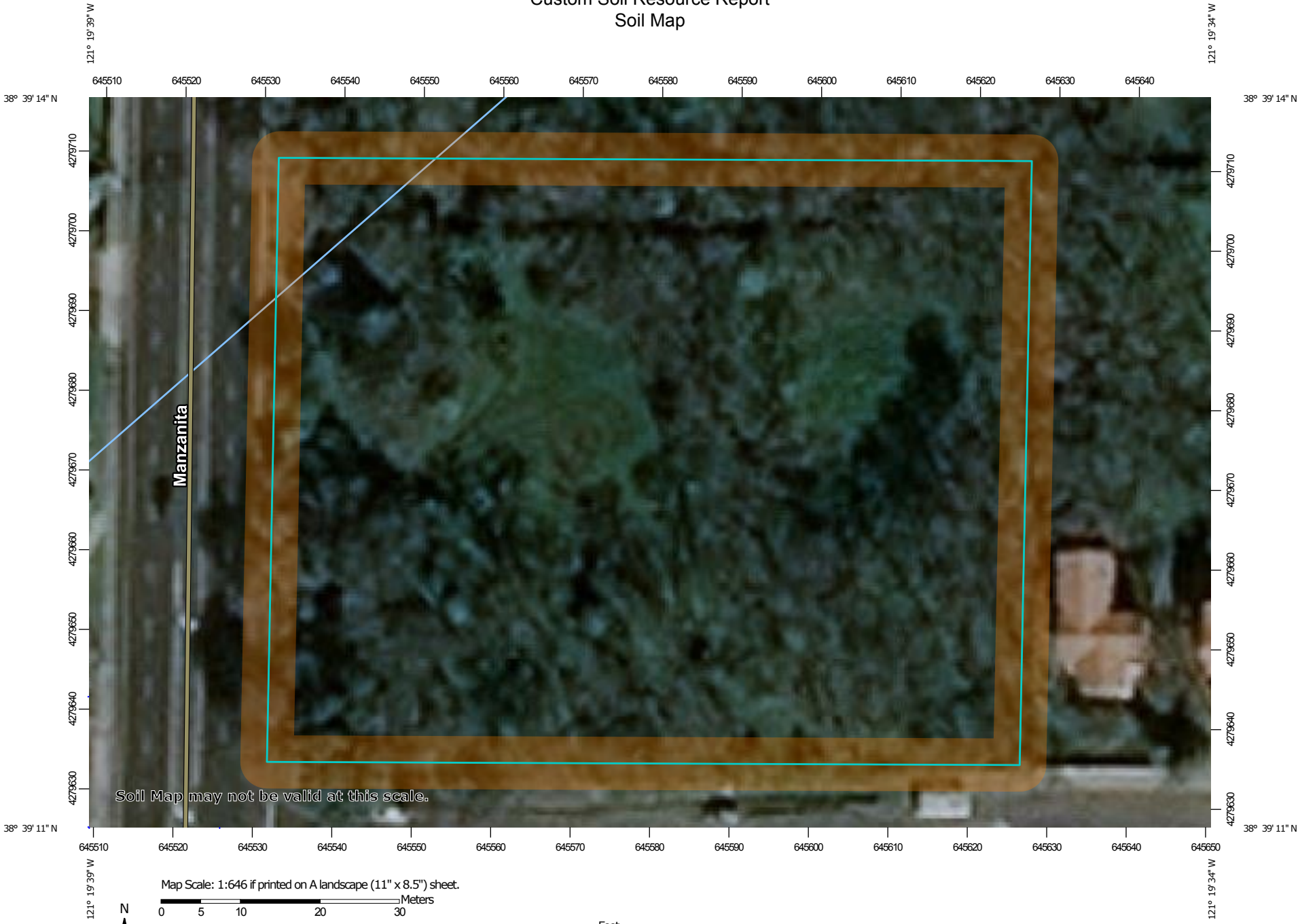
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sacramento County, California
Survey Area Data: Version 16, Sep 26, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 12, 2016—Mar 28, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
229	Urban land-Xerarents-Fiddyment complex, 0 to 8 percent slopes	1.8	100.0%
Totals for Area of Interest		**1.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sacramento County, California

229—Urban land-Xerarents-Fiddyment complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hhqc
Elevation: 0 to 2,500 feet
Mean annual precipitation: 19 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 40 percent
Xerarents and similar soils: 30 percent
Fiddyment and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Xerarents

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydric soil rating: No

Description of Fiddyment

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 15 inches: loam
H3 - 15 to 28 inches: sandy clay loam, clay loam
H3 - 15 to 28 inches: indurated
H4 - 28 to 40 inches: weathered bedrock
H5 - 40 to 50 inches:

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 28 to 40 inches to duripan; 40 to 50 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Kaseberg

Percent of map unit: 7 percent
Hydric soil rating: No

Orangevale

Percent of map unit: 6 percent
Hydric soil rating: No

Unnamed, shallow

Percent of map unit: 2 percent
Hydric soil rating: No

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Appendix B.
Ordinary High Water Mark Data Form

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Verde Cruz Townhomes
Project Number: 18-009
Stream: Verde Cruz Creek
Investigator(s): Cortez, Brinkman

Date: 05/10/2018 **Time:** 10:20 am
Town: Carmichael **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details:
At the corner of Manzanita and Bourbon in Carmichael, CA

Projection: CA FIPS Zone 2 **Datum:** NAD83
Coordinates: 38.653969, -121.326801

Potential anthropogenic influences on the channel system:

Trash and debris throughout stream, steps cut into bank, retaining wall along northeast segment of stream.

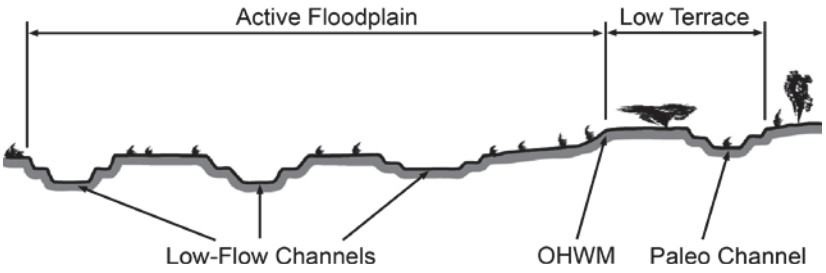
Brief site description:

Verde Cruz Creek is located at the northern edge of the 1.8-acre parcel. The parcel generally slopes from the south to the north and consists of blue oak woodland. Site is surrounded by urban and residential land use.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

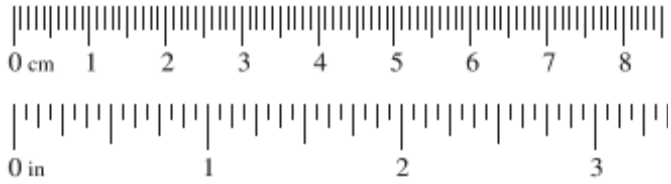


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

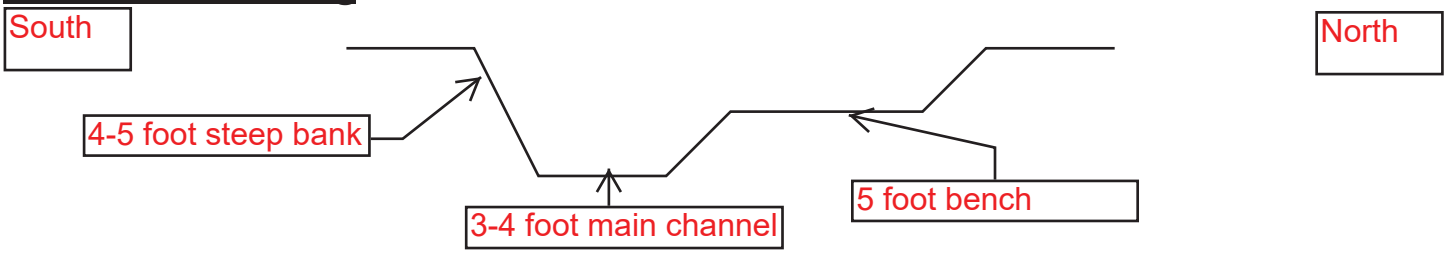
Wentworth Size Classes

Millimeters (mm)		Inches (in)		Wentworth size class	
	10.08		256	Boulder	
	2.56		64	Cobble	Gravel
	0.157		4	Pebble	
	0.079		2.00	Granule	
	0.039		1.00	Very coarse sand	
	0.020		0.50	Coarse sand	
1/2	0.0098		0.25	Medium sand	Sand
1/4	0.005		0.125	Fine sand	
1/8	0.0025		0.0625	Very fine sand	
1/16	0.0012		0.031	Coarse silt	
1/32	0.00061		0.0156	Medium silt	Silt
1/64	0.00031		0.0078	Fine silt	
1/128	0.00015		0.0039	Very fine silt	
				Clay	Mud



Project ID: Verde Cruz T **Cross section ID:** 1 **Date:** 05/10/2018 **Time:** 10:20 am

Cross section drawing:



OHWM

GPS point: 38.653969, -121.326801

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Unvegetated, highly eroded, steep bank along southern side of channel and gradually sloped bank with dominant non-native herbaceous vegetation along bank and bench of northern side of channel.

Floodplain unit:

- [ ] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: 38.653969, -121.326801

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 100 % Tree: 2 % Shrub: 30 % Herb: 40 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Urban creek with apparent high winter flows and low summer flows (likely from residential runoff). Creek has sandy-silt bottom with cobble ~1-inch average diameter. Established bench along northern side of channel supporting primarily herbaceous and some vine/shrub species. Dominant species include white-flowered onion (Allium triquetrum) and Himalayan blackberry (Rubus armeniacus).

Appendix C
List of Vascular Plant Species Observed

Appendix C. Wetland Indicator Status for Plant Species Observed in the Survey Area

Scientific Name	Common Name	Wetland Indicator Status[a]
Allium triquetrum	white-flowered onion	--
Avena sativa	wild oats	UPL
Bambusa sp.	bamboo	--
Bromus arvensis	soft brome	FACU
Bromus diandrus	ripgut grass	--
Bromus tectorum	cheatgrass	--
Carduus pycnocephalus	Italian thistle	--
Casuarina cunninghamiana	river she-oak	--
Cyperus eragrostis	tall flatsedge	FACW
Cytisus scoparius	scotch broom	--
Festuca perennis	Italian ryegrass	FAC
Ficus carica	edible fig	FACU
Foeniculum vulgare	fennel	--
Galium aparine	bedstraw	FACU
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	FAC
Iris sp.	iris (ornamental)	--
Juglans hindsii	Northern black walnut	FAC
Ligustrum lucidum	broad-leaf privet	--
Morus alba	white mulberry	FACU
Olea europaea	olive	--
Pinus sabiniana	grey pine	--
Plantago lanceolata	English plantain	FAC
Polygonum sp.	smartweed	--
Quercus douglasii	blue oak	--
Quercus wislizeni	interior live oak	--
Rubus armeniacus	Himalayan blackberry	FAC
Rumex obtusifolius	bitter dock	FAC
Sequoia sempervirens	coast redwood	--
Torilis arvensis	field hedge-parsely	--
Vaccinium sp.	blueberry shrub (cultivar)	--
Vicia sativa	spring vetch	FACU
Vitis californica	wild grape	FACU
Washingtonia robusta	Mexican fan palm	FACW

Scientific Name	Common Name	Wetland Indicator Status[a]

Sources: Environmental Laboratory 1987; Lichvar 2016; Baldwin et al. 2012.

[a] Indicator Status Definitions:

OBL	=	Obligate, almost always occurs in wetlands (>99% probability of occurrence)
FACW	=	Facultative wetland, usually occurs in wetlands (66%–99% probability)
FAC	=	Facultative, equally likely to occur in wetlands or nonwetlands (34%–66% probability)
FACU	=	Facultative upland, usually occurs in nonwetlands but occasionally in wetlands (1%–33% probability)
UPL	=	Obligate upland, almost never occurs in wetlands (<1% probability)
--	=	No indicator (insufficient information to assign an indicator status)

Appendix D.
Representative Photographs



Photo Point 1. View of Verde Cruz Creek – Intermittent Channel, downstream view towards Manzanita Avenue (facing northwest). Taken on May 10, 2018.



Photo Point 2. View of Verde Cruz Creek – Intermittent Channel, upstream view (facing northeast). Taken on May 10, 2018.



Photo Point 3. View just above south bank of Verde Cruz Creek – Intermittent Channel, representative of Blue Oak Woodland vegetation community (facing east). Taken on May 10, 2018.



Photo Point 4. View of southeast corner of Survey Area (facing southeast). Taken on May 10, 2018.



Photo Point 5. View of open non-native grassland area within Blue Oak Woodland (facing east). Taken on May 10, 2018.



Photo Point 6. View of southern boundary of Survey Area (facing southeast). Taken on May 10, 2018.

Appendix E
Aquatic Resources

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
W-1	CALIFORNIA	R4		Area	0.088	ACRE	DELINEATE	38.68396200	-121.32707000	

Appendix F
WETS Table

WETS Table

WETS Station: SACRAMENTO 5ESE, CA								
Requested years: 1998 - 2018								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	57.1	41.1	49.1	3.48	1.13	4.16	6	-
Feb	62.3	43.5	52.9	3.58	1.74	4.37	7	-
Mar	68.3	46.7	57.5	2.65	1.23	3.23	6	-
Apr	73.3	49.0	61.2	1.59	0.60	1.92	3	-
May	81.4	54.0	67.7	0.74	0.21	0.78	2	-
Jun	89.4	59.0	74.2	0.17	0.00	0.12	1	-
Jul	94.6	61.7	78.2	0.00	0.00	0.00	0	-
Aug	93.6	60.9	77.2	0.02	0.00	0.00	0	-
Sep	89.3	58.9	74.1	0.21	0.00	0.19	0	-
Oct	78.4	52.7	65.6	1.14	0.40	1.26	2	-
Nov	65.1	45.5	55.3	1.77	1.15	2.13	4	-
Dec	57.0	40.5	48.7	3.41	1.01	4.03	6	-
Annual:					14.69	21.47		
Average	75.8	51.1	63.5	-	-	-	-	-
Total	-	-	-	18.76			38	-

GROWING SEASON DATES			
Years with missing data:	24 deg = 1	28 deg = 1	32 deg = 1
Years with no occurrence:	24 deg = 20	28 deg = 18	32 deg = 5
Data years used:	24 deg = 20	28 deg = 20	32 deg = 20
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	No occurrence	1/2 to 12/23: 355 days
70 percent *	No occurrence	No occurrence	12/18 to 1/7: 385 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1877							MT	T	0.00	0.73	1.07	1.43	3.23
1878	9.26	8.04	3.09	1.07	0.17	0.00	0.00	0.00	0.29	0.55	0.51	0.47	23.45
1879	3.18	3.89	4.88	2.56	1.30	0.13	T	T	0.00	0.88	2.05	3.41	22.28
1880	1.64	1.83	1.70	M14.20	0.76	0.00	T	0.00	0.00	0.00	0.05	11.81	31.99
1881	6.14	5.06	1.37	1.64	T	0.50	T	0.00	0.30	0.55	1.88	3.27	20.71
1882	1.89	2.40	3.78	1.99	0.35	0.10	T	M0.00	0.57	2.63	3.22	1.13	18.06
1883	2.23	1.11	3.70	0.67	2.85	0.00	0.00	0.00	0.90	0.97	0.61	0.44	13.48
1884	3.43	4.46	8.14	4.32	0.06	1.45	0.00	T	0.60	2.01	0.00	10.45	34.92

1885	2.16	0.49	0.08	0.68	T	0.11	T	0.00	0.08	0.02	11.34	5.76	20.72
1886	7.95	0.29	2.68	4.08	0.07	0.00	M0.00	0.00	0.00	0.68	0.21	2.18	18.14
1887	1.12	6.28	0.94	2.53	T	0.00	0.00	T	0.02	0.00	0.45	2.09	13.43
1888	4.81	0.57	3.04	0.10	0.40	0.08	T	T	0.55	0.00	4.28	M4.61	18.44
1889	0.15	0.33	6.25	0.26	3.25	0.25	0.00	0.00	0.00	6.02	3.15	7.82	27.48
1890	6.62	4.06	3.00	1.33	1.80	0.00	0.00	T	0.80	MT	0.00	6.68	24.29
1891	0.53	6.61	1.78	2.04	0.66	0.05	T	0.00	0.10	0.10	0.48	3.28	15.63
1892	1.78	2.84	3.02	1.20	2.38	T	M0.00	0.00	0.18	0.70	3.34	4.90	20.34
1893	3.27	2.66	3.51	1.08	1.05	0.00	T	0.00	0.22	0.12	2.92	1.76	16.59
1894	4.17	3.92	0.74	M0.34	1.70	0.46	T	T	0.88	1.06	0.48	8.86	22.61
1895	8.42	1.84	1.20	0.86	0.51	0.00	0.04	T	1.26	0.17	1.54	1.54	17.38
1896	9.76	0.09	2.57	5.34	0.66	0.00	T	0.20	0.31	0.55	3.56	1.76	24.80
1897	3.66	4.15	2.54	0.25	0.30	0.04	0.00	0.01	0.16	1.96	0.61	1.64	15.32
1898	0.98	3.19	0.04	0.28	1.50	0.14	0.00	0.00	0.36	0.64	0.61	2.30	10.04
1899	3.94	0.04	6.02	0.10	0.54	0.49	0.00	0.02	0.00	4.46	2.62	2.91	21.14
1900	3.54	0.32	1.61	1.88	2.88	T	T	0.00	0.06	1.74	4.50	1.38	17.91
1901	3.70	5.32	M0.48	2.23	0.80	T	T	T	0.56	1.56	2.68	1.19	18.52
1902	0.95	6.52	1.99	1.36	0.45	0.01	0.00	T	0.00	1.67	M1.96	2.91	17.82
1903	3.05	1.70	4.81	0.46	T	T	0.00	0.00	0.00	0.12	3.44	1.12	14.70
1904	0.45	5.26	5.43	1.02	0.03	T	T	0.07	3.62	1.86	2.05	1.20	20.99
1905	3.34	2.47	3.75	1.18	2.45	0.00	0.00	T	0.03	0.00	1.20	0.56	14.98
1906	6.63	3.02	8.45	1.21	2.24	0.59	0.00	T	0.20	T	0.99	7.37	30.70
1907	4.63	2.37	7.28	0.25	0.10	0.85	0.00	0.00	T	1.20	0.04	M2.71	19.43
1908	3.84	2.75	0.42	0.08	0.54	T	T	0.00	0.05	0.26	1.23	2.04	11.21
1909	9.65	6.53	1.84	T	T	0.03	0.00	0.00	0.21	1.27	1.32	3.87	24.72
1910	1.48	0.83	3.06	0.11	0.03	T	T	0.00	0.20	0.28	0.17	1.62	7.78
1911	12.72	1.88	4.30	0.66	0.03	0.12	0.00	0.00	T	0.18	0.15	1.07	21.11
1912	2.74	0.23	1.97	1.69	0.94	0.58	T	0.00	1.25	0.58	0.80	0.23	11.01
1913	2.52	0.16	1.34	0.53	0.51	0.11	T	0.01	T	0.13	4.58	4.40	14.29
1914	5.97	2.96	0.59	0.70	0.50	0.60	0.00	0.00	T	0.82	0.47	3.44	16.05
1915	3.76	M4.26	1.20	0.50	2.75	0.00	T	0.01	T	T	0.83	4.42	17.73
1916	9.35	2.45	1.06	0.06	0.10	0.01	0.07	T	0.16	0.79	0.49	3.73	18.27
1917	1.30	4.97	0.70	0.62	0.12	0.00	T	T	0.51	MT	0.25	0.45	8.92
1918	0.97	3.36	4.00	1.06	0.01	T	M0.00	T	3.58		1.84	1.70	16.52

1919	1.77	M6.15	1.50	0.11	0.01	0.00	T	T	0.53	0.01	M0.36	2.22	12.66
1920	0.29	0.81	3.27	1.36	0.00	0.05	0.00	T	0.01	1.29	3.39	4.32	14.79
1921	4.61	0.54	1.45	0.39	0.75	0.05	0.00	0.00	T	0.80	1.09	3.81	13.49
1922	2.16	4.18	1.29	0.40	0.43	T	T	T	0.00	0.72	3.03	6.12	18.33
1923	2.05	0.30	0.43	2.87	0.08	0.09	0.00	T	0.50	0.58	0.62	0.94	8.46
1924	1.80	2.00	M0.65	0.30	0.06	0.00	T	T	T	2.10	1.59	3.63	12.13
1925	1.02	4.45	1.14	1.61	2.11	0.05	0.01	0.01	0.02	T	1.13	1.50	13.05
1926	3.20	5.52	0.05	4.25	0.36	0.00	0.00	T	T	2.14	4.48	0.58	20.58
1927	2.30	4.99	1.01	M1.47	0.21	0.57	0.00	T	0.01	1.45	1.81	M0.58	14.40
1928	1.17	1.38	3.39	0.78	0.02	0.04	T	0.00	T	0.15	2.98	2.66	12.57
1929	0.88	1.44	0.78	M0.44	0.04	1.02	T	M0.00	0.00	0.15	0.00	4.06	8.81
1930	3.65	1.62	2.86	0.94	0.34	T	0.00	T	0.29	0.47	1.11	0.56	11.84
1931	2.50	1.35	1.14	0.05	0.67	0.29	T	T	T	0.18	1.30	6.84	14.32
1932	1.09	1.76	0.34	0.76	0.30	0.00	T	0.00	0.00	0.00	0.36	2.11	6.72
1933	2.85	0.95	1.44	0.03	0.30	0.08	T	0.00	0.03	0.66	0.00	5.74	12.08
1934	1.33	2.97	0.13	0.16	0.26	0.30	0.00	T	0.01	0.45	2.61	2.50	10.72
1935	4.81	1.97	2.93	5.81	0.01	0.00	T	T	T	1.22	0.77	2.18	19.70
1936	3.80	8.59	1.33	1.69	0.68	0.27	T	0.00	T	0.35	0.03	2.62	19.36
1937	2.92	6.18	6.37	1.10	0.01	0.18	T	0.00	0.00	0.87	2.69	4.06	24.38
1938	3.50	8.24	3.92	1.51	0.04	T	T	0.00	0.30	1.29	0.88	0.71	20.39
1939	1.91	1.06	2.42	0.25	0.92	T	T	0.00	0.35	0.45	0.07	1.15	8.58
1940	7.98	9.25	4.22	0.68	0.92	T	0.00	0.00	0.01	0.93	1.32	M7.67	32.98
1941	5.78	5.40	2.86	4.76	1.35	0.02	0.00	T	T	0.86	1.17	6.29	28.49
1942	4.68	2.98	3.31	4.58	1.07	0.00	T	0.00	0.03	0.27	2.22	3.16	22.30
1943	7.04	1.26	3.60	1.91	0.14	0.35	T	0.00	T	0.16	0.62	2.02	17.10
1944	3.08	7.27	1.42	1.66	0.83	0.52	0.00	0.00	T	1.39	3.54	2.31	22.02
1945	1.82	4.49	2.83	0.08	0.55	0.05	T	T	0.00	2.53	1.60	5.07	19.02
1946	0.77	0.90	1.94	0.06	0.61	0.00	T	0.00	0.04	0.75	2.42	1.56	9.05
1947	0.60	2.34	3.28	0.15	0.17	0.28	0.00	0.00	T	2.60	1.02	0.64	11.08
1948	0.51	0.88	3.68	M2.72	2.91	0.01	0.00	0.00	0.10	1.45	0.59	4.88	17.73
1949	1.47	1.91	4.15	T	0.32	T	T	0.01	0.03	0.14	1.10	1.90	11.03
1950	4.41	3.27	2.00	1.03	0.37	0.05	0.01	0.00	0.62	2.35	5.50	4.72	24.33
1951	2.45	1.57	0.84	0.85	0.64	T	0.00	T	0.25	1.33	3.18	5.11	16.22
1952	8.65	1.65	4.50	1.41	0.05	0.45	0.01	0.00	0.05	0.00	2.04	7.27	26.08

1953	3.51	0.21	1.42	2.69	0.52	0.61	0.00	0.67	0.00	0.18	1.79	0.56	12.16
1954	3.26	3.70	3.29	1.88	0.21	T	0.00	0.35	0.00	0.02	3.35	4.93	20.99
1955	3.14	1.33	0.37	2.75	0.67	0.01	0.00	0.00	0.95	0.57	1.16	12.20	23.15
1956	7.58	2.43	0.03	1.86	0.96	T	0.00	0.00	0.84	1.32	0.06	0.22	15.30
1957	2.47	4.18	2.23	1.66	1.78	T	0.00	0.00	1.35	1.35	0.33	3.07	18.42
1958	5.38	9.13	5.93	4.41	0.72	0.27	T	0.02	0.12	0.42	0.16	0.72	27.28
1959	4.62	3.64	0.46	0.30	T	0.00	T	T	1.54	T	0.01	1.28	11.85
1960	3.25	2.91	1.62	1.26	0.41	0.00	T	0.00	T	T	4.38	0.70	14.53
1961	3.11	1.19	2.02	0.49	0.13	0.02	T	0.01	0.17	0.03	2.96	1.44	11.57
1962	0.95	7.60	1.84	0.19	0.06	0.01	0.00	0.13	0.11	6.85	0.40	1.74	19.88
1963	3.65	1.75	3.56	3.43	0.64	0.02	0.00	T	0.35	1.27	3.92	0.38	18.97
1964	3.35	0.19	0.83	0.16	0.18	0.41	0.01	0.06	0.00	1.55	2.64	5.69	15.07
1965	3.66	0.48	1.61	2.97	0.07	T	0.00	0.59	0.00	0.11	3.25	2.89	15.63
1966	2.11	1.58	0.22	0.59	0.24	T	0.09	0.00	0.05	0.00	5.48	3.33	13.69
1967	7.94	0.40	4.15	3.85	0.12	0.68	0.00	0.00	0.04	0.26	1.25	0.94	19.63
1968	3.34	1.97	2.42	0.40	0.32	0.23	0.00	0.08	0.00	0.68	2.74	3.10	15.28
1969	8.90	7.61	1.13	1.32	0.09	0.01	0.00	0.00	0.03	0.80	0.81	5.36	26.06
1970	7.05	1.45	1.83	0.14	0.00	0.24	0.00	0.00	0.00	0.95	7.44	3.73	22.83
1971	1.10	0.33	2.34	0.54	0.94	0.05	0.00	0.00	0.00	0.27	0.88	4.84	11.29
1972	1.07	1.15	0.37	1.27	0.34	0.15	0.00	0.00	0.99	1.70	5.08	2.25	14.37
1973	7.29	6.47	2.89	0.41	0.06	0.00	0.00	0.00	0.44	1.56	6.69	3.05	28.86
1974	3.80	1.57	3.72	1.34	0.00	0.66	0.90	0.01	0.00	1.22	0.86	3.42	17.50
1975	1.15	5.16	4.73	1.10	0.00	0.00	0.02	0.16	0.00	2.32	0.40	0.30	15.34
1976	0.37	1.49	0.61	1.53	0.00	0.05	0.00	0.57	0.81	0.00	0.62	0.62	6.67
1977	1.36	1.10	1.33	0.36	0.76	0.00	0.01	0.00	0.55	0.27	2.00	3.65	11.39
1978	9.61	2.77	4.24	2.26	0.00	0.00	0.00	0.00	0.37	0.01	3.45	0.87	23.58
1979	5.81	5.24	2.67	0.88	0.09	0.00	0.22	0.00	0.01	1.79	1.66	3.96	22.33
1980	5.33	8.08	2.19	1.04	0.47	0.04	0.31	0.00	0.00	0.04	0.26	2.25	20.01
1981	4.97	1.00	3.55	0.71	0.34	0.00	0.00	0.00	0.32	2.64	7.13	3.91	24.57
1982	5.40	2.90	6.87	3.36	0.00	0.17	0.00	0.00	1.54	2.69	5.83	3.44	32.20
1983	5.54	5.28	8.30	4.36	0.23	0.28	0.00	0.01	0.61	0.53	5.83	6.65	37.62
1984	0.23	1.52	1.47	0.44	0.01	0.10	0.00	0.08	0.08	1.87	5.46	1.75	13.01
1985	1.07	1.85	2.79	0.11	0.02	0.14	0.00	0.01	0.71	0.69	4.64	3.19	15.22
1986	4.88	10.30	4.23	1.02	0.08	0.00	0.00	0.00	0.80	0.33	0.22	1.30	23.16

1987	2.55	3.77	3.57	0.26	0.01	0.00	0.00	0.00	0.00	1.30	3.22	3.75	18.43
1988	3.61	0.74	0.31	1.46	0.75	0.23	0.01	0.00	0.00	0.22	2.08	3.32	12.73
1989	0.70	1.38	6.73	0.39	0.04	0.26	0.00	0.37	3.15	1.47	1.26	0.00	15.75
1990	5.49	3.14	1.16	0.75	2.61	0.00	0.00	0.00	0.00	0.28	0.56	1.66	15.65
1991	0.37	3.18	7.48	0.38	0.26	0.56	0.00	0.01	0.05	1.22	0.32	2.04	15.87
1992	1.68	6.89	3.32	0.93	0.00	0.22	0.00	0.00	0.00	1.26	0.38	6.23	20.91
1993	9.37	5.11	2.43	0.75	1.23	0.94	0.00	0.00	0.00	0.43	2.70	2.04	25.00
1994	2.16	3.17	0.07	0.80	1.65	0.00	0.00	0.00	0.00	0.45	3.96	3.54	15.80
1995	12.35	0.19	7.84	1.90	1.01	0.53	0.01	0.00	0.00	0.00	0.00	5.14	28.97
1996	3.30	6.09	2.30	1.93	2.22	0.00	0.00	0.00	0.00	0.76	1.49	5.83	23.92
1997	7.68	0.26	0.58	0.28	0.35	0.53	0.00	0.21	0.18	1.01	4.67	2.64	18.39
1998	6.79	9.43	2.55	1.44	3.04	0.29	0.00	0.00	0.30	0.81	3.60	0.65	28.90
1999	2.86	4.54	1.46	0.94	0.08	0.03	0.00	0.00	0.00	0.13	1.75	0.03	11.82
2000	7.20	8.93	2.26	2.05	1.36	0.03	0.00	0.00	0.17	2.57	0.76	0.55	25.88
2001	4.48	4.79	2.15	1.70	0.00	0.14	0.00	0.00	0.33	0.35	2.33	5.99	22.26
2002	2.23	1.04	2.85	0.15	1.81	0.00	0.00	0.00	0.00	0.00	2.00	5.85	15.93
2003	1.13	1.08	1.95	2.75	1.23	0.00	0.00	0.34	0.00	0.27	1.64	4.35	14.74
2004	2.07	4.84	0.49	0.11	0.08	0.00	0.00	0.00	1.93	3.09	2.76	4.13	19.50
2005	3.69	2.52	3.55	0.86	1.31	0.69	0.00	0.00	0.10	0.16	0.90	9.47	23.25
2006	3.07	2.07	6.02	3.42	0.42	0.00	0.00	0.00	0.00	0.21	1.03	3.12	19.36
2007	0.07	5.17	0.50	1.42	0.43	0.00	0.01	0.00	0.08	0.93	0.98	3.35	12.94
2008	7.42	1.83	0.12	0.01	0.04	0.00	0.00	0.00	0.00	0.75	2.22	1.75	14.14
2009	1.48	5.06	1.83	1.61	1.30	0.47	0.00	0.00	0.19	3.42	0.36	3.16	18.88
2010	4.75	2.28	1.95	2.60	0.84	0.00	0.00	0.00	0.05	1.75	2.65	5.52	22.39
2011	1.36	3.88	7.00	0.08	1.40	1.14	0.00	0.00	0.00	1.72	0.87	0.07	17.52
2012	2.52	0.94	4.45	2.65	0.00	0.01	0.00	0.00	0.00	1.28	4.33	6.46	22.64
2013	1.06	0.26	1.59	0.58	0.57	0.31	0.00	0.00	0.55	0.00	0.82	0.38	6.12
2014	0.20	4.49	1.93	1.97	0.01	0.00	0.02	0.00	0.54	0.37	1.28	7.63	18.44
2015	0.01	2.28	0.16	1.82	0.19	0.07	0.00	0.00	0.00	0.44	1.35	1.83	8.15
2016	5.79	0.85	4.64	1.48	0.59	0.00	0.00	0.00	0.00	4.41	1.33	3.77	22.86
2017	9.85	8.18	2.76	3.36	0.10	0.18	0.00	0.00	0.00	0.14	2.45	0.13	27.15
2018	5.07	0.66	5.37	2.45	M0.00								13.55

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a

month or year is blank.

Creation date: 2016-07-22

Exhibit A
Aquatic Resources Delineation Map



VERDE CRUZ TOWNHOMES PROJECT

AQUATIC RESOURCES DELINEATION
FOR THE
VERDE CRUZ TOWNHOMES PROJECT

- Survey Area (1.929 acres)
- Photo Point and Direction
- Ordinary High Water Mark (OHWM)

Potential Aquatic Resource Classification

- Verde Cruz Creek - Intermittent Channel (W-1: 0.088 acre)
- Flow Direction
- OHWM Cross Section (x = average width)

0 50 100 feet

AREA WEST ENVIRONMENTAL, INC.

Data Source:
-Google Earth Imagery, February 1, 2018;
- Area West Environmental, Inc. 2018; Date: 5-17-18

Delineation performed by:	Mapping performed by:
- Sara Cortez - Cory Brinkman	- Samuel Price

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