BIOLOGICAL RESOURCES EVALUATION

VULCAN – SACRAMENTO AGGREGATES

CARLI EXPANSION SITE

SACRAMENTO COUNTY, CALIFORNIA



LSA

May 2019

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CARLI EXPANSION SITE

SACRAMENTO COUNTY, CALIFORNIA

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May 2019

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1.0 INTRODUCTION

LSA was retained by Vulcan Materials – Western Region (Vulcan) to prepare a Biological Resources Evaluation (BRE) for the 160.98-acre Vulcan-Sacramento Aggregates Carli Expansion Site (referred to as the Carli Property henceforth in this document) located southwest and adjacent the original Sacramento Aggregates mining site.

This BRE discusses vegetative communities, associated wildlife and special-status species occurring or potentially occurring on the Carli Property, and evaluates the impacts to these resources from proposed mining operations.

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2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Carli Property is located in the southeast quarter of Section 36 of Township 8 North, Range 6 East and the southwest quarter of Section 31 of Township 8 North, Range 7 East, on the Elk Grove and Carmichael quadrangle maps. Figures 1 and 2 show the project location and regional vicinity, respectively.

2.2 CARLI PROPERTY DESCRIPTION

The Carli Property includes 160.98 acres of private and public land. The Carli Property's southern boundary shares a boundary with the southern boundary of the Florin Road Right-of-Way (ROW), the western boundary is Eagles Nest Road, and the northern and eastern edges bound the existing 338.04-acre Current Active Mining Area.

2.2.1 Non-Disturbance Areas

Non-Disturbance Areas in the Carli Property, totaling 19.76 acres, include a Wetland Avoidance Area (10.69 acres) located in the southeast corner of the Carli Property adjacent to Florin Road; County ROW (6.16 acres) on Florin Road along the southern boundary; and a perimeter area of Excavation Setbacks (2.91 acres) along the shoulders of Eagles Nest Road and Florin Road.

2.2.2 Proposed Carli Mining Area

The remainder of the Carli Property contains the proposed 141.22-acre Carli Mining Area. The Carli Mining Area contains two distinct areas that will be implemented in phases: Phase T-1 is 74.58 acres and Phase T-2 is 66.64 acres.

Figure 3 shows the Carli Property, including the 19.76-acre Non-Disturbance Areas and the 141.22-acre Carli Mining Area. Figure 3 also depicts the Biological Study Area which is described in Section 4.

2.3 MINE PLAN

The Sacramento Aggregates sand and gravel mining operation consists of Phases I – X and Expansion Phases E-1, E-2 and E-3 (Florin Road South Expansion). The approved end use for the existing phases is reclamation back to grazing land and in some areas of Expansion Phase E, the end use will also include seasonal wetlands.

The Carli Property will add Phase T (see Appendix A) to the approved operations and will be implemented in two mining phases: Phases T-1 (74.58 acres) and T-2 (66.64 acres). The site will be mined starting in the northern portion of the site, extending south down and around the existing composting facility, then to the east, and finally back up towards the northeast to excavate the area currently occupied by the composting operation. The Carli Property will be reclaimed back to grazing land consistent with the other approved mining phases (see Appendix B).

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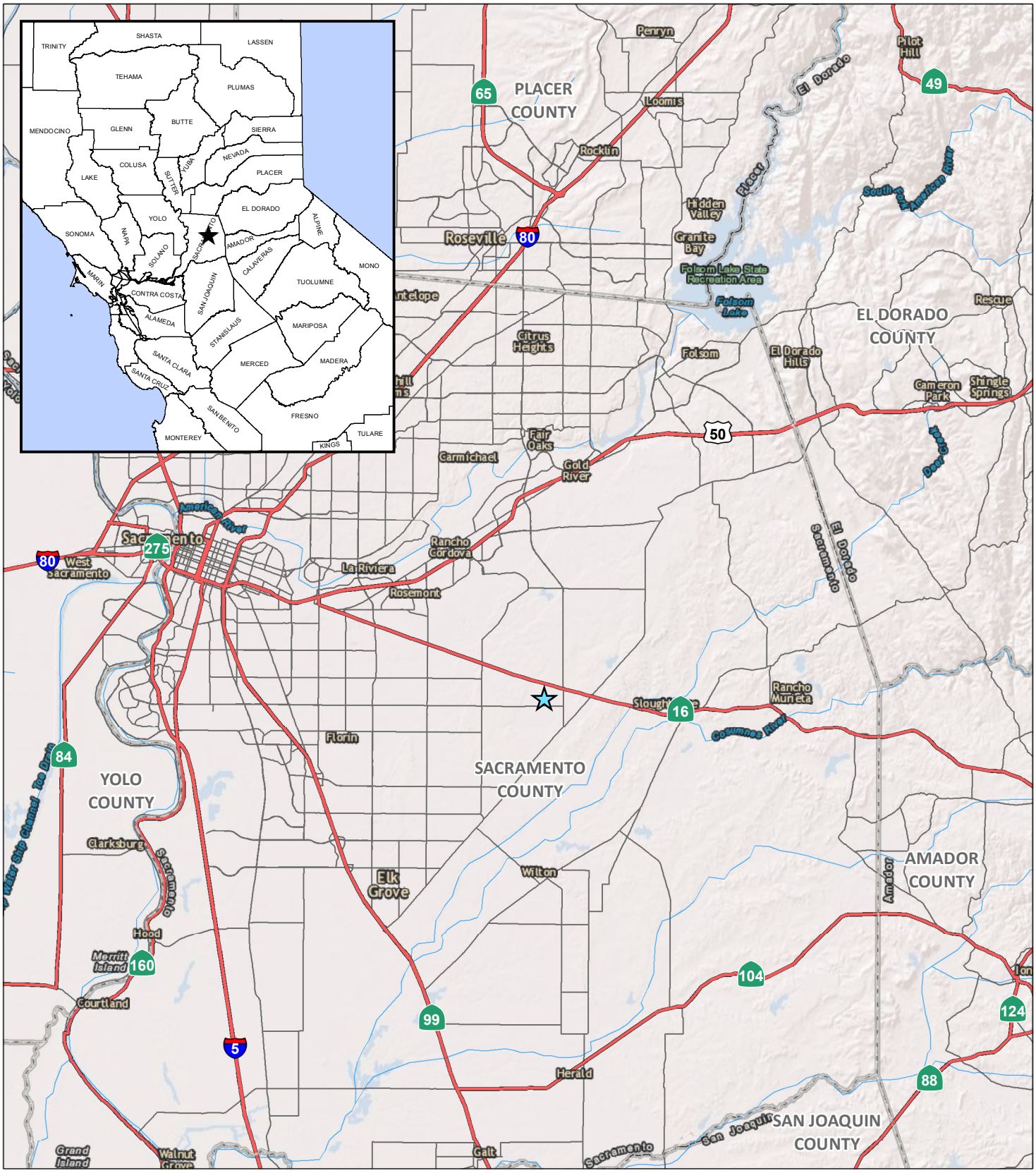

LSA

LEGEND

Biological Study Area

FIGURE 1

N

0 2.5 5

Miles

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Regional Location

SOURCE: ESRI Imagery (4/2008)

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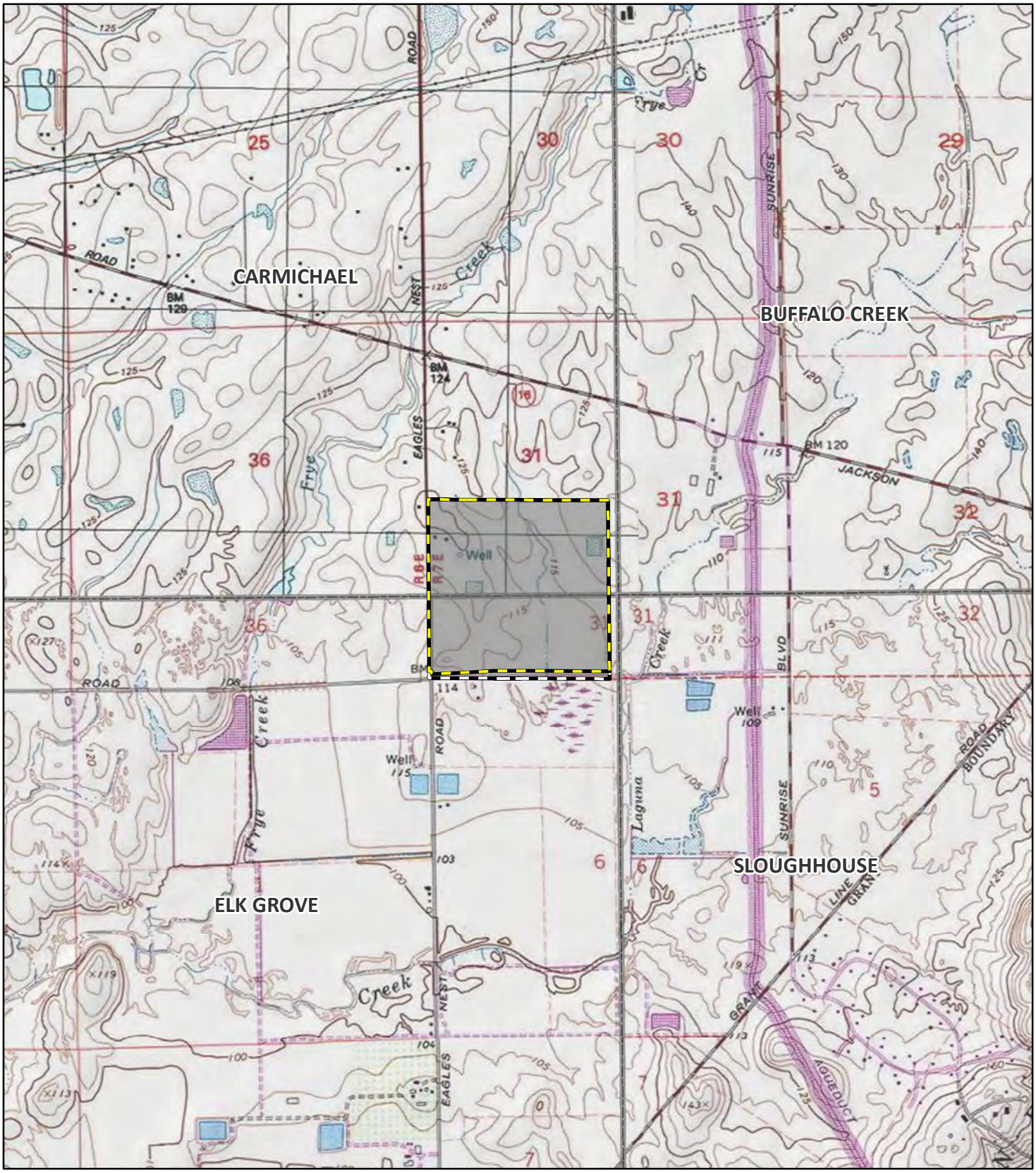

LSA

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- USGS 7.5' Quad Boundaries

N

0 1000 2000
FEET

FIGURE 2

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601
Biological Study Area
Vicinity on Topographic Base

SOURCE: USGS 7.5-minute topographic quadrangles Carmichael (1997); Elk Grove (1980); Buffalo Creek (1980); Sloughhouse (1993)

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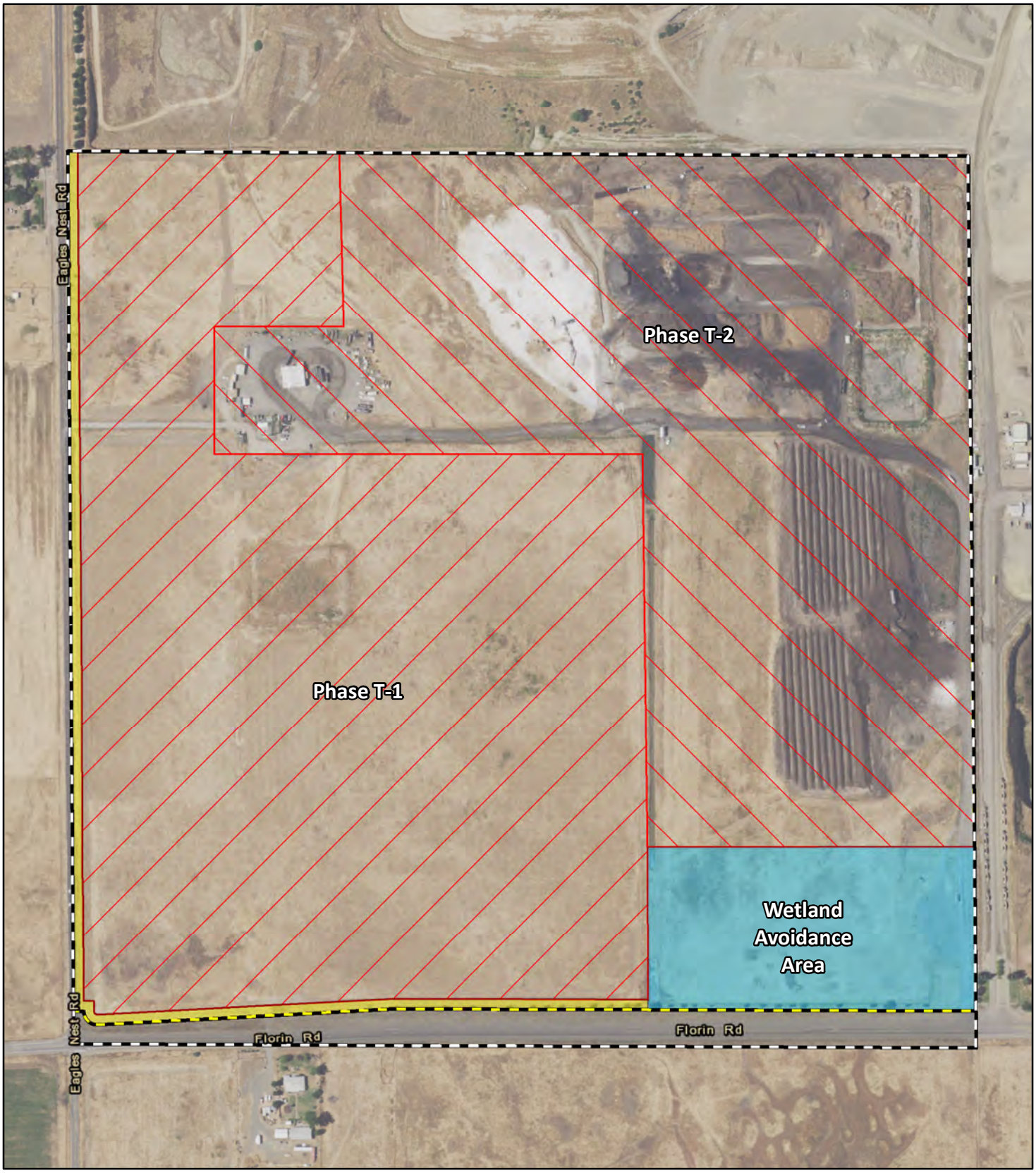

LSA

FIGURE 3

LEGEND

Carli Property - (160.98 ac)

Biological Study Area - (154.82 ac)

Carli Mining Area - (141.22 ac)

Phase T-1 - (74.58 ac)

Phase T-2 - (66.64 ac)

Non-Disturbance Areas - (19.76 ac)

Wetland Avoidance Area - (10.69 ac)

Florin Road ROW - (6.16 ac)

Undisturbed Setbacks - (2.91 ac)

N

0 200 400

FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Carli Expansion Site

SOURCE: Basemap - NAIP Aerial Imagery (06/2016); Mapping - Vulcan (4/2019)

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2.3.1 Description of Mining

Overburden from the Carli Property will be removed with existing equipment used at other Sacramento Aggregate mining areas (e.g., a hydraulic excavator and front-loaders). Aggregate will be mined from the Carli Property using existing equipment, including a hydraulic excavator and front-loaders. Excavated aggregate will be transported to an extendable pit conveyor by loaders or existing haul trucks. Other existing mobile equipment will include bulldozer, motor-grader, water truck, and service truck. No processing will occur on the Carli Property.

2.3.2 Overburden and Waste Material Placement Sites

There is an approximately 2- to 3-foot thick layer of topsoil present in the Carli Property. Topsoil will be removed as a separate layer from each phase by using existing front-loaders or hydraulic excavator. Topsoil is transported by haul trucks, spread at previously excavated areas for use as the final cover for reclamation, or stored separately for such use in later reclamation.

An estimated 6.3 million cubic yards of overburden will be removed during the mining at the Carli Property (Phase T) by using existing hydraulic excavator and will be transported by haul trucks, spread at previously excavated areas for use as fill for reclamation or stored separately for such use in later reclamation.

2.3.3 Non-Disturbance Areas

The proposed excavation setbacks (2.91 acres total) would be the same as for the existing permitted operations (i.e., 30 feet from edge of pavement). For the Carli Property, that includes 30 feet from the Florin Road right-of-way and 30 feet from the Eagles Nest Road right-of-way). The setbacks would be landscaped to match the existing landscaping on the northeast and southeast sides of Florin Road and create a visual barrier between the roads and the mining activities. The landscaping would include the same native and/or landscape varieties of plants within a 15 feet wide planting area. The proposed mine plan is included in Appendix A.

The 6.16-acre segment of Florin Road ROW included in the Carli Property stretches from Eagles Nest Road eastward for approximately 2,640 feet (0.5 mile). No project elements are proposed within the Florin Road ROW.

Additionally, a 10.69-acre area in the southeast corner of the Carli Property has been designated for avoidance as a Wetland Avoidance Area. The seasonal wetlands present in this area will be preserved.

2.4 RECLAMATION PLAN

The mined area will be reclaimed to rolling grazing lands. Overburden and rock will be removed to elevations ranging between approximately 50 and 70 feet (approximate depths of 50 to 70 feet below current average site elevation of 120 feet), with side slopes of 1H:1V. This will be a temporary slope that will be partially filled during mine reclamation. Mined slopes meet criteria at 1H:1V for the final pit depth and 1.75H:1V backfilled with engineered fill for the reclaimed pit depth. The proposed reclamation plan is included in Appendix B.

3.0 REGULATORY BACKGROUND

3.1 SPECIAL STATUS SPECIES

Special status species include plants and animals that are: 1) listed as rare, threatened, or endangered by United States Fish and Wildlife Service (USFWS) or California Department of Fish and Wildlife (CDFW) under State or federal endangered species acts; 2) on formal lists as candidates for listing as threatened or endangered; 3) on formal lists as species of concern; or 4) otherwise recognized at the State, federal, or local level as sensitive.

3.1.1 Federal and California Endangered Species Acts

Under the Federal Endangered Species Act (FESA), it is unlawful to "take any species listed as threatened or endangered". "Take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." An activity is defined as "take" even if it is unintentional or accidental. "Take" provisions under FESA apply only to listed fish and wildlife species under the jurisdiction of the USFWS and/or the National Oceanic & Atmospheric Administration, National Marine Fisheries Service (NMFS). Consultation with USFWS or NMFS is required if a project "may affect" a listed species.

When a species is listed, the USFWS and/or the NMFS, in most cases, must officially designate specific areas as critical habitat for the species. Consultation with USFWS and/or the NMFS is required for projects that include a federal action or federal funding if the project may affect designated critical habitat.

Under the California Endangered Species Act (CESA), it is unlawful to "take" any species listed as rare, threatened, or endangered. Under CESA, "take" means to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill". CESA take provisions apply to fish, wildlife, and plant species. "Take" may result whenever activities occur in areas that support a listed species. Consultation with CDFW is required if a project will result in "take" of a listed species.

3.1.2 Magnuson-Stevens Fishery Conservation and Management Act

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), essential fish habitat (EFH) must be designated in every fishery management plan. EFH includes "…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The MSA requires consultation with NMFS for projects that include a federal action or federal funding and may adversely modify EFH.

3.2 WATERS OF THE U.S. AND OTHER JURISDICTIONAL WATERS

3.2.1 Army Corps of Engineers

3.2.1.1 Section 404 of the Clean Water Act

Under Section 404 of the Clean Water Act (CWA), the Army Corps of Engineers (ACOE) regulates the discharge of dredged or fill material into waters of the U.S. Waters of the U.S. are those waters that have a connection to interstate commerce, either direct via a tributary system or indirect through a

nexus identified in the ACOE regulations. In non-tidal waters, the lateral limit of jurisdiction under Section 404 extends to the ordinary high water mark (OHWM) of a waterbody or, where adjacent wetlands are present, beyond the OHWM to the limit of the wetlands. The OHWM is defined as "that 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, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR 328.3). In tidal waters, the lateral limit of jurisdiction extends to the high tide line or, where adjacent wetlands are present, to the limit of the wetlands.

Wetlands

Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for a life in saturated soil conditions".

Non-Wetland Waters

Non-wetland waters essentially include any body of water, not otherwise exempted, that displays an OHWM.

3.2.1.2 Section 10 of the River and Harbors Act

Under Section 10 of the River and Harbors Act (RHA), the ACOE regulates the construction of any structure in or over any navigable water of the United States. Navigable waters are defined as are those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce.

3.2.2 Regional Water Quality Control Board

Under Section 401 of the CWA, the State Water Resources Control Board must certify all activities requiring a 404 permit. The Regional Water Quality Control Board (RWQCB) regulates these activities and issues water quality certifications for those activities requiring a 404 permit. In addition, the RWQCB has authority to regulate the discharge of "waste" into waters of the State pursuant to the Porter-Cologne Water Quality Control Act (PCWQCA).

3.2.3 California Department of Fish and Wildlife

CDFW, through provisions of Section 1602 of the California Fish and Game Code, is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be substantially adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an ephemeral or intermittent flow of water. CDFW regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by CDFW.

CDFW generally includes, within the jurisdictional limits of streams and lakes, any riparian habitat present. Riparian habitat includes willows, cottonwoods, and other vegetation typically associated

with the banks of a stream or lake shoreline. In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat. Thus, defining the limits of CDFW jurisdiction based on riparian habitat will automatically include any wetland areas. Riparian communities may not fall under ACOE jurisdiction unless they are below the OHWM or classified as wetlands.

3.3 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) prohibits actions that will result in "take" of migratory birds, their eggs, feathers, or nests. "Take" is defined in the MBTA as any means or any manner to hunt, pursue, wound, kill, possess, or transport, any migratory bird, nest, egg, or part thereof.

Migratory birds are also protected, as defined in the MBTA, under Section 3513 of the California Fish and Game Code.

3.4 CALIFORNIA FISH AND GAME CODE (BREEDING BIRDS)

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird, except as otherwise provided by the California Fish and Game Code or other regulation.

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4.0 METHODS

Prior to conducting any field studies, the limits of the Biological Study Area (BSA) were established, as shown in Figure 3. The BSA, totaling 154.82 acres, consists of the area of direct affect (Carli Mining Area), the Wetland Avoidance area southeast of the Mining Area designated for preservation, and the 30-foot excavation setbacks along the outer perimeter of the Mining Area. The BSA does not include the County ROW along Florin Road at the southern end of the Carli Property.

4.1 LITERATURE REVIEW

A list of sensitive wildlife and plant species potentially occurring within the BSA was compiled to evaluate potential impacts resulting from the mining operation. Sources used to compile the list include the California Natural Diversity Data Base (CNDDB 2017), the California Native Plant Society (CNPS) Online Edition (2017), and the U.S. Fish and Wildlife Service, Sacramento Field Office (USFWS 2017) referencing the Elk Grove, Carmichael, Buffalo Creek, Sloughhouse, Clay, Galt, Bruceville, Florin, and Sacramento East 7.5-Minute United States Geologic Survey (USGS) quadrangles (herein referred to as the 9-quad area). The individual lists are included in Appendix C.

The special status species lists obtained from the CNDDB, CNPS, and USFWS were reviewed to determine which species could potentially occur within the Study Area. The cumulative list (shown in Table C, Section 5) includes numerous species representing a variety of habitat types. The list includes each species' protection status, habitat information, status in the BSA, and supporting comments as necessary.

The determination of whether a species could potentially occur within the BSA was based on the availability of suitable habitat within the species' known range, as well as known occurrences of the species in or adjacent to the BSA according to the CNDDB. Species requiring specific habitat not present in the vicinity of the project were eliminated as potentially occurring and are not discussed further.[1] Those species that could potentially occur in the BSA based on habitat suitability or known occurrences in or within the vicinity of the BSA are discussed in Section 6.

4.2 FIELD SURVEYS

The studies required to fully document the environmental conditions of the BSA included a general biological survey, vegetation mapping, a jurisdictional waters delineation, focused wildlife and plant surveys, and vernal pool invertebrate surveys. Table A below provides a summary of the field surveys performed in the BSA.

[1] Occasionally, a species that is determined absent from the BSA pursuant to Table C is also discussed in Section 6 to document special circumstances (e.g., an exhaustive survey effort).

Table A: Survey Dates and Personnel

Date	Personnel	Task
October 5, 2016	Laura Belt and David Muth	Dry Season Survey
November 1, 2016	Laura Belt and Julie McNamara	Reconnaissance Hydrology Status for VPI Surveys
November 11, 2016	Laura Belt and Julie McNamara	Wet Season Survey #1 for VPI
November 23, 2016	Laura Belt	Wet Season Survey #2 for VPI
December 5, 2016	Laura Belt and Julie McNamara	Wet Season Survey #3 for VPI
December 19, 2016	Laura Belt	Wet Season Survey #4 for VPI
January 2, 2017	Laura Belt	Wet Season Survey #5 for VPI
January 13, 2017	Joey Bena	Jurisdictional Delineation Hydrology Survey
January 16, 2017	Laura Belt	Wet Season Survey #6 for VPI
January 30, 2017	Laura Belt and Jeremy Foreman	Wet Season Survey #7 for VPI
February 13, 2017	David Muth	Wet Season Survey #8 for VPI
February 27, 2017	Laura Belt	Wet Season Survey #9 for VPI
March 13, 2017	Laura Belt	Wet Season Survey #10 for VPI
March 27, 2017	Laura Belt	Wet Season Survey #11 for VPI
March 29, 2017	Laura Belt	TRBL Observation
April 10, 2017	Laura Belt	Wet Season #12 Survey for VPI
April 12, 2017	Anna Van Zuuk and Dan Williams	Vegetation Mapping, Focused Plant Survey, and Focused Wildlife Survey
May 10, 2017	Mike Trueblood and Anna Van Zuuk	Jurisdictional Delineation, Focused Plant Survey
May 31, 2017	Dan Williams	Focused Wildlife Survey

VPI = Vernal Pool Invertebrates
TRBL = Tricolored Blackbird

4.2.1 General Biological Survey/Vegetation Mapping

A general biological survey of the BSA, was conducted during focused plant and wildlife surveys on April 12, 2017 by LSA biologists Ana Van Zuuk and Dan Williams. Vegetation in the BSA was classified according to A Manual of California Vegetation, Second Edition (Sawyer, Keeler-Wolf, and Evans 2008), as appropriate. Managed or developed areas were classified according to their dominant plant species. Species names follow the standard nomenclature presented in The Jepson Manual: Vascular Plants of California (Baldwin, B. G., et. al., editors 2012) and the Jepson Online Interchange for California Floristics (Jepson eFlora 2016).

4.2.2 Jurisdictional Waters Delineation

A delineation of waters of the U.S. potentially subject to regulation by the ACOE was conducted on May 10, 2017, by LSA biologists Mike Trueblood and Anna Van Zuuk. Additionally, hydrology in the BSA was observed during a survey on January 13, 2017 by Joey Bena and during the wet season surveys for vernal pool invertebrates.

All potential waters of the U.S. in the review area were delineated in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the 2008 Regional Supplement – Arid West Region. A total of 19 formal observation points were described in the field. At each point, a pit was

dug and soils and hydrology examined (unless the data point was inundated); vegetation was also characterized at each data point.

Potential waters of the U.S. were located in the field using a GPS unit with sub-meter accuracy. All data was entered into a GIS database to calculate the extent of potential waters of the U.S. in the review area and to produce the final mapping. Final mapping was completed using color aerial photos, dated June 2016, at a scale of 1 inch = 200 feet.

A copy of the Approved Jurisdictional Delineation Report, dated July 2017, is provided in Appendix D.

4.2.3 Focused Plant Survey

Focused plant surveys were performed on April 12 and May 10, 2017 by LSA botanist Anna Van Zuuk. The surveys were performed by walking meandering transects across the entire BSA, recording all species observed and focusing specifically on special status species that were identified during literature review. The surveys were conducted during the normal blooming periods of all special status plants with potential to occur in the BSA, based on the habitat present. All plant species observed were identified to a sufficient taxonomic level to determine if it was one of the target species.

4.2.4 Focused Wildlife Surveys

Wildlife surveys were performed on April 12 and May 31, 2017 by LSA biologist Dan Williams. The surveys were performed by walking meandering transects across the entire BSA, recording all species observed and noting behaviors and signs which indicated how those species may be using the BSA.

4.2.5 Vernal Pool Invertebrate Surveys

4.2.5.1 Dry Season Surveys

The 2016 dry season surveys of the BSA were conducted by LSA Biologist David Muth (under Federal 10(a)(1)(A) Permits TE-797234 and TE-839213) with assistance from LSA Biologist Laura Belt (Permit TE-797234) in accordance with the USFWS Survey Guidelines for the Listed Large Branchiopods, dated May 31, 2015. Authorization to conduct the surveys was provided by USFWS on August 29, 2016.

A series of 10-milliliter soil aliquots were collected from each of the potential habitat areas in the BSA on October 5, 2016. The number of aliquots varied depending on the size of the feature, but followed the requirements specified in the Survey Guidelines. The soil was dry at the time of collection and stored in plastic zip-lock bags marked to indicate the site of collection.

The collected soil was sieved on October 26, 2016. Samples were processed individually by placing the collected material into 5-gallon buckets filled with 1 to 2 gallons of 5 percent brine solution to resaturate soils. During the approximately 10 to 15 minutes saturation period, the bucket was occasionally stirred to ensure all biological material was released and floated to the surface. In small aliquots, the biological material was poured through a series of four sieves with mesh sizes of 710,

355, 212, and 150 microns. The sieves were stacked with the largest mesh size at the top and the smallest mesh size on the bottom. Material was washed through the set with water. Particles trapped in the three smallest sieve sizes were saved for analysis by washing them onto blotter paper to dry.

The sieved material was examined on October 30 and November 16, 2016, by David Muth, using a 10 to 40-power Olympus stereo-optic scope. A reference cyst collection was available, if needed for comparison of any cysts found in the samples. Soil material is currently being stored with LSA until final deposition can be arranged.

4.2.5.2 Wet Season Surveys

On November 1, 2016, following multiple storm events, LSA conducted a reconnaissance site visit and determined potential aquatic features within the BSA were sufficiently inundated to begin protocol wet season surveys. Per the 2015 Survey Guidelines, appropriate habitat is considered to be inundated when it holds greater than 3 centimeters, or 1 inch, of standing water 24 hours after a rain event.

A total of 12 wet season vernal pool invertebrate surveys were performed by LSA biologists Laura Belt, Jeremy Foreman, Julie McNamara, and David Muth between November 11, 2016 and April 10, 2017 in potentially suitable aquatic features within the BSA (refer to Table A for specific dates).

Sampling procedures for vernal pool crustaceans consisted of two parts. The first was a visual examination of the water body to see individuals swimming in the water column and to search for shed tadpole shrimp carapace. Following visual inspection, a hand held net was pulled through the water to capture animals. The net was drawn through each sample site by holding the net mouth just above the pool bottom and walking through the sample site, moving the net through the water. The net was occasionally bumped along the pool bottom to stir up any benthic organisms. The net was periodically removed from the water and checked for presence of aquatic species. Sampling continued until the net was pulled through a sufficient portion of the water body to capture vernal pool crustaceans or to satisfy the field researcher that these species were absent.

In addition to the BSA, LSA also surveyed a seasonally inundated feature on the Triangle Rock Vernal Pool Preserve, located west and adjacent to the BSA, which is known to support vernal pool fairy shrimp and vernal pool tadpole shrimp. Surveys on the Triangle Rock Vernal Pool Preserve provided a reference site. The reference site was surveyed concurrent with the wet season surveys in the BSA, documented above.

Survey reports documenting the dry and wet season surveys are provided in Appendix E.

5.0 ENVIRONMENTAL SETTING

The BSA, totaling approximately 154.82 ac, is currently the site of a commercial compost operation, within rural unincorporated Sacramento County. The northeast portion of the BSA is currently used for compost/manure processing; the majority of the remaining area is vacant except for a few buildings in the central portion of the site near Eagles Nest Road. Adjacent land uses include grazing, aggregate mining, and open space.

5.1 PHYSICAL CONDITIONS

5.1.1 Climate

The climate in the BSA is characterized as Mediterranean with cool, wet winters and hot, dry summers. The average total annual precipitation is approximately 18.15 inches (Western Regional Climate Center, 2017), most of which falls between November and April. There is normally less than 0.5 inch of rain between June and September. The average winter temperature is 48.3 Fahrenheit (ºF) and the average winter low temperature is 40.9 ºF. The average summer temperature is 73.9 ºF and the average summer high temperature is 89.4 ºF.

5.1.2 Topography

The BSA lies at an elevation of about 120 feet above mean sea level. Topography of the site is gentle, sloping primarily north to south-southwest except for the western portion of the BSA that flows to the southwest. The entire BSA has been leveled to facilitate flood irrigation.

5.1.3 Hydrology

Historic aerial photos (the earliest of which is from 1937) indicate the predominant flow pattern in the BSA from northwest southeast, except for the southwest part of the BSA with trends to the west. Subsequent photos (1947, 1957, and 1964) show an increase in agricultural use and associated irrigation. During this time period, irrigation runoff and still appeared to flow southeast out of the BSA, joining Laguna Creek. Current conditions (1971 to present) continue to maintain the general southeast flow patter but a large ditch has been constructed to provide water for the compost operation and the ditch has been designed to flow north. Florin Road has also been constructed and blocks historical southeast flows into Laguna Creek, creating a large seasonal wetland in the southeast corner of the BSA. Water from this wetland flows into Laguna Creek only during large storm events. Laguna Creek joins Morrison Creek approximately 20 miles west, then flows southwest for approximately 3 miles into the Sacramento River.

5.1.4 Soils

The following soil types are mapped within the BSA, shown in Figure 4 (NRCS Soil Survey Sacramento County, California):

- Durixeralfs, 0 to 1 percent slopes
- Fiddyment fine sandy loam, 1 to 8 percent slopes

- San Joaquin silt loam, leveled, 0 to 1 percent slopes
- San Joaquin silt loam, 0 to 3 percent slopes
- Xerarents-San Joaquin complex, 0 to 1 percent slopes

All soil types in the review area with the exception of the Fiddyment fine sandy loam soils are considered hydric soils (NRCS Soil Survey Sacramento County, California).

5.1.4.1 Durixeralfs, 0 to 1 percent slopes

Durixeralfs are a great group of soils in the Alfisols order and the Xeralfs suborder and consist of well-drained soils formed in material derived from granitic rock sources. These soils are found on low terraces. The mean annual precipitation is about 15 inches and the mean annual temperature is about 62ºF.

5.1.4.2 Fiddyment fine sandy loam, 1 to 8 percent slopes

The Fiddyment-series soil consists of moderately deep, well-drained soils formed in material weathered from consolidated sediments of mixed rock sources. These soils are on nearly level to rolling low terraces and hills. The mean annual precipitation is about 19 inches and mean annual temperature is about 61ºF. Soil temperature ranges from 62 to 67ºF. Soil between 8 and 21 inches is moist in all parts from December through April and is dry in all parts from June through mid-October in most years.

5.1.4.3 San Joaquin silt loam

The San Joaquin-series soils consist of moderately deep to a duripan (depth ranges from 20 to 40 inches), well and moderately well drained soils formed in alluvium derived from mixed but predominantly granitic rock sources. They are on undulating low terraces; some areas have been leveled. The mean annual precipitation is about 15 inches and the mean annual temperature is about 61ºF. Soil temperature ranges from 60 to 64ºF. Soil at depths of about 7 to 24 inches or directly above the duripan is dry in all parts from June to November and is moist in some or all parts the rest of the year. Permeability is very slow, so some areas are subject to rare or occasional flooding.

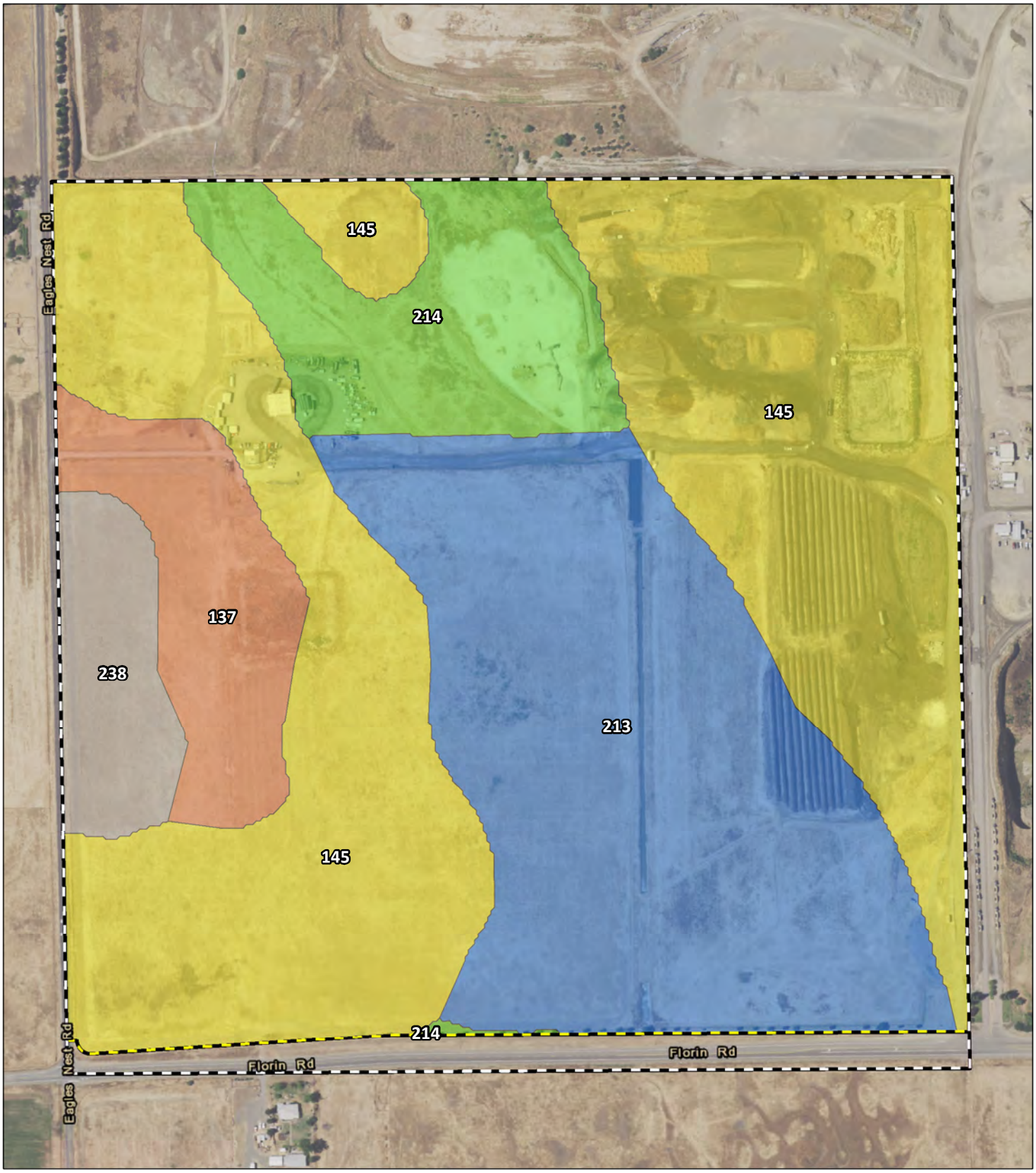
5.1.4.4 Xeraents-San Joaquin complex, 0 to 1 percent slopes

Xerarents-San Joaquin Complex soils consist of well and moderately well drained soils formed in alluvium derived from granitic rock sources. These soils are found on low terraces in floodplains and basin floors. The mean annual precipitation is about 17 inches and the mean annual temperature is about 62ºF.

5.2 BIOLOGICAL CONDITIONS

5.2.1 Vegetation Communities and Land Uses

Natural habitats comprise approximately 111.86 acres of the BSA and include non-native grasslands, seasonal wetland, and open water communities. The remaining 42.96 acres are devoted to developed land uses (Figure 5).



LSA

LEGEND

Carli Property - (160.98 ac)

Biological Study Area - (154.82 ac)

NRCS Soil Classification

137 - Durixeralfs, 0 to 1 percent slopes

145 - Fiddyment fine sandy loam, 1 to 8 percent slopes

213 - San Joaquin silt loam, leveled, 0 to 1 percent slopes

214 - San Joaquin silt loam, 0 to 3 percent slopes

238 - Xerarents-San Joaquin complex, 0 to 3 percent slopes

N

0 200 400

FEET

FIGURE 4

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

NRCS Soil Classifications

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - NRCS Soil Survey Sacramento County (1993)

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5.2.1.1 Non-Native Grasslands

Non-native grasslands are the most common vegetation community in the BSA. As a result of the decades of flood irrigation practices, this community is dominated by Italian ryegrass (*Festuca perennis*); however, wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), and foxtail barley (*Hordeum murinum*) are also present, with many other grasses and herbs present in smaller numbers. Small areas of ruderal vegetation and barren disturbed areas are included in this category. Portions of the non-native grasslands community are mowed and/or disked annually for fire protection.

5.2.1.2 Seasonal Wetlands

Seasonal wetlands occur in several locations within the review area. The seasonal wetlands are dominated by Italian ryegrass, rabbitsfoot grass (*Polypogon monspeliensis*), common spikerush (*Eleocharis macrostachya*), and curly dock (*Rumex crispus*) but several other species common in seasonal wetlands were also observed including Mediterranean barley (*Hordeum marinum*), low manna grass (*Glyceria declinata*), and vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus*).

5.2.1.3 Open Water

Aquatic open water features within the review area include a ponded ditch bisecting the southern half of the property and a retention basin in the northeast corner of property. Both features are man-made and typically inundated to support the composting operation. Based on minimal vegetation present, these areas are mapped as open water.

5.2.1.4 Developed Areas

Developed areas include the office complex, compost piles, entrance station, and gravel roads.

5.2.2 Wildlife Use

Wildlife use of the BSA is relatively low due to the current compost operation on the site and the historical irrigation practices that have resulted in land-leveling and an Italian ryegrass-dominated grassland. However, a variety of species are known to occur in disturbed areas. Common wildlife species that may be observed include, but are not limited to, California ground squirrels (*Otospermophilus beecheyi*), coyote (*Canis latrans*), American crow (*Corvus brachyrhynchos*), California horned lark (*Eremophila alpestris actia*), brewers blackbird (*Euphagus cyanocephalus*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), and red-tailed hawk (*Buteo jamaicensis*).

A comprehensive list of plant and wildlife species observed is provided in Appendix F.

5.2.3 Wildlife Movements

Wildlife movement corridors are linear habitats that function to connect two or more areas of significant wildlife habitat. These corridors may function on a local level as links between small habitat patches (e.g., streams in urban settings) or may provide critical connections between regionally significant habitats (e.g., deer movement corridors). Wildlife corridors typically include vegetation and topography that facilitate the movements of wild animals from one area of suitable



LSA

FIGURE 5

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- Elderberry Shrub

Plant Communities / Land Uses - (154.82 ac)

- Developed - (42.96 ac)
- Nonnative Grassland - (108.12 ac)
- Open Water - (1.25 ac)
- Seasonal Wetland - (2.49 ac)

N

0 200 400
FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Plant Communities / Land Uses

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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habitat to another in order to fulfill foraging, breeding, and territorial needs. These corridors often provide cover and protection from predators that may be lacking in surrounding habitats. Wildlife corridors generally include riparian zones and similar linear expanses of contiguous habitat.

There are no significant migration corridors that exist within the BSA. Laguna Creek, which meanders generally from northeast to southwest through the original mining, is the best example of a migration corridor near the BSA.

5.2.4 Aquatic Resources

Aquatic features within the BSA, consisting of both wetlands and non-wetland waters and totaling 3.857 acres, are comprised of seasonal wetlands an inundated ditch that extends through the center of the BSA, several ephemeral ditches, and a retention basin in the northeast corner. Of the total acreage, 2.698 acres were determined to meet ACOE criteria for wetlands, and 1.159 acres were determined to be non-wetland waters. This information is summarized below in Table B and shown in Figure 6. The Approved Jurisdictional Delineation Report can be found in Appendix D.

Table B: Summary of Aquatic Resources in the BSA (acres)

Type	Total
Wetlands	
Seasonal Wetlands	1.589
Ephemeral Drainage	0.049
Adjacent Wetlands	0.126
Ponded Ditch	0.858
Isolated Wetland	0.076
Wetlands Subtotal	**2.698**
Non-Wetland Waters	
Ephemeral Drainage	0.102
Retention Basin	1.057
Non-Wetland Waters Subtotal	**1.159**
Total	**3.857**

5.2.4.1 Seasonal Wetlands

A large seasonal wetland is located in the southeast corner of the BSA and other, smaller seasonal wetlands, are located throughout the BSA. The large seasonal wetland in the southeast corner conveys flows into Laguna Creek; several of the other seasonal wetlands appear to be isolated and or flow to the north. Section 5.2.1.2 describes the vegetation in the seasonal wetlands.

5.2.4.2 Ponded Ditch

The ponded ditch was excavated in uplands and designed to flow north. Water is artificially pumped into the ditch from a well and is used in compost operations for dust control. A section of the ponded ditch was recently filled and separated an approximately 200-foot long section of the ditch at the south end of the BSA from the majority of the ditch to the north.

5.2.4.3 Ephemeral Drainages

Three ephemeral drainages are present within the BSA. Two of the drainages convey flows south of the BSA. The remaining drainage, located in the north-central portion of the BSA, drains north into a large mining pit on the original mining site.

5.2.4.4 Retention Basin

The retention basin is an isolated aquatic feature that is not connected to other waters within or adjacent to the BSA. Additionally, this feature is man-made and has been created by placing elevated basin walls; no excavation below ground level occurred. This feature is not considered waters of the U.S., and would not be regulated under Section 404 of the CWA.

5.2.5 Invasive Species

Many non-native species have been part of the California landscape for the past 150 years and are considered naturalized in the wild. Some examples of these introduced species observed during surveys include wild oats, black mustard (*Brassica nigra*), ripgut brome, Italian ryegrass, and foxtail barley, among others. These species are primarily annual or biennial and considered to be moderately invasive at worst. Several species of concern were observed in the BSA during surveys, including yellow star thistle (*Centaurea solstitalis*), medusa head (*Elymus caput-medusae*), and perennial pepperweed (*Lepidium latifolium*). These species have an invasive rating of 'High' per the California Invasive Plant Council Invasive Plant Inventory Online Database (http://www.cal-ipc.org/paf/).

5.2.6 Species of Concern

Table C provides a list of special status species that could potentially occur in the region, and therefore in the BSA; this list was compiled as described in Section 4.1. A review was conducted of the specific habitat required by each species listed in Table C, and the specific habitats and habitat conditions present in the BSA. Based on this evaluation, it was determined whether the species listed in Table C had potential to occur in the BSA. Special status species that were observed, or determine to potentially occur in the BSA based on availability of suitable habitat of other factors such as scat, nests, dents, etc. are discussed more fully in Section 6 of this report. Species determined unlikely to occur in the BSA based on these same factors are documented accordingly in the table and not discussed any further.

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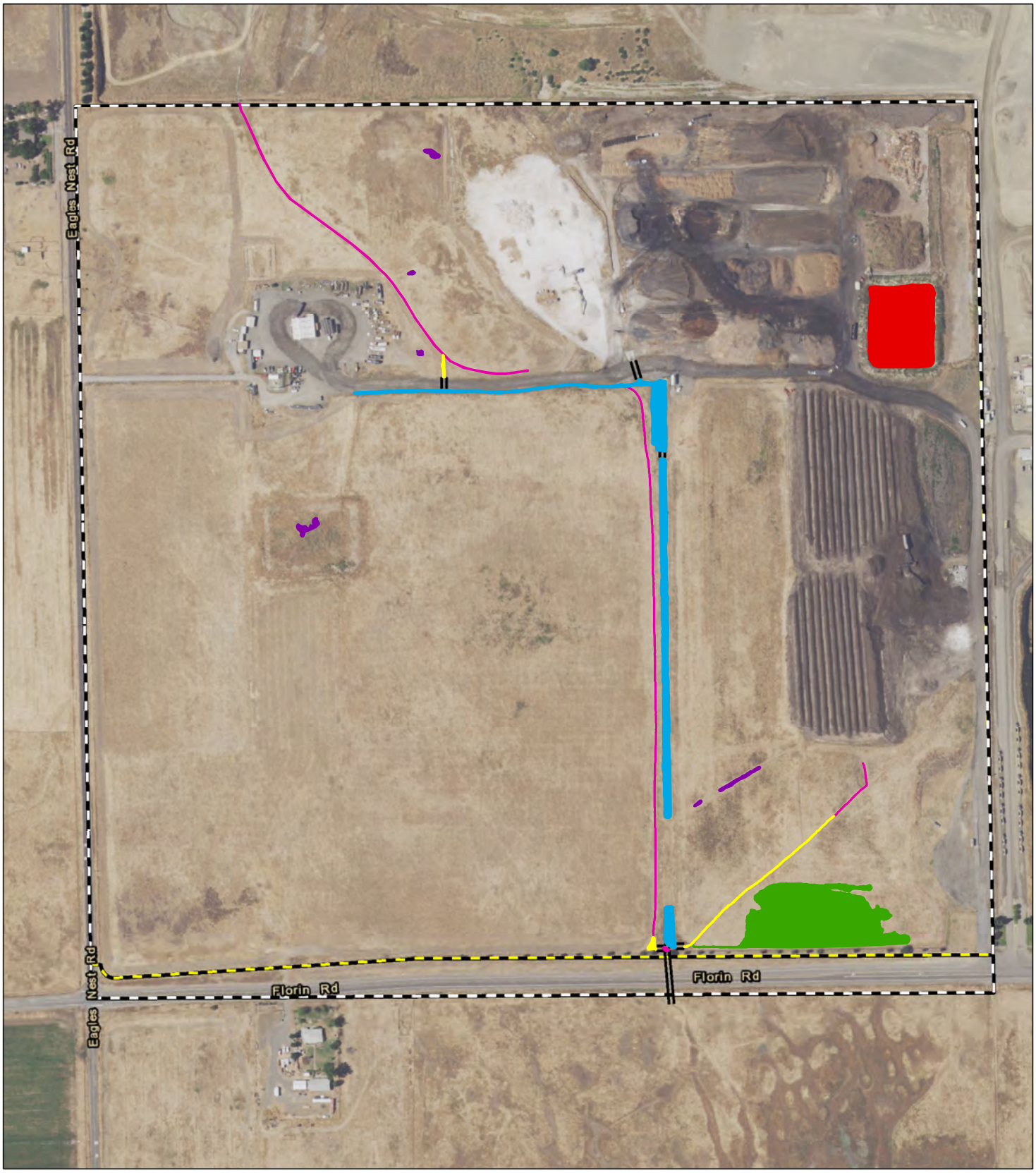

LSA

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- Culverts

Non-Wetland Waters

- Ephemeral Drainage
- Retention Basin

Wetlands

- Ephemeral Drainage
- Isolated Depression
- Ponded Ditch
- Seasonal Wetland

0 200 400
FEET

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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FIGURE 6

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Aquatic Resources

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Table C: Special Status Species Potentially Occurring Within the BSA

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
Plants					
Brasenia schreberi	watershield	List 2	Both natural and artificial water bodies (98-7,218 feet). Blooms June through September.	Absent	Suitable habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from Stone Lakes NWR over 15 miles from the BSA.
Carex comosa	bristly sedge	List 2	Lake margins and other wet places (-16-5,315 feet). Blooms May through September.	Absent	No suitable habitat present. There are no lake margins or comparable areas in the BSA. The nearest CNDDB occurrence is from Stone Lakes NWR over 15 miles from the BSA.
Centromadia parryi ssp. *rudis*	pappose tarweed	List 4	Grasslands, edges of marshes and vernal pools, disturbed sites (0–1,640 feet). Blooms May through October.	Absent	Suitable habitat present, but species not observed within BSA during focused plant surveys. There are no CNDDB occurrences from the 9-quad search area around the BSA.
Cicuta maculata var. *bolanderi*	Bolander's water hemlock	List 2	Fresh and brackish marshes (0-656 feet). Blooms July through September.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Delta Meadows River Park over 20 miles from the BSA.
Cuscuta obtusiflora var. *glandulosa*	Peruvian dodder	List 2	Fresh marshes (50-920 feet). Blooms July through October.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Elk Grove over 10 miles from the Carli Property.
Downingia pusilla	dwarf downingia	List 2	Vernal pools, freshwater wetlands, valley grasslands and riparian areas (0 – 1,082 feet). Blooms March through May.	Absent	Marginally suitable habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from Elk Grove area approximately 6.5

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
					miles southwest of the BSA.
Gratiola heterosepala	Boggs Lake hedge-hyssop	SE, List 1B	Vernal pools, marshes, and lake margins (13-7,900 feet). Blooms April through August.	Absent	Marginally suitable habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from between Grant Line Road and Sloughhouse Road, less than 2 miles east southeast of the Carli Property.
Hesperevax caulescens	hogwallow starfish	List 4	Vernal pools (0-1,600 feet). Blooms March through June.	Absent	Marginally suitable habitat present, but species not observed within BSA during focused plant surveys. No CNDDB occurrences from the 9-quad search area around the BSA.
Hibiscus lasiocarpos var. *occidentalis*	wooly rose-mallow	List 1B	Moist, freshwater-soaked river banks & low peat islands in sloughs; can also occur on riprap and levees (0-500 feet). Blooms June through September.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Stone Lakes NWR over 13 miles from the BSA.
Juglans hindsii	Northern California black walnut	List 1B	Riparian woodland (0-2,100 feet). Blooms April through May.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Freeport along the Sacramento River over 13 miles from the BSA.
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	List 1B	Vernal pools (100-330 feet). Blooms March through May.	Absent	Marginally suitable habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from an area near Mather Regional Park, less than 2 miles north northeast of the BSA.
Lathyrus jepsonii var. *jepsonii*	delta tule pea	List 1B	Marsh and slough edges (0-16 feet). Blooms May through July.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from near the Cosumnes River over 19 miles from

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
					the BSA.
Legenere limosa	legenere	List 1B	Vernal pools (3-2,887 feet). Blooms April through June.	Absent	Marginally suitable habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from an area near Sunrise Boulevard and Jackson Highway, less than 1 mile northeast of the BSA.
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	List 1B	Valley and foothill grasslands and vernal pools (3-100 feet). Blooms March through May.	Absent	Marginally suitable habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from Stone Lakes NWR over 15 miles from the BSA.
Lilaeopsis masonii	Mason's lilaeopsis	List 1B	Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion (0-33 feet). Blooms April through November.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Delta Meadows River Park over 20 miles from the BSA.
Limosella australis	delta mudwort	List 2	Riparian scrub, marshes and swamps (0-16 feet). Blooms in April.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Delta Meadows River Park over 20 miles from the BSA.
Navarretia eriocephala	hoary navarretia	List 4	Heavy soil of seasonally wet flats (0-1,312 feet). Blooms April through May.	Absent	Potential habitat present, but species not observed within BSA during focused plant surveys. There are no CNDDB occurrences from the 9-quad search area around the BSA.
Orcuttia tenuis	slender Orcutt grass	FT, SE, List 1B	Vernal pools moderate to deep, with few weedy plants (82-5,758 feet). Blooms May through September.	Absent	No suitable habitat present; no moderately deep vernal pools occur in the BSA. The nearest CNDDB occurrence is from an area near

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
					Laguna Creek, just over 2 miles southwest of the BSA.
Orcuttia viscida	Sacramento Orcutt grass	FE, SE, List 1B	Vernal pools moderate to deep, with few weedy plants (50-280 feet). Endemic to Sacramento County. Blooms April through July.	Absent	No suitable habitat present; no moderately deep vernal pools occur in the BSA. The nearest CNDDB occurrence is from an area near Excelsior Road and Florin Road, less than 2 miles west of the BSA.
Sagittaria sanfordii	Sanford's arrowhead	List 1B	Standing or slow-moving freshwater ponds, marshes, and ditches (0-1,985 feet). Blooms May through October.	Absent	Suitable habitat present in the ponded ditch. However, this species was not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from Sunrise Boulevard and Grant Line Road, less than 1 mile southeast of the BSA. This species is known to occur in Laguna Creek on the original mine site approximately 600 feet east of the BSA.
Scutellaria galericulata	marsh skullcap	List 2	Marshes, lower montane coniferous forests, meadows and seeps. (0-6,400 feet). Blooms June through September.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Delta Meadows River Park over 20 miles from the BSA.
Scutellaria lateriflora	side-flowering skullcap	List 2	Wet meadows and marshes. (0-1,640 feet). Blooms July through September.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrence is from Delta Meadows River Park over 20 miles from the BSA.
Trifolium hydrophilum	saline clover	List 1B	Marshes and swamps, valley and foothill grassland, and vernal pools. (3-1,100 feet). Blooms April through June.	Absent	Potential habitat present, but species not observed within BSA during focused plant surveys. The nearest CNDDB occurrence is from Stone

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
					Lakes National Wildlife Refuge over 13 miles from the BSA.
Invertebrates					
Andrena blennospematis	Blennosperma vernal pool andrenid bee	CA SA	Endemic to vernal pools and solely reliant on the host plant species (butter and eggs).	Absent	Host plant not identified within BSA during focused plant surveys. The nearest CNDDB occurrence is from between Sloughhouse and Rancho Murrieta approximately 6.25 miles east of the BSA.
Branchinecta conservatio	conservancy fairy shrimp	FE	Turbid playa pools in grasslands of the Central Valley. Requires a cool, stable temperature regime. Generally found in larger, deeper pools that remain inundated for 3-4 months.	Absent	Marginally suitable habitat is present, however focused surveys for vernal pool invertebrates in the BSA during the 2016-17 wet season yielded negative results. See discussion is Section 6.2.1
Branchinecta lynchi	vernal pool fairy shrimp	FT	Endemic to the grasslands of the Central Valley, Central Coast Mountains and South Coast Mountains. Typically associated with small, shallow vernal pools with relatively short periods of inundation. Found in larger pools in southern extent of range.	Absent	Marginally suitable habitat is present, however focused surveys for vernal pool invertebrates in the BSA during the 2016-17 wet season yielded negative results. See discussion is Section 6.2.1
Branchinecta mesovallensis	midvalley fairy shrimp	CA SA	Endemic to a small portion of California's Central Valley in small, short-lived vernal pools and grass-bottomed swales ranging from 4 to 663 square feet.	Absent	Marginally suitable habitat is present, however focused surveys for vernal pool invertebrates in the BSA during the 2016-17 wet season yielded negative results. See discussion is Section 6.2.1
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* ssp. *caerulea*). Prefers branches greater than 1 inch in diameter.	Low	There are two elderberry shrubs within the BSA, but they are beyond 1,000 meters from the nearest riparian habitat, and when examined during surveys did not have beetle

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
					exit holes. The nearest CNDDB occurrence is from Sloughhouse area approximately 2.5 miles east southeast of the BSA. See discussion is Section 6.2.2
Dumontia oregonensis	hairy water flea	CA SA	Vernal pools.	Absent	Marginally suitable habitat present, but species not observed within BSA during surveys. Mather Field 1.5 mile north of the BSA is one of only 2 known sites for the species.
Hydrochara rickseckeri	Ricksecker's water scavenger beetle	CA SA	Wetlands.	Absent	Potential habitat present, but species not observed within BSA during surveys. The nearest CNDDB occurrence is from Mather Field approximately 2.25 miles north of the BSA.
Lepidurus packardi	vernal pool tadpole shrimp	FE	Found in a variety of natural, and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities. Within the Sacramento Valley.	Absent	Marginally suitable habitat is present, however focused surveys for vernal pool invertebrates in the BSA during the 2016-17 wet season yielded negative results.
Linderiella occidentalis	California linderiella	CA SA	Occurs in seasonal pools (e.g., vernal pools) in unplowed grasslands with old alluvial soils underlain by hardpan or heavy clay or in sandstone depressions. Tolerant of wide temperature range and pool size.	Absent	Marginally suitable habitat is present, however focused surveys for vernal pool invertebrates in the BSA during the 2016-17 wet season yielded negative results.
Fish					
Hypomesus transpacificus	delta smelt	FT	With the exception of spawning season, delta smelt generally inhabits the freshwater-saltwater mixing zone of an	Absent	The BSA is not within the known range of this species, and there is no suitable habitat present. There are

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
			estuary. Spawning occurs in river channels upstream from the mixing zone.		no CNDDB occurrences from the 9-quad search area around the BSA.
Onchorhynchus mykiss irideus	steelhead – Central Valley DPS	FT	Populations occur and spawn in the Sacramento and San Joaquin rivers and their tributaries.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrences are confined to the anadromous waters of the Cosumnes, American and Sacramento Rivers.
Pogonichthys macrolepidotus	Sacramento splittail	SSC	Largely confined to the Delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, and other parts of the Sacramento-San Joaquin estuary. Occurs in slow moving river sections and dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrences are confined to the anadromous waters of the Cosumnes, American and Sacramento Rivers.
Spirinchus thaleichthys	longfin smelt	FC, ST, SSC	Coastal waters near shore, bays, estuaries, and rivers, and landlocked in some lakes. In estuaries usually found in middle or bottom of water column. Prefers salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	Absent	No suitable habitat present within the BSA. The nearest CNDDB occurrences are confined to the anadromous waters of the Cosumnes, American and Sacramento Rivers.
Amphibians and Reptiles					
Emys marmorata	Pacific pond turtle	SSC	Occurs in permanent or nearly permanent water sources, ponds, marshes, rivers, streams and irrigation ditches with emergent vegetation and basking sites. Lay eggs in upland habitat consisting of sandy banks or grassy, open fields.	Low	Potential habitat present, but species not observed within BSA during surveys. The nearest CNDDB occurrence is from Mather Lake approximately 3.5 miles north of the BSA. See discussion is Section 6.2.3.
Ambystoma californiense	California tiger salamander	FT, ST	Most commonly found in annual grassland habitat, but also occurs in grassy understory of valley-foothill	Absent	No suitable habitat present. While there are seasonal aquatic features in the BSA that could be considered

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
			hardwood habitats, and uncommonly along stream courses in valley-foothill riparian habitats. Requires vernal pools or other seasonal water bodies for breeding. Needs underground refuges, especially ground squirrel burrows.		suitable for breeding, the features do not remain inundated for a sufficient duration to allow the species to complete its life cycle. Additionally, upland refugia is also quite limited, with few California ground squirrels present within the BSA. The nearest CNDDB occurrence is from near Wilton over 11 miles southeast of the BSA.
Rana draytonii	California red-legged frog	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Absent	The BSA is not within the known range of this species, and American bullfrogs are known present in the BSA which severely limits the chances for this species to occur there. There are no CNDDB occurrences for this species from the 9-quad search area around the BSA.
Spea hammondii	western spadefoot	SSC	Occurs primarily in grassland habitats but also found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Absent	Marginally suitable habitat present, but species not observed within BSA during wet season surveys for vernal pool invertebrates or during other surveys. The nearest CNDDB occurrences are from vernal pools just east of Sunrise Boulevard and north of Jackson Highway approximately 0.5 mile east northeast of the BSA.
Thamnophis gigas	giant garter snake	FT, ST	Streams and sloughs, usually with mud bottom. One of the most aquatic of garter snakes; usually in areas of freshwater marsh and low-gradient streams with emergent vegetation, also	Low	No suitable habitat present within the BSA. The nearest CNDDB occurrences are from Elk Grove approximately 9 miles southwest of the BSA.

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
			drainage canals, irrigation ditches, ponds, and small lakes.		
Birds					
Accipiter cooperii	Cooper's hawk	SSC	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms or river flood-plains; also live oaks.	Absent	Observed flying through the BSA, however, no suitable habitat is present. No further discussion.
Agelaius tricolor	tricolored blackbird	SC, SSC	Nests in freshwater marshes with tules or cattails, or in other dense vegetation such as thistle, blackberry thickets, etc. in close proximity to open water. Forages in a variety of habitats including pastures, agricultural fields, rice fields, and feedlots within a mile or two of nesting area.	Present	Thousands of individuals observed feeding within the BSA and staging observed in milk thistle patches near perimeter of BSA. See discussion in Section 6.2.5.
Aquila chrysaetos	golden eagle	SFP, SWL	Cliff walled canyons for nesting, mountains and foothill and valley grasslands for foraging.	Low (foraging, seasonal)	Suitable foraging habitat present, though this species was not observed during surveys. The nearest CNDDB occurrence from Jackson Highway and Excelsior Road approximately 2.25 miles northwest of BSA. This species likely occurs in the BSA as a migrant or winter resident, but no nesting habitat present. No further discussion.
Ardea alba	great egret	CA SA (nesting)	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Present (foraging only)	Observed foraging within the BSA, However, no rookery trees present. No further discussion.
Ardea herodias	great blue heron	CA SA (nesting)	Colonial nester in large trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Present (foraging only)	Observed foraging within the BSA, However, no rookery trees present. No further discussion.
Athene	Western	SSC	Burrow sites in open, dry, annual or	Low	While somewhat suitable habitat is

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
cunicularia	burrowing owl		perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.		present within the BSA, there are few California ground squirrel burrows present within the BSA to provide enough suitable nesting sites. Neither owls nor sign observed within BSA during surveys. The nearest CNDDB occurrence is from an area near Laguna Creek, just over 2 miles southwest of the BSA. See discussion in Section 6.2.6.
Buteo regalis	ferruginous hawk	SWL	Winters in open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon-juniper habitats. Mostly eats lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Present (foraging, seasonal)	Observed foraging within the BSA in April (late wintering or migrant individual). The BSA is not within the breeding range of the species. No further discussion.
Buteo swainsoni	Swainson's hawk	ST	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannahs. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Present	Nest observed in a willow along Laguna Creek within originally mining site approximately 600 feet east of the BSA. Adults were observed foraging over the BSA on multiple occasions. See discussion in Section 6.2.7.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT, SE	Nests in riparian systems along the broad lower flood-bottoms of larger river systems; requires dense riparian vegetation.	Absent	No suitable habitat is present within the BSA. The nearest CNDDB occurrences from the American River Parkway approximately 6 miles northwest of the BSA.
Elanus leucurus	white-tailed kite	SFP	Nests on rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodlands. Found in open grasslands, meadows, or marshes for	Present	Species observed foraging within the BSA. Suitable nesting habitat is present within 500 feet of the BSA. See discussion in Section 6.2.8.

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
			foraging close to isolated, dense-topped trees for nesting and perching.		
Falco columbarius	merlin	SWL (Wintering)	An uncommon winter migrant that requires dense tree stands close to bodies of water. Can be found in wetlands, lakeshores, coastlines, open grasslands, savannahs, and woodlands.	Low (foraging, seasonal)	Probably occurs as a migrant or wintering resident within the BSA. the BSA is not within the breeding range of the species. No further discussion.
Falco peregrinus	peregrine falcon	SFP	Nests on cliffs, but also human-made structures such as buildings, bridges, and electrical towers.	Low (foraging, seasonal)	Probably occurs as a migrant or wintering resident within the BSA, but very unlikely to nest within the BSA. There are no CNDDB occurrences from the 9-quad search area around the BSA. No further discussion.
Haliaeetus leucocephalus	bald eagle	SFP	Requires large bodies of water; occurs near ocean shore, lakes, reservoirs, and rivers. Usually nests within 1 mile of water, in large, dominant trees with open branches	Absent	No suitable habitat present. No lakes or large waterbodies present in the vicinity. The nearest nesting record is at Lake Natoma approximately 10 miles north northeast of the BSA.
Lanius ludovicianus	loggerhead shrike	SSC	Shrublands and open woodlands with grasslands for foraging and barbwire fences or thorny vegetation for impaling prey.	Low	Suitable habitat occurs within the BSA, but species not observed during surveys. There are no CNDDB occurrences from the 9-quad search area around the BSA. See discussion in Section 6.2.9.
Melospiza melodia	song sparrow ("Modesto" population)	SSC	Occurs in the northern Central Valley, high populations near the Butte sink area and Sacramento-San Joaquin river delta. Found frequently along riparian corridors, particularly the Stanislaus and Cosumnes Rivers. Sometimes observed near vegetated irrigation canals and levees. In the winter, this species may be found far	Absent	Suitable habitat is not present in the BSA; The nearest CNDDB occurrences from the American River Parkway approximately 6 miles northwest of the BSA.

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
			from water, in open habitats with shrubs or tall herbs.		
Nycticorax nycticorax	black-crowned night-heron	CA SA (nesting)	Colonies usually in trees, occasionally in tule patches. Forage on lake margins, mud-bordered bays, and marshes.	Low (foraging)	One individual observed flying over the BSA during April survey. Likely forages within the BSA occasionally but no suitable nesting habitat is present. No further discussion.
Phalacrocorax auritus	double-crested cormorant	SWL (nesting)	Colonial nester in trees, on ground, or on cliffs near ponds, lakes, rivers, lagoons, estuaries, and along open coastlines.	Low (foraging)	One individual observed flying over the BSA during April survey. Likely forages within the BSA occasionally but no suitable nesting habitat is present. No further discussion.
Progne subis	purple martin	SSC	Colonies nest in large coniferous tree cavities at elevation, but in the Central Valley, they nest locally in man-made structures such as weep holes of freeway overpasses.	Low (foraging)	Migrants or individuals dispersing from breeding colonies may forage over the BSA occasionally; suitable nesting habitat is not present within the BSA. The nearest CNDDB occurrence is from East Sacramento under Highway 50 approximately 9 miles northwest of the BSA. No further discussion.
Riparia riparia	bank swallow	ST	Open and partly open situations, frequently near flowing water. Colonial nester in steep sand, dirt, or gravel banks, in burrows dug near the top of the bank, along the edge of inland water or along the coast, or in gravel pits, road embankments, etc.	Low (foraging, seasonal)	Migrants or individuals dispersing from breeding colonies may forage over the BSA occasionally; suitable nesting habitat is not present within the BSA. The nearest CNDDB occurrence is from the American River Parkway approximately 8 miles north of the BSA. No further discussion.
Xanthocephalus xanthocephalus	yellow-headed blackbird	SSC	Nests typically in colonies in marshes. Requires cattails, bulrushes, and reeds in water, usually 3 feet above the water's	Present (foraging)	Several individuals observed foraging within the BSA in mixed flocks with other blackbird species. Suitable

Scientific Name	Common Name	Status	Habitat Requirements	Potential for Occurrence	Comments
			surface.		nesting habitat is present within 500 feet of the BSA (south of Florin Road). See discussion in Section 6.2.10.
Mammals					
Taxidea taxus	American badger	SSC	Occurs throughout California and the United States. Primary habitat requirements seem to be sufficient food and friable soils in relatively open uncultivated ground in grasslands, woodlands, and desert.	Absent	No suitable habitat present and this species was not observed during surveys. Nearest CNDDB occurrence from Jackson Highway and Excelsior Road approximately 2.25 miles northwest of BSA.

Status Codes

Federal

FE: Federally listed; Endangered
FT: Federally listed; Threatened
FPE: Federally Proposed for Listing as Endangered
FPT: Federally Proposed for Listing as Threatened
FC: Federal Candidate
NMFS SC: National Marine Fisheries Service Species of Concern

State

ST: State listed; Threatened
SE: State listed; Endangered
SFP: State Fully Protected
SC: State Candidate
SWL: State Watch List
SSC: California Species of Special Concern

California Native Plant Society (CNPS) designations:

List 1A: Plants presumed extinct in California.
List 1B: Plants rare and endangered in California and throughout their range.
List 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
List 3: Plants about which we need more information; a review list.
List 4: Plants of limited distribution; a watch list

CA SA: Special Animal: General term that refers to taxa that the CNDDB is interested in tracking regardless of legal or protection status: Includes the following categories in addition to those listed above:

- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act Guidelines.
- Taxa that are biologically rare, very restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring.
- Populations in California that may be on the periphery of a taxon's range, but are threatened with extirpation in California.
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.)
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or non-governmental organization (NGO).

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6.0 SPECIAL STATUS SPECIES AND SENSITIVE HABITATS

6.1 SPECIAL STATUS PLANT SPECIES

Of the 23 special status plant species identified in the record searches, potential or suitable habitat is present for 11 species. All target species were surveyed within the normal blooming period during the focused plant surveys on April 12, and May 10, 2017. No special status plants were observed in the BSA during focused plant surveys or any other surveys. As a result, special status plant species are considered absent from the BSA.

The BSA is not located within critical habitat for any special status plants.

6.2 SPECIAL STATUS WILDLIFE SPECIES

Species that require specific habitat not present in the BSA were eliminated as potentially occurring and are not discussed further (with the exception of Vernal Pool Invertebrates). Special status species that were determined to have the potential to occur in the BSA, or otherwise warrant further discussion, are discussed below.

The BSA is not located within critical habitat for any special status wildlife.

6.2.1 Vernal Pool Invertebrates

Vernal pool fairy shrimp (*Branchinecta lynchi* - VPFS), midvalley fairy shrimp (*B. mesovallensis*), vernal pool tadpole shrimp (*Lepidurus packardi* - VPTS), and California linderiella (*Linderiella occidentalis*) are all specials status aquatic invertebrate species that depend on vernal pools or similar seasonal aquatic environments to complete their life cycles. VPFS is a Federal Threatened species and VPTS is a Federal Endangered species; the remaining species are State species of special concern. None of these species are formally listed pursuant to CESA.

There are CNDDB occurrences of VPFS, VPTS, and midvalley fairy shrimp within the 9-quad search area and occurrences of California linderiella from within 1 mile west of the BSA, all from as recently as 2005.

LSA conducted a dry season survey for vernal pool invertebrates as described in Section 4.2.5.1. In addition, a total of 12 wet season vernal pool invertebrate surveys were performed by LSA biologists in the BSA and at an adjacent reference site, as described in Section 4.2.5.2.

No specials status vernal pool invertebrates were observed in the BSA during the wet season surveys nor did the dry season survey yield positive results. However, VPFS, VPTS, and California linderiella were all observed at the Triangle Rock Preserve reference site during the 2016-17 surveys, demonstrating that these species successfully completed their life cycle during the 2016-17 season. Based on these results, special status vernal pool invertebrates are considered to be absent from the BSA.

6.2.2 Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) is a federal threatened species. VELB are dependent on their host plant, black elderberry (*Sambucus nigra*), which is a common component of Central Valley riparian habitats. VELB typically occupy elderberry shrubs with stems that are greater than 1 inch in diameter, and that are part of mature riparian habitat corridors associated with large river systems from the valley floor to 500 feet in elevation.

Two elderberry shrubs with stems greater than 1 inch in diameter occur in the BSA (see Figure 5). These shrubs are not part of a riparian habitat corridor and close examination of the stems revealed no beetle exit holes. The nearest riparian corridor to the BSA is along Laguna Creek, which is over 1,000 feet from the shrubs. There are 13 CNDDB occurrences for VELB within 10 miles of the BSA, the nearest of which is located approximately 2.5 miles east southeast near Sloughhouse Road. VELB is considered is considered to have a low potential to occur in the BSA.

6.2.3 Pacific Pond Turtle

Pacific pond turtle (*Emys marmorata*) is a State species of special concern which ranges from the Central Valley and San Francisco Bay area north through Oregon and parts of Washington into the Vancouver, BC area. This species was long thought conspecific with southern pond turtle (*A. pallida*) which ranges from the San Francisco Bay area south into Baja California, but the two species have recently been split.

This species typically occurs in ponds, marshes, rivers, streams and irrigation ditches with sites for basking and grassy banks or fields adjacent for egg laying. There are six CNDDB records for Pacific pond turtle within 10 miles of the BSA, the closest of which is from Mather Lake approximately 3.5 miles north. The ponded ditch, which flows south to north through the south-central portion of the BSA, provides marginal habitat for the species, but there is poor connectivity between this and more appropriate habitat, and no turtles were observed during the surveys of the BSA. Pacific pond turtle is considered is considered to have a low potential to occur in the BSA.

6.2.4 Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is a State species of special concern which, due to precipitous declines in many parts of its limited range, has been submitted as a candidate for Endangered Species listing on multiple occasions in recent years. This species is closely related to the much more widespread red-winged blackbird (*A. phoeniceus*), but unlike that species which ranges across most of the continent, tricolored blackbirds are a near California endemic, with only a very few breeding in the Pacific Northwest, Nevada, and Baja California.

Tricolored blackbirds breed in colonies in thorny shrubs such as Himalayan blackberry (*Rubus armeniacus*) or California wild rose (*Rosa californica*) adjacent to wetlands and near an abundant source of insects such as pastures or croplands.

Thousands of tricolored blackbirds were observed during all surveys of the BSA, foraging in the compost piles in the northeast portion of the BSA and staging in patches of milk thistle (*Silybum marianum*) on the eastern and northern perimeters of the BSA. The patches of milk thistle that

occur on the site, which varies from year to year based on precipitation and maintenance activities, provide suitable nesting habitat for this species.

6.2.5 Western Burrowing Owl

Western burrowing owl (*Athene cunicularia*) is a State species of special concern which occurs in warm valleys, open grasslands, deserts, and scrublands associated with agriculture and urban areas that support populations of California ground squirrels (*Otospermophilus beecheyi*). Burrowing owls nest below ground, utilizing abandoned burrows of other species, most commonly ground squirrel burrows, and feed on insects and small mammals.

While marginally suitable foraging habitat western burrowing owl is present in the BSA, there are relatively few California ground squirrel burrows present to provide enough suitable nesting sites. Additionally none of the burrows exhibited signs of burrowing owl occupancy when examined during field surveys. The nearest CNDDB occurrence is from an area near Laguna Creek, just over 2 miles southwest of the BSA. However, burrowing owls are migratory and despite the limited burrow habitat present in the BSA could potentially move on to the site prior to the start of mining. Western burrowing owl is considered is considered to have a low potential to occur in the BSA.

6.2.6 Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a State threatened species which breeds as far north as Alaska and Arctic Canada, across the Great Basin, Rocky Mountains, and Great Plains, and in an isolated breeding population from Shasta County south through much of the Central Valley. They are long distance migrants, wintering primarily in South America, returning north to breed. They return to the Central Valley in mid-March and begin migrating south in August. Nests are built in the tops of large trees, primarily those associated with riparian habitats. Home ranges maintained by Swainson's hawks average about 6,800 acres, and they are known to forage up to 10 miles from their nest sites.

Swainson's hawks were observed soaring, foraging, vocalizing, and in courtship displays over the BSA on multiple occasions during site surveys, and an active Swainson's hawk nest was discovered approximately 600 feet east of the BSA in a willow tree along Laguna Creek. There are no trees within the BSA that would be considered suitable for nesting, but the BSA provides suitable foraging habitat, and there are multiple suitable nest trees within 0.5 mile of the BSA.

6.2.7 White-tailed Kite

White-tailed kite (*Elanus leucurus*) is a Fully Protected species in the State of California. Its Pacific population ranges from southwestern Washington south through the Willamette Valley of Oregon and down the entire coast of California and Central Valley to Baja California. Separate populations live in southern Florida and Texas and Louisiana south through Mexico. This raptor species uses trees in open areas for nesting, and open grasslands and marshes for foraging.

At least one white-tailed kite was observed foraging low over the BSA during the field surveys. There are no trees within the BSA that would be considered suitable for nesting, but the BSA provides suitable foraging habitat and there are multiple suitable nest trees within 0.5 mile of the BSA.

6.2.8 Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is a State species of special concern which occurs in shrublands and open woodlands with open grassy areas for foraging and barbwire fences or thorny vegetation for impaling prey. Loggerhead shrikes feed on insects, small mammals, and small birds.

Foraging habitat appropriate for loggerhead shrike is present throughout the BSA, and barbwire fences present around the perimeter of the BSA provide a suitable perch for impaling prey. Suitable nest trees are present along the southern perimeter and immediately adjacent to the BSA. However, no loggerhead shrikes were observed during the field surveys. Additionally, there are no CNDDB occurrences of loggerhead shrike from the 9-quad area but this species is known to occur at Mather Field, along Grant Line Road, and at many other sites with similar habitat composition within a few miles of the BSA. Based on this information, loggerhead shrike is considered to have a low potential to occur in the BSA.

6.2.9 Yellow-headed Blackbird

Yellow-headed blackbird (*Xanthocephalus xanthocephalus*) is also a State species of special concern. It nests across western North America from the Prairie Provinces of Canada east to the Upper Midwest and south to Texas and the Lower Colorado River. Yellow-headed blackbirds breed in colonies in fresh marshes with dense stands of cattails where dragonflies and other aquatic insects are abundant.

Yellow-headed blackbirds were observed mixed in with tricolored, red-winged, and Brewer's blackbirds (*Euphagus cyanocephalus*) as well as great-tailed grackles (*Quiscalus mexicanus*) and brown-headed cowbirds (*Molothrus ater*) foraging in the compost piles in the northeast portion of the BSA during the non-breeding winter months. Yellow-headed blackbirds are known to nest at Mather Lake, 3.5 miles north of the BSA but no suitable nesting habitat is present in the BSA.

6.3 SENSITIVE HABITATS

The BSA includes one community (seasonal wetlands) considered sensitive under CEQA and may be regulated by the ACOE, RWQCB, and/or CDFW if the community is determined to be waters of the U.S. or waters of the State, as described in Section 3.2. Potential permitting requirements for impacts to this community is discussed in Sections 7.2.

7.0 IMPACTS AND MITIGATION

This section provides a discussion of the project impacts to biological resources that may occur with implementation of the proposed mining expansion. For purposes of this section, the impact area consists of the 140-acre Carli Property being mined in two phases, as described in Section 2.2. The determination of impacts is based on the biological resources present, or reasonably likely to be present, in the BSA as described herein.

The proposed mining expansion will result in impacts to vegetation communities and aquatic resources in the BSA, as shown in Figures 7 and 8. Additional discussion of these impacts as they relate to special status species and habitats is provided below.

7.1 SPECIAL STATUS SPECIES AND SENSITIVE HABITATS

7.1.1 Special Status Plants

Based on the negative results of the spring 2017 focused plant surveys, special status plant species are considered absent from the BSA. Therefore, the project not expected result in impacts to special status plant species and no mitigation is proposed.

7.1.2 Special Status Wildlife

The proposed mining expansion will potentially result in impacts to special status wildlife that occur or likely to occur within the BSA.

7.1.2.1 Valley Elderberry Longhorn Beetle

Impact Evaluation

Two elderberry shrubs with stems greater than 1 inch in diameter will be removed as a result of mining operations.

Mitigation

No beetle exit holes were observed in the shrub stems during the surveys, and the shrubs are located over 2,800 feet from riparian habitat and more than 2 miles from the nearest CNDDB occurrence of VELB. Based on the USFWS guidelines for assessing impacts to VELB (Framework 2017), no mitigation is proposed for removal of these elderberry shrubs.

7.1.2.2 Pacific Pond Turtle

Impact Evaluation

Mining activities could directly affect Pacific pond turtle if this species is present when mining begins. The project will result in permanent impacts to the ponded ditch feature in the center of the BSA, totaling 0.751 acre, which is suitable aquatic habitat for this species.

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LSA

FIGURE 7

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- Elderberry Shrub
- Impact Area (141.22)

Impacts to Plant Communities / Land Uses - (141.22 ac)

- Developed - (41.45 ac)
- Nonnative Grassland - (97.88 ac)
- Open Water - (1.25 ac)
- Seasonal Wetland - (0.64 ac)

0 200 400
FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Impacts to Plant Communities / Land Uses

SOURCE: Basemap - NAIP Aerial Imagery (06/2016); Mapping - LSA (2017)

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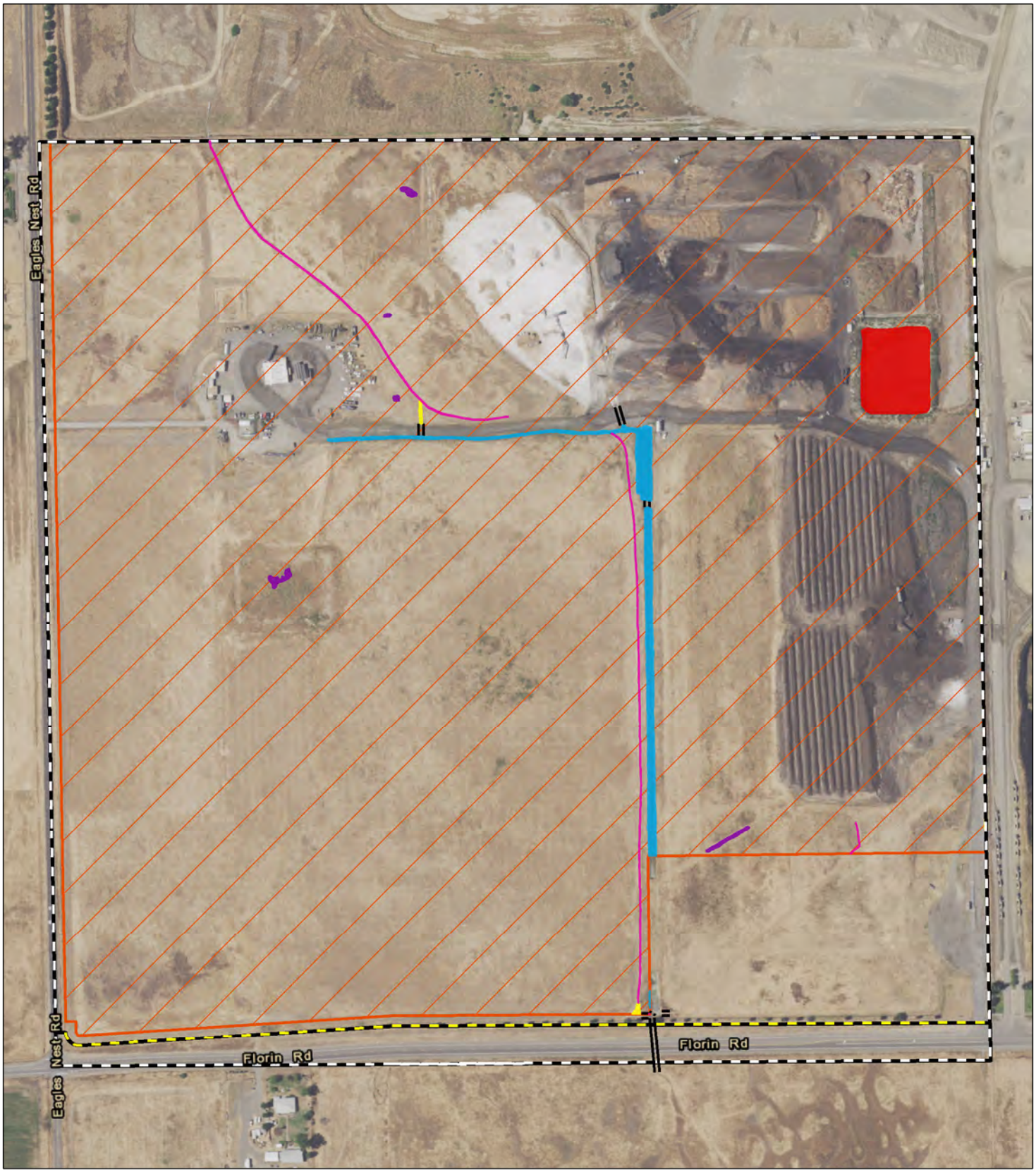

LSA

FIGURE 8

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- Culverts
- Impact Area (141.22)

Impacts to Non-Wetland Features

- Ephemeral Drainage (0.097 ac)
- Retention Basin (1.057 ac)

Impacts to Wetland Features

- Ephemeral Drainage (0.018 ac)
- Isolated Depression (0.073 ac)
- Ponded Ditch (0.751 ac)

N

0 200 400
FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Impacts to Aquatic Resources

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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Mitigation

The measures listed below shall be implemented to mitigate potential impacts to Pacific pond turtle.

1. Prior to the start of the phase of mining that will affect the ponded ditch, a preconstruction survey for Pacific pond turtle shall be performed by a qualified biologist to ensure that no individuals of this species are harmed during project construction. If a Pacific pond turtle is observed in the construction work area it will be relocated to a suitable location by a qualified biologist.

2. Due the abundance of suitable aquatic habitat for Pacific pond turtle in the region, no mitigation is proposed for the loss of 0.751 acre of aquatic habitat.

7.1.2.3 Tricolored Blackbird

Impact Evaluation

Mining activities could directly affect tricolored blackbird if this species is nesting when mining begins. The mining project will also result in permanent impacts to 97.88 acres of nonnative grassland which is suitable foraging habitat for this species. Since the presence of milk thistle patches varies on the site from year to year, loss of this vegetation is not considered an impact to tricolored blackbird.

Mitigation

The measures listed below shall be implemented to mitigate potential impacts to tricolored blackbird.

1. If mining activities begin between February 1 and August 31, a preconstruction survey for nesting tricolored blackbirds shall be performed by a qualified biologist to ensure that no individuals of this species are harmed during mining activities.

2. If an active tricolored blackbird colony is discovered within the Carli Property or within a 100-foot radius, a qualified biologist shall evaluate the potential for the mining activities to disturb nesting activities. CDFW shall be contacted to review the evaluation and determine if the project can proceed without adversely affecting nesting activities. CDFW shall also be consulted to establish protection measures such as buffers.

3. Disturbance of active nests shall be avoided until it is determined by a qualified biologist that nesting is complete and the young have fledged, or that the nest has failed. If work is allowed to proceed, at a minimum, a qualified biologist shall be on-site during the start of construction activities during the nesting season to monitor nesting activity. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

4. Measures 1-3 shall be repeated prior to the start of each phase of mining.

5. Mitigation for the loss of 97.88 of foraging habitat will be consistent with the mitigation proposed for loss of Swainson's hawk foraging habitat in Section 7.1.2.5, item 5.

7.1.2.4 Western Burrowing Owl

Impact Evaluation

Mining could directly affect western burrowing owl if this species is nesting when mining begins, although it is unlikely burrowing owl occur in the BSA on a regular basis. The project will also result in 97.88 acres of permanent impacts to non-native grasslands marginally suitable for western burrowing owl.

Mitigation

The measures listed below shall be implemented to mitigate potential impacts to western burrowing owl.

1. Preconstruction surveys for western burrowing owl shall be conducted by a qualified biologist in accordance with CDFW's 2012 Staff Report on Burrowing Owl Mitigation.

2. If burrowing owls are identified during the preconstruction survey, passive exclusion shall be implemented per CDFW's 2012 Staff Report on Burrowing Owl Mitigation (including avoidance of occupied burrows during the breeding season).

3. Measures 1-3 shall be repeated prior to the start of each phase of mining

7.1.2.5 Swainson's hawk

Impact Evaluation

Mining could directly affect Swainson's hawk if this species is nesting near the Carli Property when mining begins. The project will also result in 97.88 acres of permanent impacts to non-native grasslands which provides suitable foraging habitat for Swainson's hawk.

Mitigation

The measures listed below shall be implemented to mitigate potential impacts to Swainson's hawk.

1. If work begins between February 1 and August 31, an early season preconstruction survey for nesting Swainson's hawks shall be conducted between January and March in the BSA and immediate vicinity (an approximately 0.25 mi radius) by a qualified biologist when tree foliage is relatively sparse and nests are easy to identify. A second preconstruction survey for nesting Swainson's hawks shall be conducted in the BSA and immediate vicinity (an approximately 0.25 mi radius) by a qualified biologist no more than 14 days prior to initiation of earthmoving activities.

2. If nesting Swainson's hawks are found within the survey area, a qualified biologist shall evaluate the potential for the project to disturb nesting activities. CDFW shall be contacted to review the

evaluation and determine if the project can proceed without adversely affecting nesting activities. CDFW shall also be consulted to establish protection measures such as buffers.

3. Disturbance of active nests shall be avoided until it is determined by a qualified biologist that nesting is complete and the young have fledged, or that the nest has failed. If work is allowed to proceed, at a minimum, a qualified biologist shall be on-site during the start of construction activities during the nesting season to monitor nesting activity. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

4. Measures 1-3 shall be repeated prior to the start of each phase of mining.

5. Mitigation for the loss of 97.88 acres of permanent impacts to Swainson's hawk foraging shall be accomplished at a 1:1 ratio via preserving suitable habitat lands, purchasing credits at a CDFW approved mitigation bank, payment of in-lieu fees, a combination of these methods, or another method contingent upon approval by CDFW.

7.1.2.6 White-tailed Kite

Impact Evaluation

Mining could directly affect white-tailed kite if this species is nesting near the Carli Property when mining begins. The project will also result in 97.88 acres of permanent impacts to non-native grasslands which provides suitable foraging habitat for white-tailed kite.

Mitigation

The measures listed below shall be implemented to mitigate potential impacts to white-tailed kite.

1. If mining activities begin between February 1 and August 31, a preconstruction survey for nesting white-tailed kits shall be performed by a qualified biologist to ensure that no individuals of this species are harmed during mining activities.

2. If an active nest is discovered within the Carli Property or within a 500-foot radius, a qualified biologist shall evaluate the potential for the mining activities to disturb nesting activities. CDFW shall be contacted to review the evaluation and determine if the project can proceed without adversely affecting nesting activities. CDFW shall also be consulted to establish protection measures such as buffers.

3. Disturbance of active nests shall be avoided until it is determined by a qualified biologist that nesting is complete and the young have fledged, or that the nest has failed. If work is allowed to proceed, at a minimum, a qualified biologist shall be on-site during the start of construction activities during the nesting season to monitor nesting activity. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

4. Measures 1-3 shall be repeated prior to the start of each phase of mining.

5. Mitigation for the loss of 97.88 of foraging habitat will be consistent with the mitigation proposed for loss of Swainson's hawk foraging habitat in Section 7.1.2.5, item 5.

7.1.2.7 Loggerhead Shrike

Impact Evaluation

Mining could directly affect loggerhead shrike if this species is nesting near the Carli Property when mining begins. The project will also result in 97.88 acres of permanent impacts to non-native grasslands which provides suitable foraging habitat for loggerhead shrike.

Mitigation

The measures listed below shall be implemented to mitigate potential impacts to loggerhead shrike.

1. If mining activities begin between February 1 and August 31, a preconstruction survey for nesting loggerhead shrike shall be performed by a qualified biologist to ensure that no individuals of this species are harmed during mining activities.

2. If an active nest is discovered within the Carli Property or within a 100-foot radius, a qualified biologist shall evaluate the potential for the mining activities to disturb nesting activities. CDFW shall be contacted to review the evaluation and determine if the project can proceed without adversely affecting nesting activities. CDFW shall also be consulted to establish protection measures such as buffers.

3. Disturbance of active nests shall be avoided until it is determined by a qualified biologist that nesting is complete and the young have fledged, or that the nest has failed. If work is allowed to proceed, at a minimum, a qualified biologist shall be on-site during the start of construction activities during the nesting season to monitor nesting activity. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

4. Measures 1-3 shall be repeated prior to the start of each phase of mining.

5. Mitigation for the loss of 97.88 of foraging habitat will be consistent with the mitigation proposed for loss of Swainson's hawk foraging habitat in Section 7.1.2.5, item 5.

7.1.2.8 Yellow-headed blackbird

Impact Evaluation

Mining could directly affect yellow-headed blackbird if this species is nesting near the Carli Property when mining begins. The project will also result in 97.88 acres of permanent impacts to non-native grasslands which provides suitable foraging habitat for yellow-headed blackbird.

Mitigation

The measures listed below shall be implemented to mitigate potential impacts to yellow-headed blackbird.

1. If mining activities begin between February 1 and August 31, a preconstruction survey for nesting yellow-headed blackbirds shall be performed by a qualified biologist to ensure that no individuals of this species are harmed during mining activities.

2. If an active nest is discovered within the Carli Property or within a 100-foot radius, a qualified biologist shall evaluate the potential for the mining activities to disturb nesting activities. CDFW shall be contacted to review the evaluation and determine if the project can proceed without adversely affecting nesting activities. CDFW shall also be consulted to establish protection measures such as buffers.

3. Disturbance of active nests shall be avoided until it is determined by a qualified biologist that nesting is complete and the young have fledged, or that the nest has failed. If work is allowed to proceed, at a minimum, a qualified biologist shall be on-site during the start of construction activities during the nesting season to monitor nesting activity. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

4. Measures 1-3 shall be repeated prior to the start of each phase of mining.

5. Mitigation for the loss of 97.88 of foraging habitat will be consistent with the mitigation proposed for loss of Swainson's hawk foraging habitat in Section 7.1.2.5, item 5.

7.1.3 Sensitive Habitats

Impacts and mitigation to seasonal wetlands are discussed below in Section 7.2.

7.2 AQUATIC RESOURCES

7.2.1 Impact Evaluation

Mining will result in in permanent impacts to aquatic resources, consisting of 0.842 acre of wetlands and 1.154 acres of non-wetland waters, as shown below in Table D.

Table D: Impacts to Aquatic Resources in the BSA (acres)

Type	Total
Wetlands	
Seasonal Wetlands	*0.000*
Ephemeral Drainage	*0.018*
Adjacent Wetlands	*0.000*
Ponded Ditch	*0.751*
Isolated Wetland	*0.073*
Wetlands Subtotal	***0.842***
Non-Wetland Waters	
Ephemeral Drainage	*0.097*
Retention Basin	*1.057*
Non-Wetland Waters Subtotal	***1.154***
Total	***1.996***

7.2.2 Mitigation

The measures listed below shall be implemented to mitigate impacts to aquatic resources.

1. Mitigation for the loss consisting of 0.842 acre of wetlands and 1.154 acres of non-wetland waters shall be accomplished at a 3:1 ratio (wetlands) and a 1:1 ratio (non-wetland waters) via, purchasing credits at an approved mitigation bank, payment of in-lieu fees, or a combination of these methods.

7.3 INVASIVE SPECIES

7.3.1 Impact Evaluation

Mining activities could introduce or spread invasive species during ground disturbance at the Carli Property.

7.3.2 Mitigation

The measures listed below shall be implemented to mitigate impacts from invasive species.

1. A weed management plan shall be drafted for the project, which shall include the identification and removal of noxious weeds and invasive species, use and proper maintenance of construction equipment and materials that are known to be weed-free, and inspection of vehicles entering the site to ensure the absence of excess dirt, mud, and vegetative material.

8.0 REGULATORY DETERMINATIONS

8.1 FEDERAL ENDANGERED SPECIES ACT CONSULTATION SUMMARY

Removal of two elderberry shrubs with stems 1 inch in diameter or greater could result in take of VELB. Consultation with the USFWS pursuant to Section 7 of the FESA will likely be required. The ACOE, through the Section 404 permitting process (described below in Section 8.3.1) will be the federal lead agency and would initiate consultation with the USFWS. The project would not result in take of any other species listed under FESA.

8.2 CALIFORNIA ENDANGERED SPECIES ACT CONSULTATION SUMMARY

The project would not result in take of any species listed under CESA.

8.3 WETLANDS AND OTHER WATERS PERMITTING SUMMARY

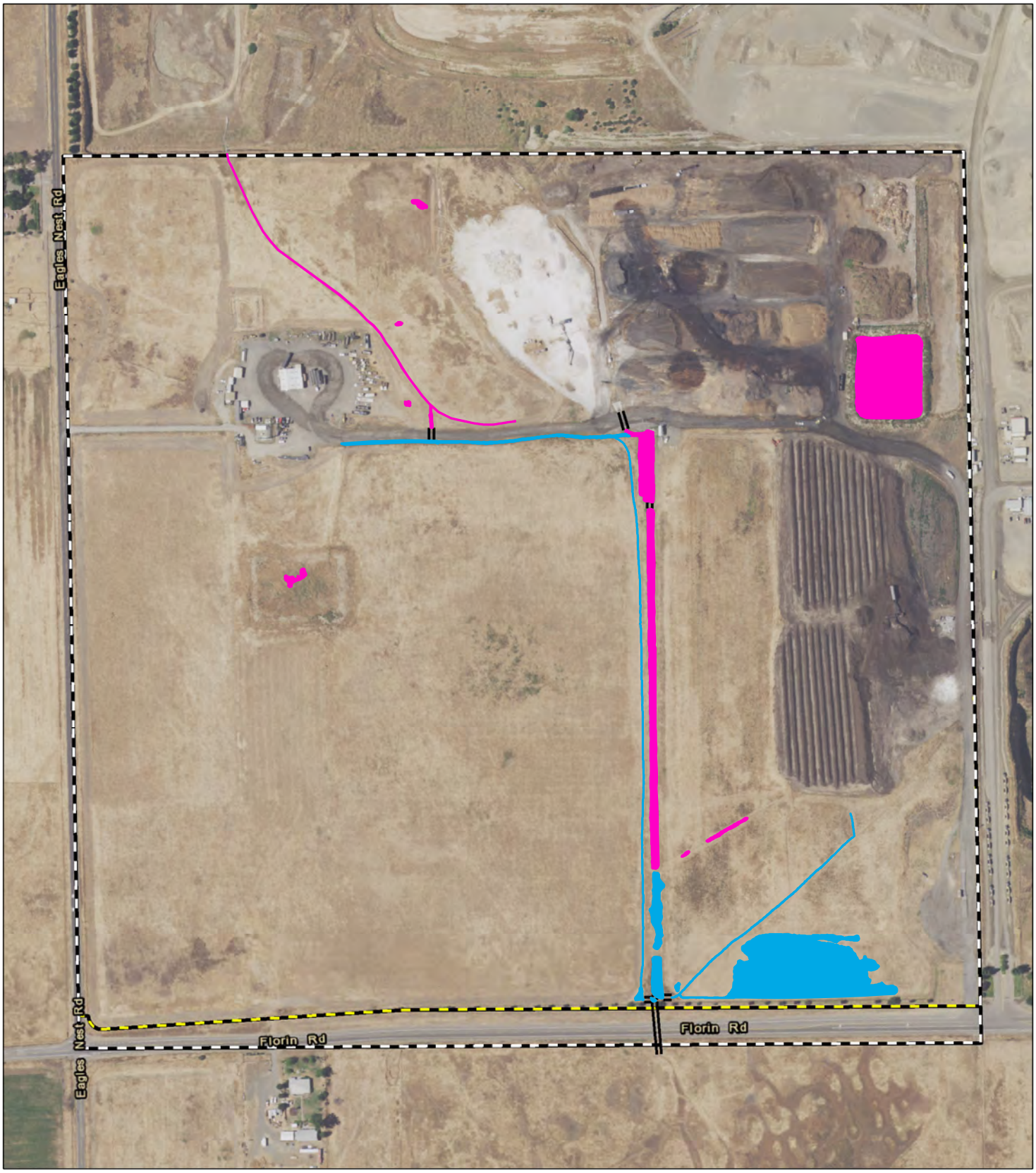
Potential jurisdictional waters in the BSA are summarized in Table E below and shown in Figure 9; impacts to jurisdictional waters are summarized in Table F and shown in Figure 10. For purposes of this analysis, waters subject to regulation under CDFW Section 1602 are equivalent to Section 404 waters.

Table E: Jurisdictional Waters in the BSA (acres)

Type	Section 404 Waters	Non-Section 404 Waters	Total
Wetlands			
Seasonal Wetlands	1.589	0.000	*1.589*
Ephemeral Drainage	0.040	0.009	*0.049*
Adjacent Wetlands	0.126	0.000	*0.126*
Ponded Ditch	0.193	0.665	*0.858*
Isolated Wetland	0.000	0.076	*0.076*
Wetlands Subtotal	***1.948***	***0.750***	***2.698***
Non-Wetland Waters			
Ephemeral Drainage	0.045	0.057	*0.102*
Retention Basin	0.000	1.057	*1.057*
Non-Wetland Waters Subtotal	***0.045***	***1.114***	***1.159***
Total	**1.993**	**1.864**	***3.857***

Table F: Impacts to Jurisdictional Waters in the BSA (acres)

Type	Section 404 Waters	Non-Section 404 Waters	Total
Wetlands			
Seasonal Wetlands	0.000	0.000	*0.000*
Ephemeral Drainage	0.009	0.009	*0.018*
Adjacent Wetlands	0.000	0.000	*0.000*
Ponded Ditch	0.117	0.634	*0.751*
Isolated Wetland	0.000	0.073	*0.073*
Wetlands Subtotal	***0.126***	***0.716***	***0.842***
Non-Wetland Waters			
Ephemeral Drainage	0.040	0.057	*0.097*
Retention Basin	0.0	1.057	*1.057*
Non-Wetland Waters Subtotal	***0.040***	***1.114***	***1.154***
Total	**0.166**	**1.830**	***1.996***



LSA

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- Culverts
- Section 404 Waters of the U.S. (1.993 ac)
- Non-Section 404 Waters (1.864 ac)

N

0 200 400
FEET

FIGURE 9

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Overview of Waters of the U.S.

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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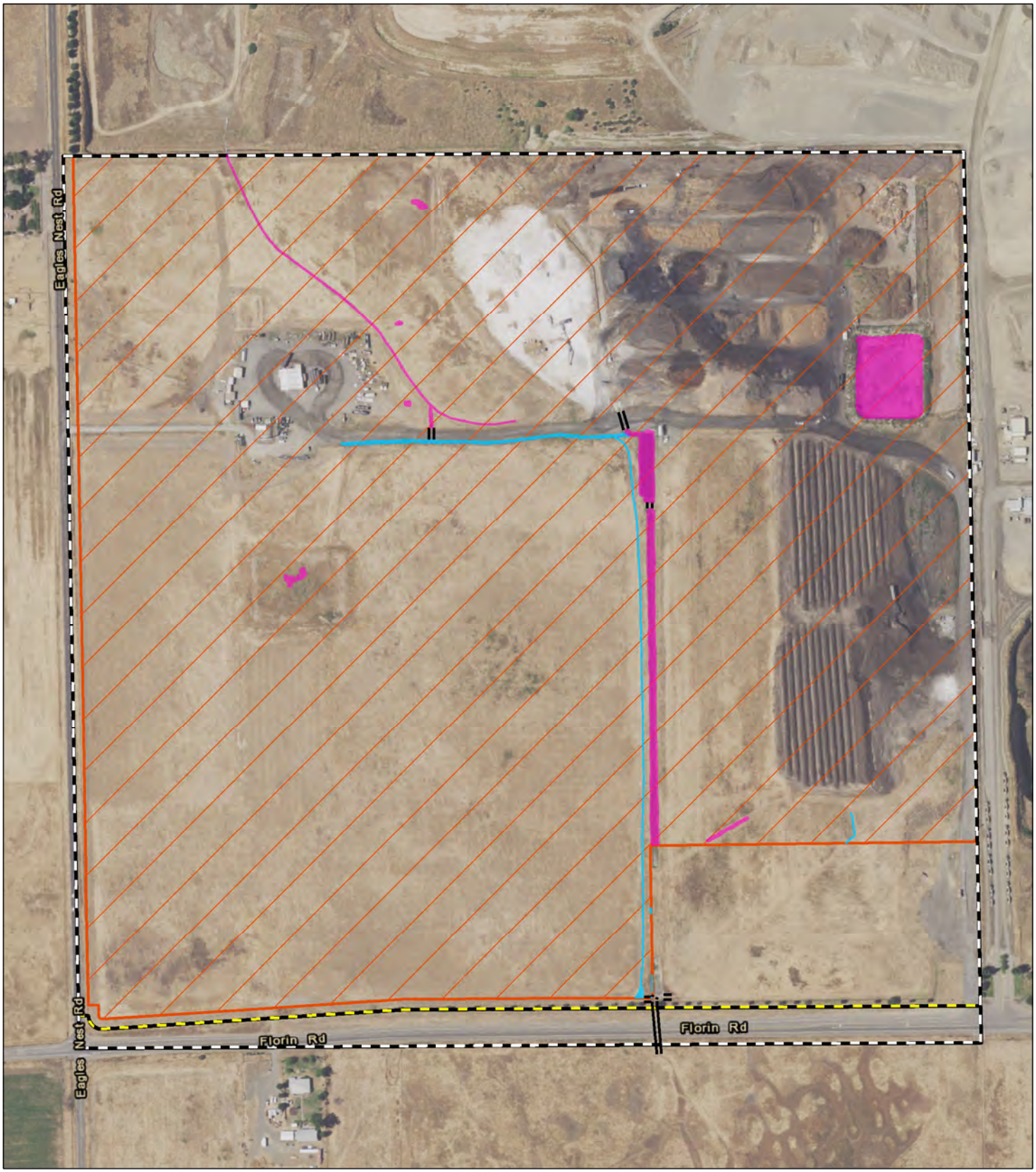

LSA

LEGEND

- Carli Property - (160.98 ac)
- Biological Study Area - (154.82 ac)
- Impact Area (141.22)
- Culverts
- Section 404 Waters of the U.S. (0.166 ac)
- Non-Section 404 Waters (1.830 ac)

0 200 400
FEET

FIGURE 10

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Impacts to Waters of the U.S.

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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8.3.1 Army Corps of Engineers

Discharges into waters of the U.S. from the project, totaling 0.167 acre, are regulated by the ACOE under Section 404 of the CWA. It is expected the proposed discharge into waters of the U.S. can be authorized by the ACOE using a Nationwide Permit.

8.3.2 Regional Water Quality Control Board

Discharges into waters of the U.S. from the project, totaling 0.167 acre, would also require a Water Quality Certification from the RWQCB, pursuant to Section 401 of the CWA. Discharges into waters of the State that are not subject to Section 404 jurisdiction, totaling 1.830 acres, would likely require Waste Discharge Requirements pursuant to RWQCB authority under the PCWQCA.

8.3.3 California Department of Fish and Wildlife

Impacts to CDFW Section 1602 waters, totaling 0.048 acre, will likely require a Lake and Streambed Alteration Agreement from CDFW pursuant to Sections 1600-1616 of the California Fish and Game Code.

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9.0 REFERENCES

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APPENDIX A

PRELIMINARY MINING PLAN

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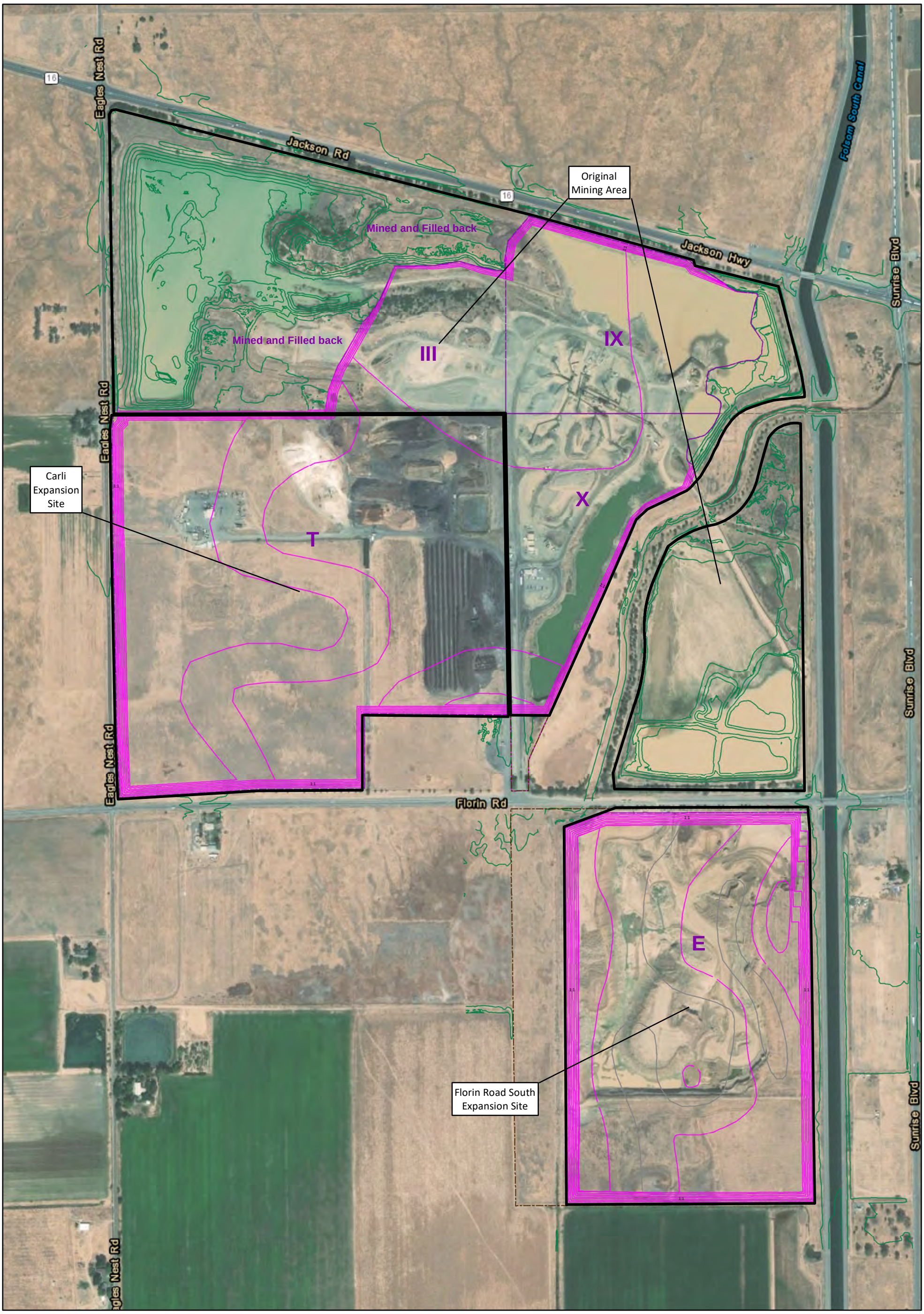

LSA

LEGEND

Areas Affected by Mining Activity

APPENDIX A

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FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Mining Plan

SOURCE: Basemap - NAIPAerial Imagery (06/2016); Mapping - Vulcan Material Company (10/2016)

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APPENDIX B

PRELIMINARY RECLAMATION PLAN

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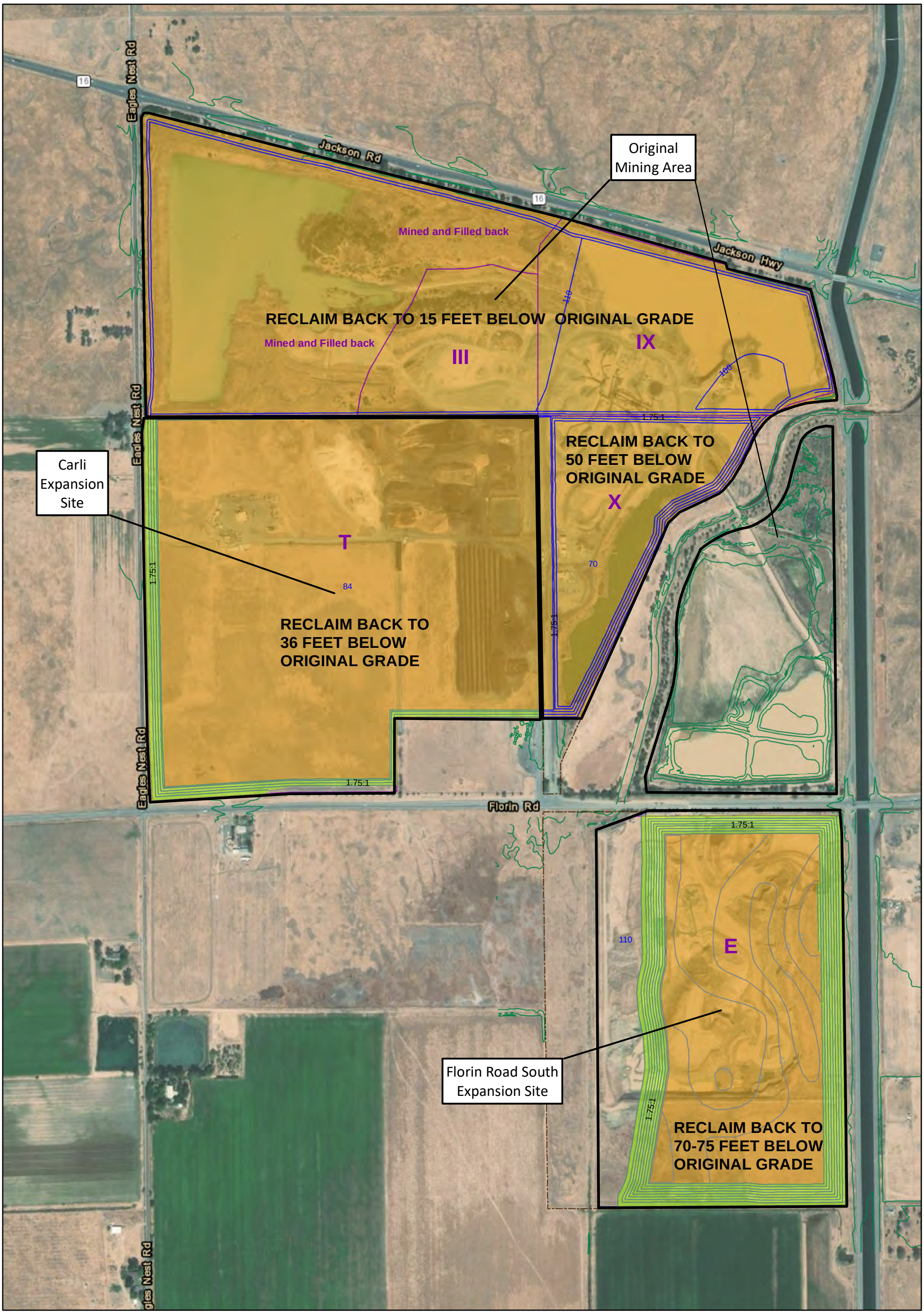

LSA

APPENDIX B

LEGEND

- Mining Site
- Pit Slope Revegetation Area
- Pit Floor Revegetation Area

0 300 600
FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Reclamation Plan

SOURCE: Basemap - NAIPAerial Imagery (06/2016); Mapping - Vulcan Material Company (10/2016)

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APPENDIX C

CNDDB, USFWS, & CNPS LISTS

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CNPS California Native Plant Society

Plant List

Inventory of Rare and Endangered Plants

23 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3812154, 3812153, 3812152, 3812144, 3812143, 3812142, 3812134 3812133 and 3812132;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	2B.3	S3	G5
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	2B.1	S2	G5
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Cicuta maculata var. bolanderi	Bolander's water-hemlock	Apiaceae	perennial herb	Jul-Sep	2B.1	S2	G5T4
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	2B.2	SH	G5T4T5
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	1B.2	S2	G2
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	4.2	S3	G3
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	1B.2	S3	G5T3
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	Apr-May	1B.1	S1	G1
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	1B.2	S1	G2T1
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	4.2	S3	G3
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	1B.2	S2	G5T2
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	S2	G2
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	1B.2	S1	G4T1
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	1B.1	S2	G2
Navarretia eriocephala	hoary navarretia	Polemoniaceae	annual herb	May-Jun	4.3	S4	G4
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	1B.1	S2	G2
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	1B.1	S1	G1
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous	May-	1B.2	S3	G3

			herb (emergent)	Oct(Nov)			
Scutellaria galericulata	marsh skullcap	Lamiaceae	perennial rhizomatous herb	Jun-Sep	2B.2	S2	G5
Scutellaria lateriflora	side-flowering skullcap	Lamiaceae	perennial rhizomatous herb	Jul-Sep	2B.2	S2	G5
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2

Suggested Citation

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 18 July 2017].

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Information
About the Inventory
About the Rare Plant Program
CNPS Home Page
About CNPS
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Contributors
The Calflora Database
The California Lichen Society

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Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Bruceville (3812134) OR Buffalo Creek (3812152) OR Clay (3812132) OR Carmichael (3812153) OR Elk Grove (3812143) OR Florin (3812144) OR Galt (3812133) OR Sacramento East (3812154) OR Sloughhouse (3812142))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Brasenia schreberi watershield	PDCAB01010	None	None	G5	S3	2B.3
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4	S2	2B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Cuscuta obtusiflora var. glandulosa Peruvian dodder	PDCUS01111	None	None	G5T4T5	SH	2B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Mixed Riparian Forest Great Valley Mixed Riparian Forest	CTT61420CA	None	None	G2	S2.2	
Great Valley Valley Oak Riparian Forest Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	G1	S1.1	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Juglans hindsii Northern California black walnut	PDJUG02040	None	None	G1	S1	1B.1
Juncus leiospermus var. ahartii Ahart's dwarf rush	PMJUN011L1	None	None	G2T1	S1	1B.2
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oncorhynchus mykiss irideus steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Orcuttia tenuis slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Scutellaria galericulata marsh skullcap	PDLAM1U0J0	None	None	G5	S2	2B.2
Scutellaria lateriflora side-flowering skullcap	PDLAM1U0Q0	None	None	G5	S2	2B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Valley Oak Woodland Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC

Record Count: 59

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sacramento County, California



Not for consultation

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.

5. Click REQUEST SPECIES LIST.

Listed species[1] are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Giant Garter Snake Thamnophis gigas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened
Steelhead Oncorhynchus (=Salmo) mykiss There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/1007	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

NAME	STATUS
Vernal Pool Tadpole Shrimp Lepidurus packardi There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Sacramento Orcutt Grass Orcuttia viscida There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/5507	Endangered
Slender Orcutt Grass Orcuttia tenuis There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The migratory birds species listed below are species of particular conservation concern (e.g. Birds of Conservation Concern) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the AKN Histogram Tools and Other Bird Data Resources. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Allen's Hummingbird Selasphorus sasin https://ecos.fws.gov/ecp/species/9637	Migrating
Bald Eagle Haliaeetus leucocephalus https://ecos.fws.gov/ecp/species/1626	Year-round
Burrowing Owl Athene cunicularia https://ecos.fws.gov/ecp/species/9737	Year-round

Costa's Hummingbird Calypte costae https://ecos.fws.gov/ecp/species/9470	Year-round
Fox Sparrow Passerella iliaca	Year-round
Lewis's Woodpecker Melanerpes lewis https://ecos.fws.gov/ecp/species/9408	Wintering
Loggerhead Shrike Lanius ludovicianus https://ecos.fws.gov/ecp/species/8833	Year-round
Long-billed Curlew Numenius americanus https://ecos.fws.gov/ecp/species/5511	Wintering
Marbled Godwit Limosa fedoa https://ecos.fws.gov/ecp/species/9481	Wintering
Mountain Plover Charadrius montanus https://ecos.fws.gov/ecp/species/3638	Wintering
Nuttall's Woodpecker Picoides nuttallii https://ecos.fws.gov/ecp/species/9410	Year-round
Oak Titmouse Baeolophus inornatus https://ecos.fws.gov/ecp/species/9656	Year-round
Peregrine Falcon Falco peregrinus https://ecos.fws.gov/ecp/species/8831	Wintering
Rufous Hummingbird selasphorus rufus https://ecos.fws.gov/ecp/species/8002	Migrating
Short-eared Owl Asio flammeus https://ecos.fws.gov/ecp/species/9295	Wintering
Swainson's Hawk Buteo swainsoni https://ecos.fws.gov/ecp/species/1098	Breeding
Tricolored Blackbird Agelaius tricolor https://ecos.fws.gov/ecp/species/3910	Year-round
Western Grebe aechmophorus occidentalis https://ecos.fws.gov/ecp/species/6743	Year-round
Williamson's Sapsucker Sphyrapicus thyroideus https://ecos.fws.gov/ecp/species/8832	Year-round
Yellow-billed Magpie Pica nuttalli https://ecos.fws.gov/ecp/species/9726	Year-round

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAANCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the Northeast Ocean Data Portal. The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAANCCOS models: the models were developed as part of the NOAANCCOS project: Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf. The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the Northeast Ocean Data Portal, which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The Avian Knowledge Network (AKN) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest,survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the Migratory Bird Programs AKN Histogram Tools webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North, Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAANCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Facilities

Wildlife refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEMC
- PEMCh

FRESHWATER POND

PUBFx

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX D

APPROVED JURISDICTIONAL DELINEATION REPORT

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APPROVED JURISDICTIONAL DELINEATION

VULCAN – SACRAMENTO AGGREGATES

CARLI EXPANSION SITE

SACRAMENTO COUNTY, CALIFORNIA



LSA

May 2019

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APPROVED JURISDICTIONAL DELINEATION

VULCAN – SACRAMENTO AGGREGATES

CARLI EXPANSION SITE

SACRAMENTO COUNTY, CALIFORNIA

Prepared for:

Vulcan Materials – Western Region
50 El Charro Road
Pleasanton, California 94588

Prepared by:

LSA
201 Creekside Ridge Court, Suite 250
Roseville, California 95678
916.772.7450

Project No. VMC1601

LSA

May 2019

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1.0 INTRODUCTION

This report, prepared by LSA on behalf of Calmat Co. dba Vulcan Materials Company – Western Division, presents the results of a delineation of potential waters of the U.S. for a review area of the Vulcan-Sacramento Aggregates Carli Property. Potential regulated waters in the review area include areas meeting the United States Army Corps of Engineers (USACE) criteria for wetlands and/or other waters of the U.S. subject to regulation under Section 404 of the Clean Water Act (CWA). Included herein are a description of the review area, an explanation of the methods used during the delineation, and a discussion of the results.

The findings and conclusions presented in this report, including the location and extent of wetlands and other waters subject to regulation under Section 404 of the CWA, represent the professional opinion of LSA. These findings and conclusions should be considered preliminary until verified by the USACE.

1.1 GENERAL DESCRIPTION

The review area totals 154.82 acres (ac) and is located in Sacramento County, approximately 9.7 miles (mi) east of the city of Sacramento, on the northeast corner of Eagles Nest Road and Florin Road. Topography is flat with some shallow undulation; the elevation is approximately 115 feet (ft) above mean sea level (Figures 1 and 2).

The Vulcan – Sacramento Aggregates mining operation will be expanding to a 160.98-ac site located southwest and adjacent to Vulcan's current mining operation (referred to as the Carli Property). The review area, as defined above, is consistent with the Carli Property with the exception of the 6.16-ac segment of the Florin Road Right-of-Way (ROW). The Carli Property is located in the southeast quarter of Section 36 of Township 8 North, Range 6 East and the southwest quarter of Section 31 of Township 8 North, Range 7 East, on the Elk Grove and Carmichael USGS quadrangle maps.

Aggregate mining and processing operations are currently permitted on 394.32 ac under Sacramento County Use Permit (01-ZGB-UPB-0107). Existing operations include an aggregate processing plant. An EIR (Sacramento Aggregates–East Vineyard Community Plan Amendment, Rezone and Use Permit, Control No. 94-CZB-UPB-0715, State Clearinghouse No. 95052078) was approved for the original project in 1997, and a Supplemental EIR (Triangle Rock Products, Inc. Zoning Agreement and Use Permit Amendments, State Clearinghouse No. 1995050278) was approved for revisions in the original area in February 2003.

The existing processing plant is immediately east of the current review area; the areas north and east of the current review area have been mined over the last 20 years (Figure 3). In addition, in November 2008 the County approved an expansion to the south of Florin Road (the Florin Road South Expansion) just southeast of the current review area for which an EIR was prepared.

1.2 CARLI PROPERTY DESCRIPTION

The proposed Carli Property includes 160.98 acres of private and public land. The Carli Property's southern boundary shares a boundary with the southern boundary of the Florin Road ROW, the

western boundary is Eagles Nest Road, and the northern and eastern edges bound the existing 338.04-acre Current Active Mining Area.

1.2.1 Non-Disturbance Areas

Non-Disturbance Areas in the Carli Property, totaling 19.76 acres, include a Wetland Avoidance Area (10.69 acres) located in the southeast corner of the Carli Property adjacent to Florin Road; County ROW (6.16 acres) on Florin Road along the southern boundary; and a perimeter area of Undisturbed Setbacks (2.91 acres) along the shoulders of Eagles Nest Road and Florin Road.

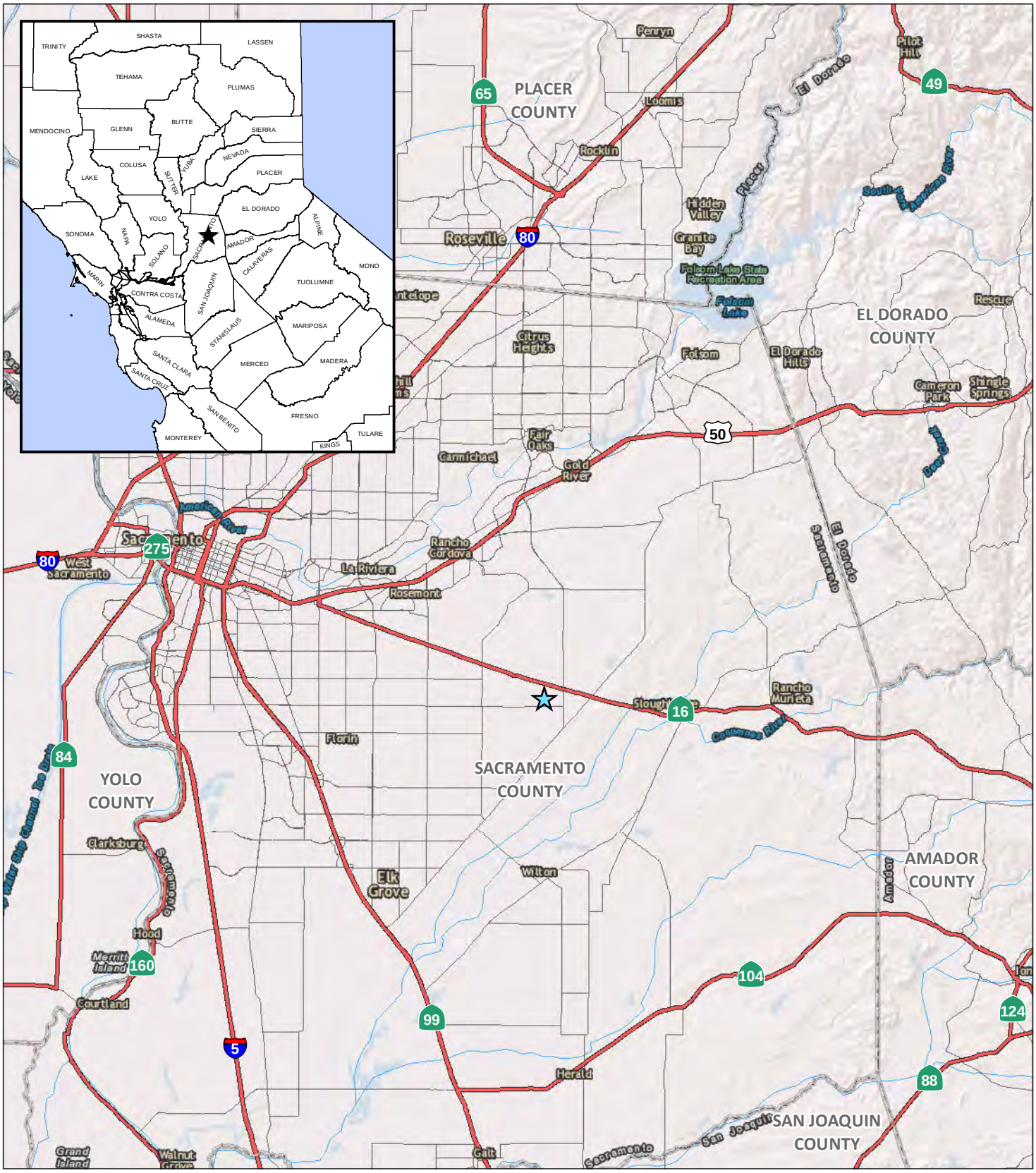
1.2.2 Proposed Carli Mining Area

The remainder of the Carli Property contains the proposed 141.22-acre Carli Mining Area. The Carli Mining Area contains two distinct areas that will be implemented in phases: Phase T-1 is 74.58 acres and Phase T-2 is 66.64 acres.

1.3 MINE PLAN

The Sacramento Aggregates sand and gravel mining operation consists of Phases I – X and Expansion Phases E-1, E-2 and E-3 (Florin Road South Expansion). The approved end use for the existing phases is reclamation back to grazing land and in some areas of Expansion Phase E, the end use will also include seasonal wetlands.

The Carli Property will add Phase T to the approved operations and will be implemented in two mining phases: Phases T-1 (74.58 acres) and T-2 (66.64 acres). The site will be mined starting in the northern portion of the site, extending south down and around the existing composting facility, then to the east, and finally back up towards the northeast to excavate the area currently occupied by the composting operation. The Carli Property will be reclaimed back to grazing land consistent with the other approved mining phases.



LSA

LEGEND

Review Area

FIGURE 1

N

0 2.5 5

Miles

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Regional Location

SOURCE: ESRI Imagery (4/2008)

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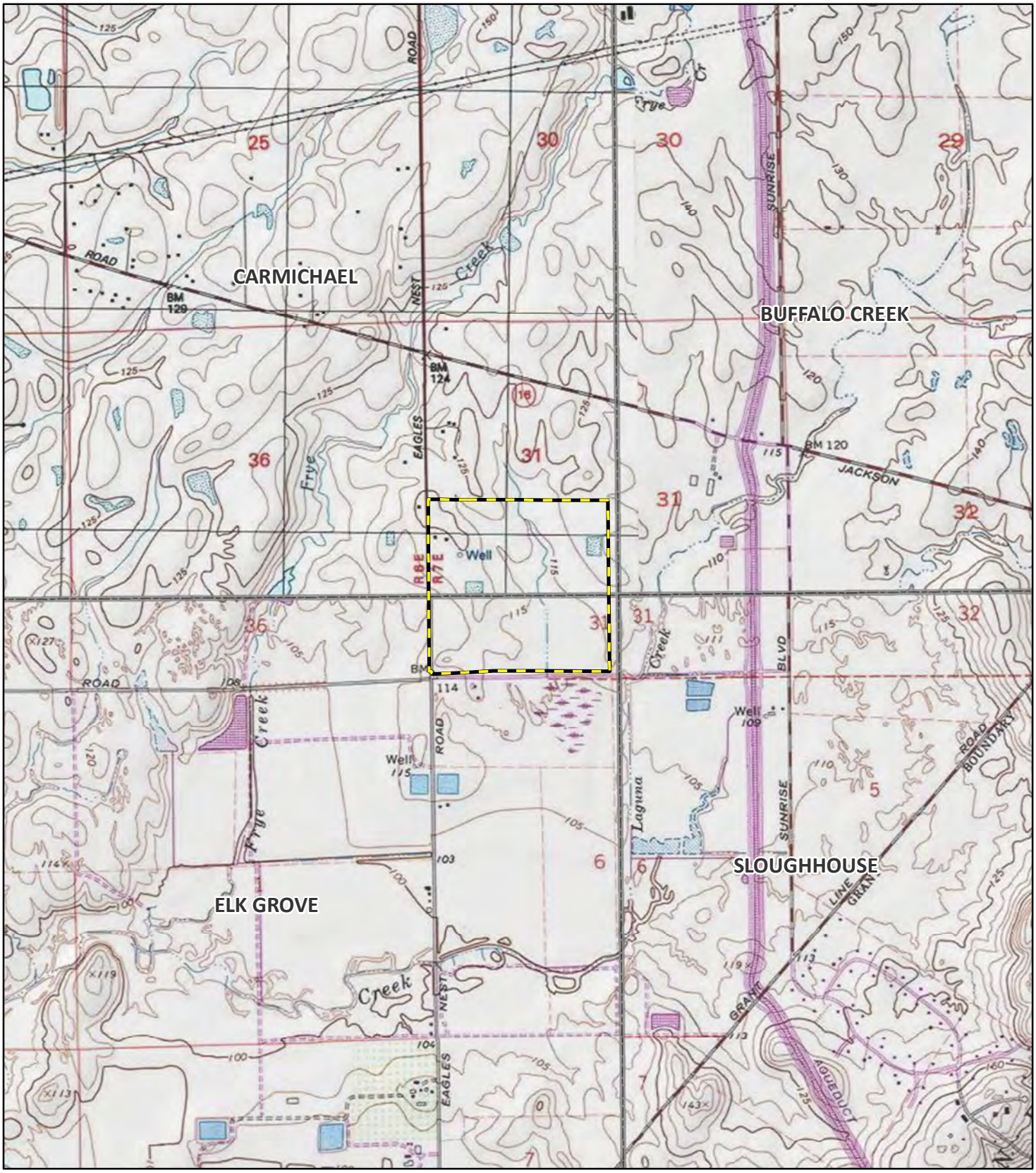

LSA

LEGEND

Review Area - (154.82 ac)

USGS 7.5' Quad Boundaries

FIGURE 2

0 1000 2000

FEET

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Review Area Vicinity on Topographic Base

SOURCE: USGS 7.5-minute topographic quadrangles Carmichael (1997); Elk Grove (1980); Buffalo Creek (1980); Sloughhouse (1993)

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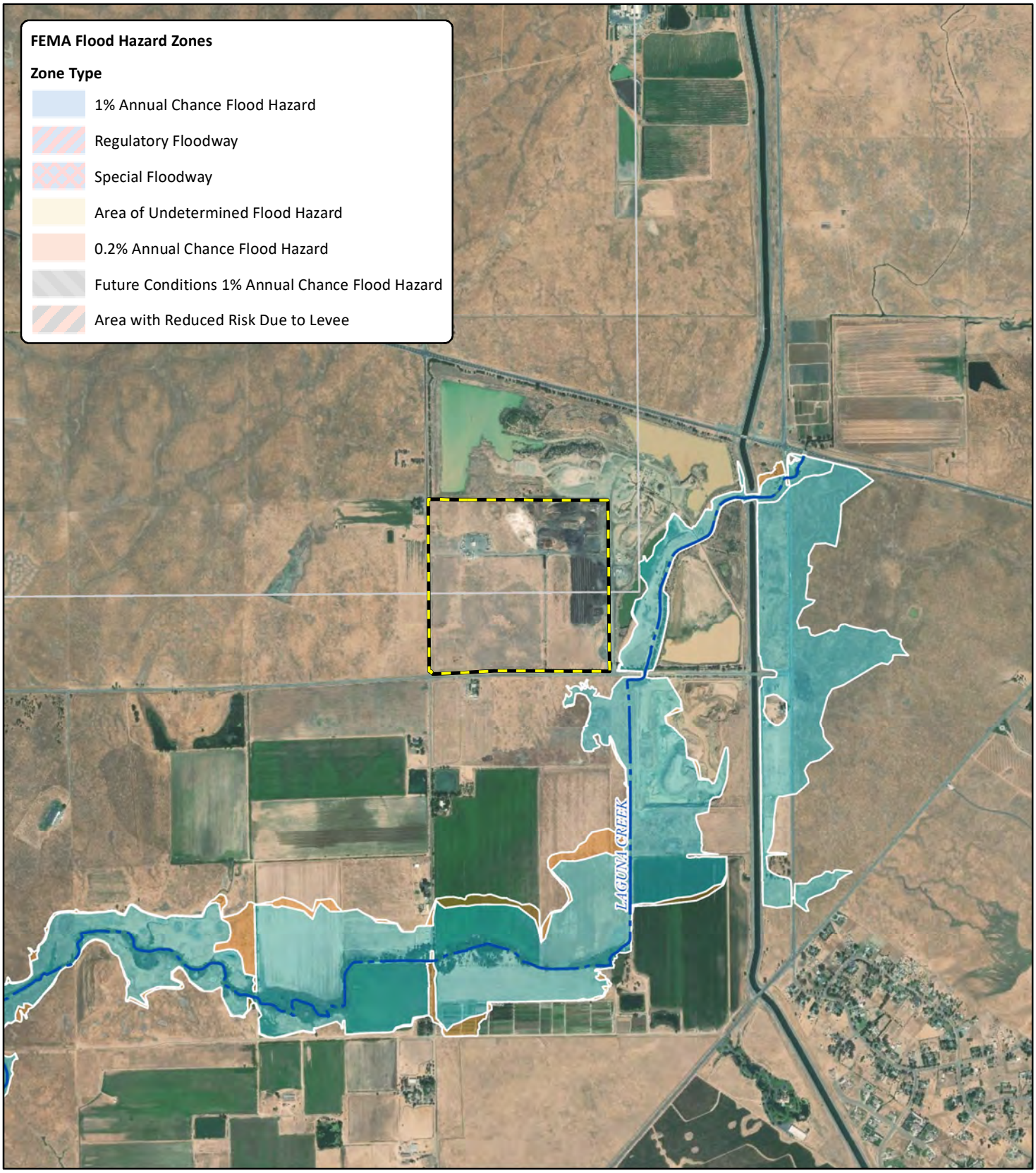

LSA

LEGEND

Review Area - (154.82 ac)

FIGURE 3

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Review Area Vicinity on Aerial Base and FEMA Flood Zones

N

0 1000 2000
FEET

SOURCE: NAIP Aerial Imagery (6/2016)

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1.3.1 Description of Mining

Overburden from the Carli Property will be removed with existing equipment used at other Sacramento Aggregate mining areas (e.g., a hydraulic excavator and front-loaders). Aggregate will be mined from the Carli Property using existing equipment, including a hydraulic excavator and front-loaders. Excavated aggregate will be transported to an extendable pit conveyor by loaders or existing haul trucks. Other existing mobile equipment will include bulldozer, motor-grader, water truck, and service truck. No processing will occur on the Carli Property.

1.3.2 Overburden and Waste Material Placement Sites

There is an approximately 2- to 3-foot thick layer of topsoil present in the Carli Property. Topsoil will be removed as a separate layer from each phase by using existing front-loaders or hydraulic excavator. Topsoil is transported by haul trucks, spread at previously excavated areas for use as the final cover for reclamation, or stored separately for such use in later reclamation.

An estimated 6.3 million cubic yards of overburden will be removed during the mining at the Carli Property (Phase T) by using existing hydraulic excavator and will be transported by haul trucks, spread at previously excavated areas for use as fill for reclamation or stored separately for such use in later reclamation.

1.3.3 Non-Disturbance Areas

The proposed excavation setbacks (2.91 acres total) would be the same as for the existing permitted operations (i.e., 30 feet from edge of pavement). For the Carli Property, that includes 30 feet from the Florin Road right-of-way and 30 feet from the Eagles Nest Road right-of-way). The setbacks would be landscaped to match the existing landscaping on the northeast and southeast sides of Florin Road and create a visual barrier between the roads and the mining activities. The landscaping would include the same native and/or landscape varieties of plants within a 15 feet wide planting area. The proposed mine plan is included in Appendix A.

The 6.16-acre segment of Florin Road ROW included in the Carli Property stretches from Eagles Nest Road eastward for approximately 2,640 feet (0.5 mile). No project elements are proposed within the Florin Road ROW. This area has not been included in the review area for purposes of this study.

Additionally, a 10.69-acre area in the southeast corner of the Carli Property has been designated for avoidance as a Wetland Avoidance Area. The seasonal wetlands present in this area will be preserved.

1.4 RECLAMATION PLAN

The mined area will be reclaimed to rolling grazing lands. Overburden and rock will be removed to elevations ranging between approximately 50 and 70 feet (approximate depths of 50 to 70 feet below current average site elevation of 120 feet), with side slopes of 1H:1V. This will be a temporary slope that will be partially filled during mine reclamation. Mined slopes meet criteria at 1H:1V for the final pit depth and 1.75H:1V backfilled with engineered fill for the reclaimed pit depth.

2.0 ENVIRONMENTAL SETTING

The review area is located in the Central Valley of California. Topography in the region varies from lowlands of the valley floor to the rolling terrain of the foothills. The predominant habitats in the region are grassland and oak woodland/savannah interspersed with various wetland and riparian habitats. Primary land uses in the vicinity are agricultural and industrial with smaller areas of concentrated residential housing.

2.1 CLIMATE

The climate in the review area is Mediterranean with cool, wet winters and hot, dry summers. The average total annual precipitation is approximately 18.15 inches (Western Regional Climate Center, 2017), most of which falls between November and April. There is normally less than 0.5 inch of rain between June and September. The average winter temperature is 48.3 degrees Fahrenheit (ºF) and the average winter low temperature is 40.9ºF. The average summer temperature is 73.9ºF and the average summer high temperature is 89.4ºF.

2.2 HYDROLOGY

Historic aerial photos (the earliest of which is from 1937) indicate the predominant flow pattern in the review area from northwest to southeast, except for the southwest part of the site with trends to the west. Subsequent photos (1947, 1957, and 1964) show an increase in agricultural use and associated irrigation. During this time period, irrigation runoff and still appeared to flow southeast out of the review area, joining Laguna. Current conditions (1971 to present) continue to maintain the general southeast flow pattern but a large ditch has been constructed to provide water for the compost operation and the ditch has been designed to flow north. Florin Road has also been constructed and blocks historical southeast flows into Laguna Creek, creating a large seasonal wetlands in the southeast corner of the review area. Water from this wetland flows into Laguna Creek only during large storm events. Historic aerial photos are included in Appendix A. Laguna Creek joins Morrison Creek approximately 20 mi west, then flows southwest for approximately 3 mi and joins the Sacramento River.

2.3 SOILS

The review area contains the following soil types (shown in Figure 4):

- Durixeralfs, 0 to 1 percent slopes
- Fiddyment fine sandy loam, 1 to 8 percent slopes
- San Joaquin silt loam, leveled, 0 to 1 percent slopes
- San Joaquin silt loam, 0 to 3 percent slopes
- Xerarents-San Joaquin complex, 0 to 1 percent slopes

All soil types in the review area with the exception of the Fiddyment fine sandy loam soils are considered hydric soils (NRCS Soil Survey Sacramento County, California).

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LSA

LEGEND

Review Area - (154.82 ac)

NRCS Soil Classification

137 - Durixeralfs, 0 to 1 percent slopes

145 - Fiddyment fine sandy loam, 1 to 8 percent slopes

213 - San Joaquin silt loam, leveled, 0 to 1 percent slopes

214 - San Joaquin silt loam, 0 to 3 percent slopes

238 - Xerarents-San Joaquin complex, 0 to 3 percent slopes

0 200 400
FEET

FIGURE 4

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

NRCS Soil Classifications

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - NRCS Soil Survey Sacramento County (1993)

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2.3.1 Durixeralfs, 0 to 1 percent slopes

Durixeralfs are a great group of soils in the Alfisols order and the Xeralfs suborder and consist of well-drained soils formed in material derived from granitic rock sources. These soils are found on low terraces. The mean annual precipitation is about 15 inches and the mean annual temperature is about 62ºF.

2.3.2 Fiddyment fine sandy loam, 1 to 8 percent slopes

The Fiddyment-series soil consists of moderately deep, well-drained soils formed in material weathered from consolidated sediments of mixed rock sources. These soils are on nearly level to rolling low terraces and hills. The mean annual precipitation is about 19 inches and mean annual temperature is about 61ºF. Soil temperature ranges from 62 to 67ºF. Soil between 8 and 21 inches is moist in all parts from December through April and is dry in all parts from June through mid-October in most years.

2.3.3 San Joaquin soil complex

The San Joaquin-series soils consist of moderately deep to a duripan (depth ranges from 20 to 40 inches), well and moderately well drained soils formed in alluvium derived from mixed but predominantly granitic rock sources. They are on undulating low terraces; some areas have been leveled. The mean annual precipitation is about 15 inches and the mean annual temperature is about 61ºF. Soil temperature ranges from 60 to 64ºF. Soil at depths of about 7 to 24 inches or directly above the duripan is dry in all parts from June to November and is moist in some or all parts the rest of the year. Permeability is very slow, so some areas are subject to rare or occasional flooding.

2.3.4 Xeraents-San Joaquin complex, 0 to 1 percent slopes

Xerarents-San Joaquin Complex soils consist of well and moderately well drained soils formed in alluvium derived from granitic rock sources. These soils are found on low terraces in floodplains and basin floors. The mean annual precipitation is about 17 inches and the mean annual temperature is about 62ºF.

2.4 PLANT COMMUNITIES / LAND USES

Natural habitats comprise approximately 111.62 ac of the review area and include non-native grassland, seasonal wetland, and open water communities. The remaining 43.62 ac are devoted to developed land uses (Figure 5).

2.4.1 Non-Native Grasslands

Non-native grasslands are the most common vegetation community in the review area, comprising 70% of the site. This community is dominated by Italian ryegrass (*Festuca perennis*) but wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), and foxtail barley (*Hordeum murinum*) are also present, with many other grasses and herbs present in smaller numbers. Small areas of ruderal vegetation and barren disturbed areas are included in this category. Portions of the non-native grassland community are mowed and/or disked annually for fire protection.

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LSA

LEGEND

Review Area - (154.82 ac)

Plant Communities / Land Uses - (154.82 ac)

- Developed - (42.96 ac)
- Nonnative Grassland - (108.12 ac)
- Open Water - (1.25 ac)
- Seasonal Wetland - (2.49 ac)

N

0 200 400

FEET

SOURCE: Basemap - NAIP Aerial Imagery (06/2016); Mapping - LSA (2017)

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FIGURE 5

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Plant Communities on the Carli Property Expansion Site

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2.4.2 Seasonal Wetlands

Seasonal wetlands occur in several locations within the review area. The seasonal wetlands are dominated by Italian ryegrass, rabbitsfoot grass (*Polypogon monspeliensis*), common spikerush (*Eleocharis macrostachya*), and curly dock (*Rumex crispus*) but several other species common in seasonal wetlands were also observed including Mediterranean barley (*Hordeum marinum*), low manna grass (*Glyceria declinata*), and vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus*).

2.4.3 Open Water

Aquatic open water features within the review area include a ponded ditch bisecting the southern half of the property and a retention basin in the northeast corner of property. Both features are man-made and were created to store water as part of the composting operation dust control practices. Consequently, both features are typically inundated. Based on minimal vegetation present, these areas are mapped as open water.

2.4.4 Developed Areas

Developed areas include the office complex, compost piles, entrance station, and gravel roads.

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3.0 REGULATORY BACKGROUND

The discharge of dredged or fill material into streams, lakes, and other bodies of water, including wetlands, are often regulated by the USACE under Section 404 of the CWA. The USACE also regulates activities in navigable waters under Section 10 of the Rivers and Harbors Act. The basis of USACE jurisdiction over various waters is described in the following sections.

3.1 SECTION 404

Under Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into waters of the U.S., including wetlands.

3.1.1 Definition of Waters of the U.S.

In the USACE/EPA CWA regulation (33 CFR 328.3(a)), the term "waters of the U.S." is defined as follows:

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 interstate 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 U.S. under the definition;
5. Tributaries of waters identified in paragraphs (1)-(4) of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1)-(6) of this section.

Based on this definition, the USACE will assert jurisdiction over the following waters as outlined in the Jurisdictional Determination Form Instructional Guidebook (May 2007):

1. Traditional Navigable Waters (TNW) and adjacent wetlands.
2. Relatively Permanent Waters (RPW) (i.e. tributaries that typically flow year-round or have continuous flow at least seasonally) that flow directly or indirectly into TNW.
3. Non-Relatively Permanent Waters (Non-RPW) that flow directly or indirectly into TNW (with significant nexus determination).

4. Wetlands directly abutting an RPW that flows directly or indirectly into a TNW.
5. Wetlands adjacent to by not directly abutting an RPW that flows directly or indirectly into a TNW (with significant nexus determination).
6. Wetlands adjacent to non-RPWs that flow directly or indirectly into a TNW (with significant nexus determination).

3.1.2 Significant Nexus Evaluation

A significant nexus evaluation includes:

1. An assessment of the flow characteristics and functions of the tributary, itself, in combination with the functions performed by any wetlands adjacent to the tributary to determine if they have more than an insubstantial or speculative effect on the chemical, physical, and/or biological integrity of TNWs.
2. A consideration of hydrologic factors such as volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary; proximity to the TNW; size of the watershed; average annual rainfall; and average annual winter snow pack.
3. A consideration of ecologic factors such as the ability of the tributary and its adjacent wetlands (if any) to carry pollutants and flood waters to TNWs; the ability of the tributary and its adjacent wetlands (if any) to provide aquatic habitat that supports biota of a TNW; the ability for adjacent wetlands to trap and filter pollutants or store flood waters; and the ability to maintain water quality.

3.1.3 Wetlands

The USACE and EPA defines wetlands as follows:

"*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 to life in saturated soil conditions.*"

In order to satisfy the USACE wetland definition, an area must possess three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Each characteristic has a specific definition and criteria that must be satisfied in order for that particular wetland characteristic to be met. Several parameters (indicators) may be analyzed to determine whether the criteria are satisfied. Conversely, if an area lacks one of the three characteristics under normal circumstances, the area is non-wetland.

3.1.4 Non-Wetland Waters

Non-wetland waters essentially include any body of water, not otherwise exempted, that displays an ordinary high water mark (OHWM).

3.1.5 Isolated Waters

As discussed above, USACE regulatory jurisdiction under Section 404 is founded on a connection between the water body in question connectivity to navigable waters. This connection may be

direct, through a tributary system linking a stream channel with traditional navigable waters, or may be indirect, through a nexus identified in the USACE regulations.

3.1.6 Man-Made Waters

The preamble to USACE regulations (Preamble Section 328.3 Definitions) states that the USACE does not generally consider the following waters to be waters of the U.S. The USACE does, however, reserve the right to regulate these waters on a case-by-case basis.

- Non-tidal drainage and irrigation ditches excavated on dry land.
- Artificially irrigated areas that would revert to upland if the irrigation ceased.
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- Water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for purposes of obtaining fill, sand or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the U.S.

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4.0 METHODS

A delineation of all aquatic features in the review area was conducted on May 10, 2017, by LSA biologists Mike Trueblood and Anna Van Zuuk. Current and historical photos (see Appendix A) were also reviewed prior to the field investigation.

All aquatic features in the review area were delineated in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the 2008 Regional Supplement – Arid West Region. A total of 19 formal observation points were described in the field. At each point, a pit was dug and soils and hydrology examined; vegetation was also characterized at each data point. Copies of the field data forms are attached (Appendix B).

Aquatic features were located in the field using a GPS unit with sub-meter accuracy. All data was entered into a GIS database to calculate the extent of the mapped features in the review area and to produce the final mapping. Final mapping was completed using color aerial photos, dated June 2016, at a scale of 1 inch = 200 ft.

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5.0 DELINEATION RESULTS

A total of 3.857 ac of potential jurisdictional waters were mapped in the review area, consisting of approximately 2.698 ac of potential wetlands and 1.159 ac of non-wetland waters. Areas potentially meeting USACE criteria for wetlands in the review area include scattered isolated wetlands, a large seasonal wetland in the southeast corner, and a manmade inundated ditch that extends through the center of the review area. Potential non-wetland waters in the review area include several ephemeral ditches and a manmade retention basin in the northeast corner. Potential jurisdictional waters are shown in Figure 5 and summarized in Table 1. Representative photos are also provided in Appendix D.

Table 1: Summary of Potential Jurisdictional Waters in the Review Area (acres)

Type	Total
Wetlands	
Seasonal Wetlands	1.589
Ephemeral Drainage	0.049
Adjacent Wetlands	0.126
Ponded Ditch	0.858
Isolated Wetland	0.076
Wetlands Subtotal	***2.698***
Non-Wetland Waters	
Ephemeral Drainage	0.102
Retention Basin	1.057
Non-Wetland Waters Subtotal	***1.159***
Total	**3.857**

A comprehensive discussion of the delineation results is provided below. Potential wetlands in the review area are characterized by data points 1 – 11 and 13 – 16, 18, and 19. Wetland data forms are provided in Appendix B.

Areas that were sampled and determined to be non-wetland waters include the man-made retention basin and ephemeral drainage ditches. These features were characterized by data points 1a – 11a, 12, and 13a – 16a, 17, 18a, and 19a.

5.1 ISOLATED DEPRESSIONS

5.1.1 Vegetation

Data collection points 6, 8, 9, 12, 13, 15, 18, and 19 were taken on the margins of isolated wetlands within the review area. The margins were dominated by a variety of hydrophytic vegetation including tall flatsedge (*Cyperus eragrostis*) – FACW, common spikerush– OBL, Italian ryegrass – FAC, low manna grass – FACW, Mediterranean barley – FAC, hyssop loosestrife (*Lythrum hyssopifolium*) – OBL, stalked popcornflower (*Plagiobothyrus stipitatus* var. *micranthus*) – FACW, rabbitsfoot grass – FACW, and curly dock – FAC. Other hydrophytic vegetation present but not dominant included brass buttons (*Cotula coronopifolia*) – OBL, toad rush (*Juncus bufonius* var. *bufonius*) – FACW, yellow glandweed (*Parentucellia viscosa*) – FAC, prostrate knotweed (*Polygonum aviculare*) – FACW, and vernal pool buttercup – OBL. Since the isolated depression margins supported a variety of dominant hydrophytic species according to the USACE, the vegetation criterion for wetlands was met.

5.1.2 Soils

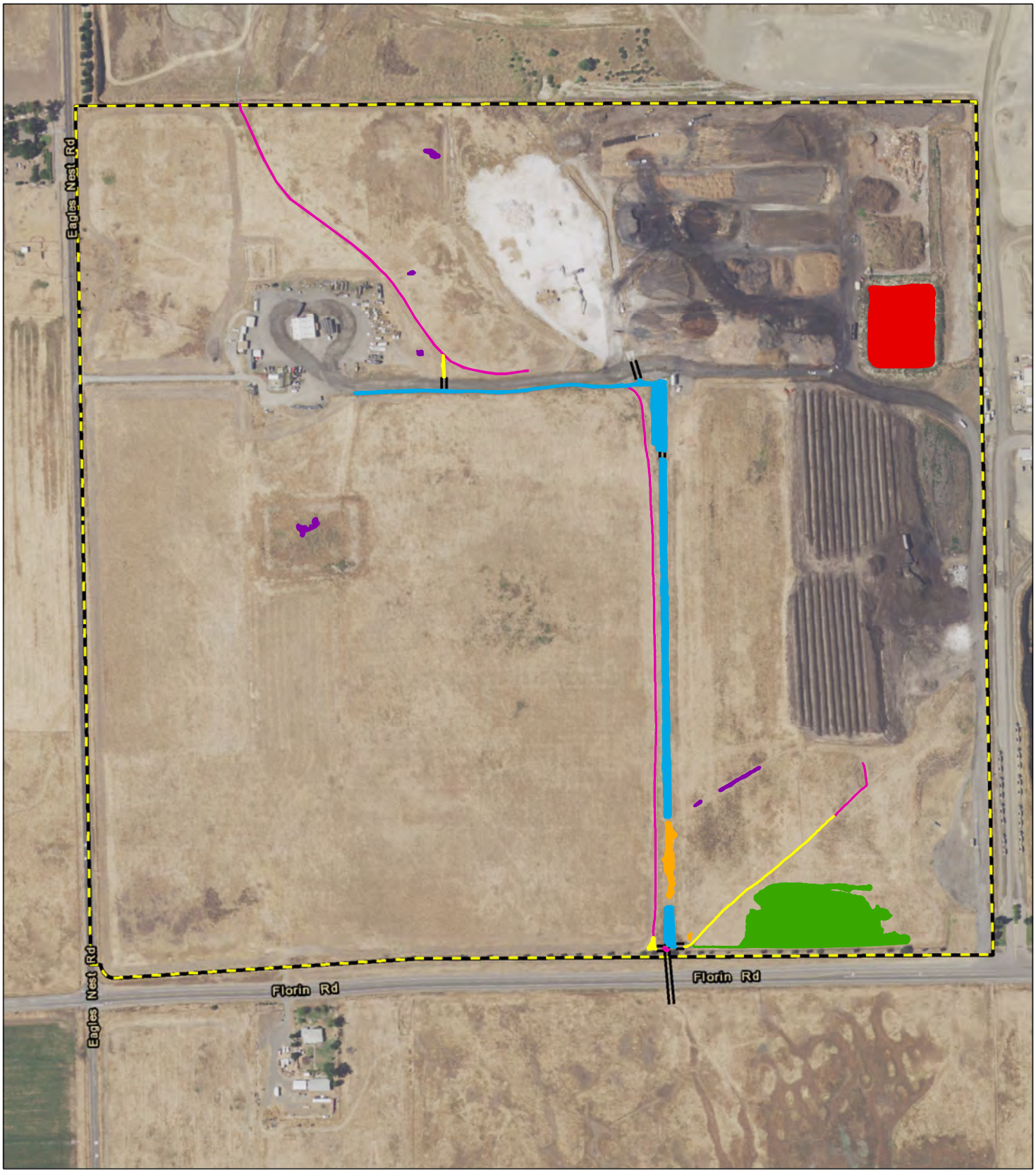
Indicators for hydric soils were observed at data points 6, 8, 9, 13, 15, 18, and 19. Data point 6 consisted of a layer with a Munsell moist color of 10YR 4/2 to 12 inches and contained 7 percent redoxomorphic concentrations in the matrix of 2.5YR 3/6. Data point 8 contained a layer of organic material to 2 inches and a second layer with a Munsell moist color of 10YR 3/2 to 13 inches, with 5 percent redoxomorphic concentrations in the matrix of 2.5YR 3/6. Data points 9 and 13 included a layer to 14 and 12 inches, respectively, with a Munsell moist color of 10YR 3/2. Data point 15 also contained a layer with a Munsell moist color of 10YR 3/2 to 4 inches, after which a hardpan was encountered. Data point 18 consisted of a layer with a Munsell moist color of 10YR 3/2 to 8 inches and contained 5 percent redoxomorphic concentrations in the matrix of 2.5YR 4/8. Data point 19 contained a layer to 10 inches with a Munsell moist color of 10YR 4/3. Data points 6 and 8 meet the requirements of the Redox Dark Surface indicator for hydric soils, data point 15 contains a hardpan at 4 inches, and data point 18 meets the requirements of the Redox Depressions indicator for hydric soils. Data points 9, 13, and 19 contain problematic soils due to recent human disturbance and presence of new fill material. These data points are consistent with problematic hydric soils of recently developed wetlands. These soils meet the USACE hydric soils criterion for wetlands.

5.1.3 Hydrology

Hydrology indicators identified included biotic crust and surface soil cracks, which are primary indicators for hydrology and thus meet the minimum USACE hydrology criterion for wetlands.

5.1.4 Paired Upland Data Points

Corresponding upland data points were taken to help determine the upland/wetland boundary (data points 6a, 8a, 9a, 13a, 15a, 18a, and 19a). Data point 12 was determined to be an upland point due to the lack of hydric soil indicators. In areas with recently developed wetlands, consistent with problematic hydric soils observed at data points 9, 13, and 19, the data points were considered to be within a wetland only if they also exhibited hydrophytic vegetation and hydrology indicators. This is consistent with the 2008 Regional Supplement – Arid West Region guidelines for problematic hydric soils.



LSA

LEGEND

Review Area - (154.82 ac)

Culverts

Wetlands - (2.698 ac)

Isolated Wetlands - (0.076 ac)

Adjacent Wetlands - (0.126 ac)

Seasonal Wetland - (1.589 ac)

Ponded Ditches - (0.858 ac)

Ephemeral Drainages - (0.049 ac)

Non-Wetland Waters - (1.159 ac)

Ephemeral Drainages - (0.102 ac)

Retention Basin - (1.057 ac)

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FIGURE 6

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Potential Jurisdictional Waters of the U.S.

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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5.2 SEASONAL WETLANDS

5.2.1 Vegetation

Data collection points 1, 2, 3, 4, and 5 were taken on the margins of the large seasonal wetland located in the southeast corner of the review area. The margins were dominated by a variety of hydrophytic vegetation including Italian ryegrass – FAC, Mediterranean barley – FAC, and rabbitsfoot grass – FACW. Other hydrophytic vegetation present but not dominant included common spikerush – OBL, low manna grass – FACW, stalked popcornflower – FACW, vernal pool buttercup – OBL, and curly dock – FAC. Since the seasonal wetland margins contain a variety of dominant hydrophytic species according to the USACE, the vegetation criterion for wetlands was met.

5.2.2 Soils

Indicators for hydric soils were observed at data points 1, 2, 3, 4, and 5. Data point 1 consisted of a layer to 7 inches with a Munsell moist color of 10YR 2/2 and a subsequent layer from 7 to 13 inches with a Munsell moist color of 10YR 3/2 containing 15 percent redoxomorphic concentration in the pore linings of 2.5YR 3/6. Data point 2 consisted of a layer to 6 inches with a Munsell moist color of 10YR 2/1 and a second layer from 6 to 14 inches with a Munsell moist color of 10YR 3/2 containing 10 percent redoxomorphic concentrations in the pore linings of 2.5YR 4/8. Data point 3 consisted of a layer to 6 inches with a Munsell moist color of 10YR 2/1 and a second layer from 6 to 12 inches with a Munsell moist color of 10YR 3/2 containing 15 percent redoxomorphic concentration in the matrix of 2.5YR 4/8. Data point 4 consisted of a layer to 5 inches of organic matter and a second layer from 5 to 13 inches with a Munsell moist color of 10YR 4/2 containing 10 percent redoxomorphic concentrations in the pore linings of 2.5YR 4/8. Data point 5 consisted of a layer to 5 inches with a Munsell moist color of 10YR 3/2 and a subsequent layer from 5 to 12 inches with a Munsell moist color of 10YR 4/2 containing 20 percent redoxomorphic concentrations in the matrix of 2.5YR 4/8. Data points 1 through 5 meet the requirements of the Redox Dark Surface indicator for hydric soils, and thus meet the USACE hydric soils criterion for wetlands.

5.2.3 Hydrology

Hydrology indicators identified included biotic crust, which is a primary indicator for hydrology and thus meets the minimum USACE hydrology criterion for wetlands.

5.2.4 Paired Upland Data Points

Corresponding upland data points were taken to help determine the upland/wetland boundary (data points 1a, 2a, 3a, 4a, and 5a).

5.3 PONDED DITCH

5.3.1 Vegetation

Data collection points 10 and 14 were taken on the margins of the ponded ditch within the review area. The margins were dominated by a variety of hydrophytic vegetation including common spikerush – OBL, rabbitsfoot grass – FACW, shining willow (*Salix lasiolepis*) – FACW, and cattail (*Typha sp.*) – OBL. Other hydrophytic vegetation present but not dominant included tall flatsedge – FACW, low manna grass – FACW, duckweed (*Lemna minor*) – OBL, and curly dock – FAC. Since the

ponded ditch margins contain a variety of dominant hydrophytic species according to the USACE, the vegetation criterion for wetlands was met.

5.3.2 Soils

Indicators for hydric soils were observed at data points 10 and 14. At data point 10, a soil pit was not dug and soils were not evaluated due to the presence of surface water and nearly vertical banks of the feature. Data point 14 consisted of a layer to 9 inches with a Munsell moist color of 10YR 4/3. Data points 10 and 14 contain problematic soils due to the presence of surface water and recent human disturbance. It is assumed that data point 10 would exhibit hydric soil indicators due to the presence of surface water and data point 14 is consistent with problematic hydric soils of recently developed wetlands. These soils meet the USACE hydric soils criterion for wetlands.

5.3.3 Hydrology

Hydrology indicators identified included surface water and biotic crust, which are primary indicators for hydrology and thus meet the minimum USACE hydrology criterion for wetlands.

5.3.4 Paired Upland Data Points

Corresponding upland data points were taken to help determine the upland/wetland boundary (data points 10a and 14a). In areas with recently developed wetlands, consistent with problematic hydric soils observed at data point 14, and areas where soils were not evaluated due to the presence of surface water (data point 10) the data points were considered to be within a wetland only in they also exhibited hydrophytic vegetation and hydrology indicators. This is consistent with the 2008 Regional Supplement – Arid West Region guidelines for problematic hydric soils.

5.4 EPHEMERAL DITCHES AND RETENTION BASIN

5.4.1 Vegetation

Data collection points 7, 11, 16, and 17 were taken on the margins of ephemeral ditches within the review area. The margins were dominated by a variety of hydrophytic vegetation including fringed willowherb (*Epilobium ciliatum*) – FACW, Italian ryegrass – FAC, and rabbitsfoot grass – FACW. Other hydrophytic vegetation present but not dominant included Mediterranean barley – FAC, common spikerush – OBL, curly dock – FAC, and tall flatsedge – FACW. Since the ditch margins contain a variety of dominant hydrophytic species according to the USACE, the vegetation criterion for wetlands was met.

5.4.2 Soils

Indicators for hydric soils were observed at data points 7, 11, and 16. Data point 7 consists of a layer to 2 inches of black compost and a subsequent layer from 2 to 14 inches with a Munsell moist color of 10YR 4/2 containing 40 percent redoxomorphic concentration in the matrix of 2.5YR 3/6. Data point 11 consists of a layer to 14 inches with a Munsell moist color of 10YR 3/2 and contained 5 percent redoxomorphic concentrations in the matrix of 5YR 4/6. Data point 16 consisted of a layer to 13 inches with a Munsell moist color of 10YR 3/2 and contained 5 percent redoxomorphic concentrations in the matrix of 2.5YR 3/6. Data points 7, 11, and 16 meet the requirements of the

Redox Dark Surface indicator for hydric soils, and thus meet the USACE hydric soils criterion for wetlands.

5.4.3 Hydrology

Hydrology indicators identified included biotic crust, which is a primary indicator for hydrology and thus meets the minimum USACE criterion for wetlands.

5.4.4 Paired Upland Data Points

Corresponding upland data points were taken to help determine the upland/wetland boundary (data points 7a, 11a, and 16a). Data point 17 was determined to be an upland point due to the lack of hydric soil and hydrology indicators.

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6.0 SECTION 404 JURISDICTIONAL DETERMINATION

A total of 1.993 acres are considered waters of the U.S. and under the CWA, consisting of two adjacent wetland depressions, seasonal wetland features, and two ephemeral ditches. A total of 1.864 acres were determined not to be subject to regulation under Section 404 of the CWA, consisting of six wetland depressions, the ponded ditch, one ephemeral ditch, and the retention basin. A detailed summary of Section 404 and non-Section 404 waters is provided below in Table 2 and these features are shown on Figures 6 and 7.

Table 2: Detailed Summary of Section 404 Waters and Non-Section 404 Waters in the Review Area (acres)

Type	Section 404 Waters	Non-Section 404 Waters	Total
Wetlands			
Seasonal Wetlands	1.589	0.000	*1.589*
Ephemeral Drainage	0.040	0.009	*0.048*
Adjacent Wetlands	0.126	0.000	*0.126*
Ponded Ditch	0.193	0.665	*0.858*
Isolated Wetland	0.000	0.076	*0.076*
Wetlands Subtotal	***1.948***	***0.750***	***2.698***
Non-Wetland Waters			
Ephemeral Drainage	0.045	0.057	*0.102*
Retention Basin	0.000	1.057	1.057
Non-Wetland Waters Subtotal	***0.045***	***1.114***	***1.159***
Total	**1.993**	**1.864**	***3.857***

Also refer to the Approved Jurisdictional Delineation (JD) Form (Appendix C) and representative photos (Appendix D).

6.1 EPHEMERAL DRAINAGES

Of the three ephemeral drainages within the review, only two were determined to be tributary waters. The small drainage that parallels the ponded ditch in the center of the review area (Non-RPW 1) and the drainage north of the seasonal wetland convey flows south of the review area (Non-

RPW 2). These drainages have the potential to carry waters to Laguna Creek, an intermittent stream and secondary tributary to the Sacramento River. Therefore, these ephemeral drainages were both determined to be waters of the U.S., and subject to USACE regulation under Section 404 of the CWA.

The remaining drainage, located northeast of the office complex, has been altered to convey site operation waters north into a large mining pit. Based on the lack of connectivity to a TNW and artificial nature of this feature, this drainage is not considered a water of the U.S. and would not be regulated under Section 404 of the CWA.

6.2 SEASONAL WETLANDS

The large seasonal wetland in the southeast corner of the property directly abuts a non-RPW that flows indirectly into a TNW, and therefore determined to be waters of the U.S., and subject to USACE regulation under Section 404 of the CWA.

6.3 ISOLATED DEPRESSIONS

Eight isolated depressions were identified in the review area. Of these, only two (the southernmost depression adjacent to the large seasonal wetland and the newly created depression directly south of the ponded ditch) demonstrated a significant nexus by being a wetland adjacent to a non-RPW that flows directly or indirectly into a TNW. The remaining six depressions / isolated wetlands do not demonstrate a significant nexus and are not considered waters of the U.S., and would not be regulated under Section 404 of the CWA.

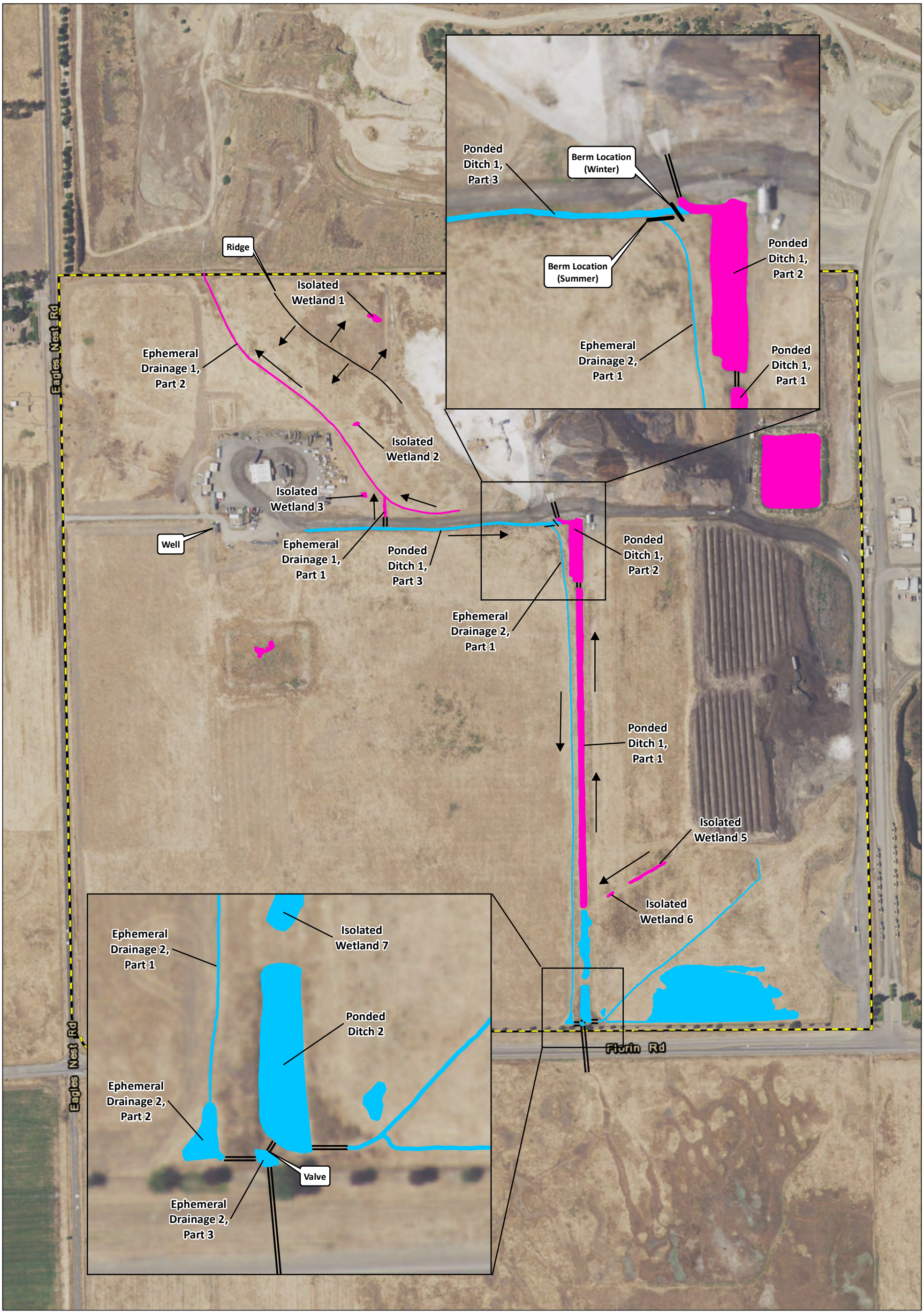
6.4 PONDED DITCH

The ponded ditch was excavated in uplands (see Appendix A for historic aerial photos) and designed to flow north. Water is artificially pumped into the ditch from a well and is used in compost operations for dust control. This feature does not flow or have connection to any other waters within or adjacent to the review area. Based on the lack of a connectivity to a TNW and artificial nature of this feature, this ditch is not considered a waters of the U.S. and would not be regulated under Section 404 of the CWA.

However, a section of the ponded ditch was recently filled and separated an approximately 200 ft long section of the ditch at the south end of the review area from the majority of the ditch to the north. This has effectively reversed flow direction of the southern section of the ponded ditch to the south and now conforms with natural flows in the area. Since this section of ditch is connected to non-RPW 1 through a valve release culvert, this feature is now considered a tributary waters of the U.S. and is subject to regulation under Section 404 of the CWA.

6.5 RETENTION BASIN

The retention basin is an isolated RPW that is not connected to other waters within or adjacent to the review area. Additionally, this feature is man-made and has been created by placing elevated basin walls; no excavation below ground level occurred. This feature is not considered waters of the U.S., and would not be regulated under Section 404 of the CWA.



LSA

LEGEND

- Review Area - (154.82 ac)
- Culverts
- Jurisdictional Waters of the U.S. - (1.993 ac)
- Non-404 Waters - (1.864 ac)

0 150 300
FEET

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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FIGURE 7

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601

Overview of Waters of the U.S.

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Feature Name	Acres
Ephemeral Drainage 1, Part 1	0.009
Ephemeral Drainage 1, Part 2	0.057
Ephemeral Drainage 2, Part 1	0.038
Ponded Ditch 1, Part 3	0.116
Isolated Wetland 1	0.015
Isolated Wetland 2	0.004
Isolated Wetland 3	0.005
Ponded Ditch 1, Part 1	0.456
Ponded Ditch 1, Part 2	0.209
Retention Basin	1.057



LSA

LEGEND

- Review Area - (154.82 ac)
- Data Points
- Culverts

Jurisdictional Waters of the U.S. (1.993 ac)

- Wetlands (1.948 ac)
- Non-Wetland Waters (0.045 ac)

Non-404 Waters (1.864 ac)

- Wetlands (0.750 ac)
- Non-Wetland Waters (1.114 ac)

0 100 200
FEET

Map Index

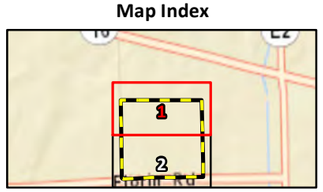

FIGURE 8
Page 1 of 2

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601
Approved Jurisdictional Delineation
200-Foot Scale Focus

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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Feature Name	Acres
Isolated Wetland 4	0.027
Isolated Wetland 5	0.022
Isolated Wetland 6	0.004
Ephemeral Drainage 2, Part 1	0.038
Ephemeral Drainage 2, Part 2	0.012
Ephemeral Drainage 2, Part 3	0.003
Ephemeral Drainage 3, Part 1	0.005
Ephemeral Drainage 3, Part 2	0.027
Isolated Wetland 7	0.121
Isolated Wetland 8	0.005
Ponded Ditch 2	0.077
Seasonal Wetland	1.589
Ponded Ditch 1, Part 1	0.456

LSA

LEGEND

- Review Area - (154.82 ac)
- Data Points
- Culverts

Jurisdictional Waters of the U.S. (1.993 ac)

- Wetlands (1.948 ac)
- Non-Wetland Waters (0.045 ac)

Non-404 Waters (1.864 ac)

- Wetlands (0.750 ac)
- Non-Wetland Waters (1.114 ac)

0 100 200
FEET

SOURCE: Basemap - NAIP Aerial Imagery (6/2016); Mapping - LSA (2017)

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Map Index

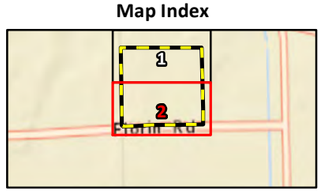

FIGURE 8
Page 2 of 2

Sacramento Aggregates Expansion
Sacramento County, California
LSA Project No. VMC1601
Approved Jurisdictional Delineation
200-Foot Scale Focus

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7.0 CONCLUSION

A total of 3.857 acres of wetlands and non-wetland waters were mapped in the review area, of which 1.993 acres were determined to be Section 404 waters, and 1.864 acres were determined to be non-Section 404 waters. This information is summarized below in Table 2.

Table 3: Summary of Waters of the U.S. in the Review Area (acres)

Type	Section 404 Waters	Non-Section 404 Waters	Total
Wetlands	1.948	0.750	2.698
Non-Wetland Waters	0.045	1.114	1.159
Total	**1.993**	**1.864**	**3.857**

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APPENDIX A

HISTORIC AERIAL PHOTOS

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INQUIRY #: 4020261.9
YEAR: 1937
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 1947
= 500'
N
EDR



INQUIRY #: 4020261.9

YEAR: 1957

= 500'

N

EDR


INQUIRY #: 4020261.9
YEAR: 1964
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 1971
= 500'
N
EDR



INQUIRY #: 4020261.9

YEAR: 1981

= 500'

N

EDR


INQUIRY #: 4020261.9
YEAR: 1993
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 1998
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 2005
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 2010
= 500'
N
EDR


INQUIRY #: 4020261.9
YEAR: 2012
= 500'
N
EDR

APPENDIX B

WETLAND DATA FORMS

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 1

Investigator(s): A. VAN ZUUL, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. RUMEX CRISPUS	5	N	FAC
2. PLAGIOBOTHYRUS STIPITATUS VAR. MICRANTHUS	2	N	FACW
3. ELEOCHARIS MACROSTACHYA	10	N	OBL
4. FESTUCA PERENNIS	8	N	FAC
5. POLYPOGON MONSPELIENSIS	40	Y	FACW
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7"	10YR 2/2	100					LOAMY SAND	
7-15"	10 YR 3/2	85	2.5 YR 3/6	15	C	PL	LOAMY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >13"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >13"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 1A

Investigator(s): A.VAN ZUUK, M.TREESLOOD Section, Township, Range:

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

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

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:)			
1. FESTUCA PERENNIS	95	Y	FAC
2. HORDEUM MARINUM	5	N	FAC
3. RUMEX CRISPUS	<1	N	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks:

SOIL

Sampling Point: 1A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR 2/1	95	2.5YR 4/8	5	C	PL	LOAMY 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:

SOIL FORMS BALL, NO RIBBON

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7.5"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7.5"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 2

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. FESTUCA PERENNIS	14	Y	FAC
2. HORDEUM MARINUM	15	Y	FAC
3. RUMEX CRISPUS	1	N	FAC
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 2/1	100					LOAMY SAND	
6-14"	10 YR 3/2	90	2.5YR 4/8	10	C	PL	CLAYEY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >14"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 2A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. FESTUCA PERENNIS	93	Y	FAC
2. HORDEUM MARINUM	5	N	FAC
3. RUMEX CRISPUS	2	N	FAC
4. GERANIUM DISSECTUM	<1	N	UPL
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	100 = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	99	x 3 =	297
FACU species	_____	x 4 =	_____
UPL species	1	x 5 =	5
Column Totals:	100 (A)		302 (B)

Prevalence Index = B/A = 3.02

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 2A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 2/2	95	2.5YR 4/8	5	C	PL	LOAMY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >14"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 3

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. ELEOCHARIS MACROSTACHYA	2	N	OBL
2. FESTUCA PERENNIS	40	Y	FAC
3. HORDEUM MARINUM	7	N	FAC
4. RUMEX CRISPUS	1	N	FAC
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	[redacted] = Total Cover		

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

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10 YR 2/1	100					LOAMY SAND	
6-12"	10 YR 3/2	85	2.5YR 4/8	15	C	M	SILTY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/16/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 3A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. FESTUCA PERENNIS	95	Y	FAC
2. HORDEUM MARINUM	5	N	FAC
3. RUMEX CRISPUS	<1	N	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 3A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	NO COLOR (ORG)	100					—	ORGANIC MATTER
4-6"	BLACK							BLACK MANURE
6-12"	10YR 4/2	93	2.5YR 4/8	7	C	PL	SILTY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7/12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7/12"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 4

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. POLYPOGON MONSPELIENSIS	75	Y	FACW
2. RANUNCULUS BONARIENSIS VAR. TRISEPALUS	5	N	OBL
3. ELEOCHARIS MACROSTACHYA	10	N	OBL
4. GLYCERIA DECLINATA	5	N	FACW
5. RUMEX CRISPUS	10	N	FAC
6. FESTUCA PERENNIS	3	N	FAC
7. HORDEUM MARINUM	3	N	FAC
8.			
	111 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust 25

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5"	ORGANIC	100					ORGANIC MATTER	
5-13"	10YR 4/2	90	2.5YR 4/8	10	C	PL	SILTY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7|3"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >13"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 4A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. FESTUCA PERENNIS	70	Y	FAC
2. HORDEUM MARINUM	10	N	FAC
3. GERANIUM DISSECTUM	5	N	UPL
4. FESTUCA MYUROS	2	N	UPL
5. BROMUS HORDEACEUS	2	N	FACU
6. POLYPOGON MONSPELIENSIS	10	N	FACW
7. MALVA NEGLECTA	<1	N	UPL
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 10	x 2 = 20
FAC species 80	x 3 = 240
FACU species 2	x 4 = 8
UPL species 8	x 5 = 40
Column Totals: 100 (A)	308 (B)

Prevalence Index = B/A = 3.08

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 4A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5"	10YR 4/3	100					SANDY CLAY	
5-12"	10YR 3/2	99	2.5YR 4/8	1	C	PL	SILTY SAND	COBBLY

[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:

ROADSIDE FILL SOIL - RANDOM BITS OF DIFF. COLORED SOIL & ROCKS

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carl: Property (VMC1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 5

Investigator(s): Anna van Zuuk; Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. Eleocharis macrostachya	10	N	OBL
2. Festuca Perennis	80	Y	Fac
3. Hordeum marinum	2	N	Fac
4. Polypogon monspeliensis	3	N	FacW
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust 20

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5"	10YR 3/2	100						silty sand
[redacted]								
5-12"	10YR 4/2	80	2.5YR 4/8	20	C	M		Clay 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 5a

Investigator(s): Anna vanZuuk; Mike Treadlood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. Festuca perennis	100	Y	FAC
2. Hordeum marinum	30	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	130 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 5a

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	Organic	100						Organic
2-5"	10YR 2/1	100						loam
5-12"	10YR 4/2	90	2.5YR 3/6	10	C	M		Silty 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ~

Water Table Present? Yes ___ No ✓ Depth (inches): 7 12"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7 12"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 6

Investigator(s): Anna VanZwol; Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. Festuca perennis	80	Y	FAC
2. Hordeum marinum	20	Y	FAC
3. Rumex crispus	1	N	FAC
4.			
5.			
6.			
7.			
8.			
	101 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/2	93	2.5YR 3/6	7	C	M		silty 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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7½"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7½"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC 1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 6a

Investigator(s): Anna van Zuuk, Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. Festuca perennis	100	Y	Fac
2. Hordeum marinum	20	N	Fac
3.			
4.			
5.			
6.			
7.			
8.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: Ga

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 3/2	100						Sandy loam
4-11"	10YR 4/2	90	7.5YR 4/8	10	C	M		

[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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): > 11"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): > 11"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 7

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. FESTUCA PERENNIS	90	Y	FAC
2. HORDEUM MARINUM	3	N	FAC
3. ELEOCHARIS MACROSTACHYA	5	N	OBL
4. RUMEX CRISPUS	5	N	FAC
5.			
6.			
7.			
8.			
	103 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust 25

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	5	x 1 =	5
FACW species	_____	x 2 =	_____
FAC species	98	x 3 =	294
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	103 (A)		299 (B)

Prevalence Index = B/A = 2.90

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	BLACK						LOAM	MANURE
2-14"	10YR 4/2	60	2.5YR 3/6	40	C	M	SILTY 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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >14"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLEROCK (VULCAN) State: CA Sampling Point: 7A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. FESTUCA PERENNIS	90	Y	FAC
2. HORDEUM MARINUM	10	N	FAC
3. BROMUS DIANDRUS	1	N	UPL
4. LACTUCA SERRIOLA	1	N	FACU
5. GALIUM APARINE	1	N	FACU
6. RUMEX CRISPUS	2	N	FAC
7. GERANIUM DISSECTUM	<1	N	UPL
8.			
Total Cover:	106		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	102	x 3 =	306
FACU species	2	x 4 =	8
UPL species	2	x 5 =	10
Column Totals:	106 (A)		324 (B)

Prevalence Index = B/A = 3.06

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: 7A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	ORGANIC						NO COLOR	ORGANIC MATTER
4-10"	10YR 4/2	95	2.5YR 4/8	5	C	PL	CLAY SAND	
10-14"	10YR 4/2	60	2.5YR 3/6	40	C	M	CLAY SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >14"

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 8

Investigator(s): Anna VanZuuk; Mike Trudeau Section, Township, Range:

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

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Eleocharis macrostachya	5	N	Obl
2. Festuca perennis	30	Y	Fac
3. Hordeum marinum	5	N	Fac
4. Rumex crispus	20	Y	Fac
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ 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: 8

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	Organic							Organic
2-13"	10YR 3/2	95	2.5YR 3/6	5	C	PL		Sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 7 13"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7 13"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC 1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 8a

Investigator(s): Anna van Zuuk; Mike Trewloor Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Lactuca serriola	1	N	FACU
2. Festuca perennis	100	Y	FAC
3. Rumex crispus	1	N	FAC
4. Hordeum marinum	10	N	FAC
5.			
6.			
7.			
8.			
Total Cover: 112			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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: 8a

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	Organic							Organic
2-7"	10YR 2/1	99	2.5YR 3/6	1	C	PL		sandy loam
7-14"	10YR 4/2	95	2.5YR 4/8	5	C	M		silty clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 7 14

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 9

Investigator(s): Anna van zuuk; Mike Krueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Rumex crispus	90	Y	FAC
2. Festuca perennis	10	N	FAC
3. Polygonum ~~sp~~ aviculare	1	N	FACW
4. Cerastium glomeratum	1	N	UPL
5.			
6.			
7.			
8.			
Total Cover: 102			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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: 9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14"	10YR 3/2	100						silty clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ____

Remarks:

recently filled in ditch with upland soils. rains compacted recently filled canal to create a new depressional feature. soils not from wetlands so did not use.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): >14

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): >14

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 9a

Investigator(s): Anna van Zuuk, Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. FESTUCA PERENNIS	50	Y	FAC
2. RUMEX CRISPUS	3	N	FAC
3. BROMUS HORDEACEOUS	20	Y	FACU
4. CONVOLVULUS ARVENSIS	2	N	UPL
5. TRIFOLIUM DUBIUM	5	N	UPL
6. MEDICAGO POLYMORPHA	10	N	FACU
7. HORDEUM MARINUM	2	N	FAC
8.			
Total Cover:	92		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	55	x 3 =	165
FACU species	30	x 4 =	120
UPL species	7	x 5 =	35
Column Totals:	92 (A)		320 (B)

Prevalence Index = B/A = 3.48

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: 9A

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9"	10YR 3/2	100					SILTY CLAY	ROCK HARD

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): 79"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): 79"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 10

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: SOIL INUNDATED, STANDING WATER PRESENT

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. LEMNA MINOR	3	N	OBL
2. GLYCERIA DECLINATA	2	N	FACW
3. ELEOCHARIS MACROSTACHYA	30	Y	OBL
4. RUMEX CRISPUS	1	N	FAC
5. TYPHA SP.	<1	N	OBL
6. CYPERUS ERAGROSTIS	2	N	FACW
7. POLYPOGON MONSPELIENSIS	25	Y	FACW
8.			
Total Cover:	64		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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: 10

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

AREA INUNDATED, NO SOIL PIT DUG.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ✓ No ___ 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

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 5/10/17

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 10a

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: See 9a

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. GERANIUM DISSECTUM	20	Y	UPL
2. BROMUS HORDEACEOUS	35	Y	FACU
3. HORDEUM MURINUM	10	N	FACU
4. SILYBUM MARINUM	20	Y	UPL
5. AVENA FATUA	2	N	UPL
6. BROMUS DIANDRUS	2	N	UPL
7. FESTUCA PERENNIS	5	N	FAC
8. CONVOLVULUS ARVENSIS	2	N	UPL
Total Cover:	96		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % 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: 3 (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:

SOIL

Sampling Point: 10A

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/2	100					SILTY CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

SEE 9A.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

SEE 9A.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 11

Investigator(s): A. VAN ZUUL, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. FESTUCA PERENNIS	90	Y	FAC
2. POLYPOGON MONSPELIENSIS	15	N	FACW
3. RUMEX CRISPUS	3	N	FAC
4.			
5.			
6.			
7.			
8.			
Total Cover:	108		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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 to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 3/2	95	5YR 4/6	5	C	M	SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >14"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARL PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 11A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

SEE 10A

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. FESTUCA PERENNIS	95	Y	FAC
2. AVENA FATUA	2	N	UPL
3. HORDEUM MURINUM	1	N	FACU
4. BROMUS HORDEACEOUS	1	N	FACU
5. LACTUCA SERRIOLA	2	N	FACU
6. CONVOLVULUS ARVENSIS	1	N	UPL
7. HORDEUM MARINUM	1	N	FAC
8.			
Total Cover:	103		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	96	x 3 =	288
FACU species	4	x 4 =	16
UPL species	3	x 5 =	15
Column Totals:	103 (A)		319 (B)

Prevalence Index = B/A = 3.10

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: 11A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 3/2	100					SILTY CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

SEE 10A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

SEE 10A

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 12

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. FESTUCA PERENNIS	90	Y	FAC
2. HORDEUM MARINUM	10	N	FAC
3. AVENA FATUA	1	N	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	101		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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 to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7"	BLACK	100					CLAY LOAM	
7-14"	10 YR 3/3	100					LOAMY CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: SIGNIFICANTLY DISTURBED

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): 7|4"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): 7|4"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 601) City/County: SACRAMENTO Sampling Date: 05/16/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: B

Investigator(s): A. VAN ZUUL, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. FESTUCA PERENNIS	45	Y	FAC
2. CYPERUS ERAGROSTIS	20	Y	FACW
3. POLYPOGON MONSPELIENSIS	5	N	FACW
4. ELEOCHARIS MACROSTACHYA	35	Y	OBL
5. JUNCUS BUFONIS	5	N	FACW
6. RUMEX CRISPUS	2	N	FAC
7. PARENTUCELLIA VISCOSA	1	N	FAC
8.			
Total Cover:	113		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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: 13

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 3/2	100					SILTY CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

SIGNIFICANTLY DISTURBED, RECENTLY GRADED

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): 7 1/2"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): 7 1/2"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 13A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. BROMUS HORDEACEOUS	20	Y	FACU
2. RUMEX CRISPUS	2	N	FAC
3. CENTUREA SOLSTITALIS	10	N	UPL
4. BROMUS DIANDRUS	20	Y	UPL
5. SONCHUS ARVENSIS	3	N	FACU
6. AMSINCKIA MENZIESII	5	N	UPL
7. BRASSICA RAPA	3	N	FACU
8. LACTUCA SERRIOLA	2	N	FACU
Total Cover:	65		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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: 13A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/2	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC 1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 14

Investigator(s): Anna VanZuuk; Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	15	Y	FACW
2.			
3.			
4.			
Total Cover:	15		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Typha [illegible] sp.	35	Y	OBL
2. Cyperus eragrostis	3	N	FACW
3. Polypogon monspeliensis	1	N	FACW
4. Eleocharis macrostachya	1	N	OBL
5.			
6.			
7.			
8.			
Total Cover:	40		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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: 14

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9"	10YR 4/3	100						Clay Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks: Dredged regularly. Did not use soil criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): –

Water Table Present? Yes _____ No ✓ Depth (inches): >9"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >9"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Cavli Property (VMC 1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 14a

Investigator(s): Anna van Zuuk, Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: upland data point

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Erodium botrys	60	Y	FACU
2. Malva neglecta	20	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	80		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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: 14a

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/3	100						loamy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): 7 1/2"

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): 7 1/2"

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Carli Property (VMC 1601) City/County: Sacramento Sampling Date: 5/10/17

Applicant/Owner: Triangle Rock (Vulcan) State: CA Sampling Point: 15

Investigator(s): Aaron VanZwol, Mike Trueblood Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Eleocharis macrostachya	15	Y	OBL
2. Glyceria declinata	10	Y	~~FACW~~ FAC
3. Cotula coronopifolia	3	N	OBL
4. Festuca perennis	2	N	FAC
5.			
6.			
7.			
8.			
Total Cover:	30		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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: 15

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4"	10YR 3/2	100						silty clay
4"	Hardpan							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: Hardpan

Depth (inches): 4"

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >4"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >4"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 15A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: CORRESPONDING UPLAND DATA POINT

VEGETATION – Use scientific names of plants.

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: _____)			
1. FESTUCA PERENNIS	100	Y	FAC
2. HORDEUM MURINUM	5	N	FACU
3. MEDICAGO POLYMORPHA	2	N	FACU
4. LACTUCA SERRIOLA	1	N	FACU
5. RUMEX CRISPUS	1	N	FAC
6. BROMUS DIANDRUS	6	N	UPL
7.			
8.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species 101	x 3 = 303
FACU species 8	x 4 = 32
UPL species 6	x 5 = 30
Column Totals: 115 (A)	365 (B)

Prevalence Index = B/A = 3.17

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 15A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 4/3	100					LOAMY 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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 16

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. EPILOBIUM CILIATUM	20	Y	FACW
2. RUMEX CRISPUS	5	N	FAC
3. POLYPOGON MONSPELIENSIS	10	Y	FACW
4. FESTUCA PERENNIS	8	N	FAC
5. CYPERUS ERAGROSTIS	5	N	FACW
6. ELEOCHARIS MACROSTACHYA	2	N	OBL
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 16

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13"	10YR 3/2	95	2.5YR 3/6	5	C	M	SANDY SILTY 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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >13"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >13"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/16/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 17

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. FESTUCA PERENNIS	100	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 17

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	BLACK COMPOST						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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 18

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. POLYPOGON MONSPELIENSIS	50	Y	FACW
2. FESTUCA PERENNIS	30	Y	FAC
3. LYTHRUM HYSSOPIFOLIA	5	N	OBL
4. HORDEUM MARINUM	2	N	FAC
5.			
6.			
7.			
8.			
	87 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 18

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	10YR 3/2	95	2.5YR 4/8	5	C	M	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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): 78"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): 78"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC 1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 18A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: CORRESPONDING UPLAND DATA POINT

VEGETATION – Use scientific names of plants.

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: _____)			
1. VICIA VILLOSA	30	Y	UPL
2. FESTUCA PERENNIS	70	Y	FAC
3. HORDEUM MURINUM	10	N	FACU
4. AVENA FATUA	2	N	UPL
5. CONVOLVULUS ARVENSIS	2	N	UPL
6.			
7.			
8.			
	114 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species 70	x 3 =	210
FACU species 10	x 4 =	40
UPL species 34	x 5 =	170
Column Totals: 114 (A)		420 (B)

Prevalence Index = B/A = 3.68

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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 18A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1"	ORGANIC MATTER						ORGANIC	
1-10"	10YR 3/3	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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >10"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >10"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/16/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 19

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

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: _____)			
1. PLAGIOBOTHRYS STIPITATUS VAR. MICRANTHUS	20	Y	FACW
2. LYTHRUM HYSSOPIFOLIA	20	Y	OBL
3. RANUNCULUS BONARIENSIS VAR. TRISEPALUS	1	N	OBL
4. HORDEUM MARINUM	10	N	FAC
5. HYPOCHAERIS GLABRA	1	N	UPL
6. POLYPOGON MONSPELIENSIS	5	N	FACW
7. FESTUCA PERENNIS	3	N	FAC
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 19

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10"	10YR 4/3	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: SCRAPED OUT AREA FROM CONSTRUCTION EQUIPMENT. SOILS HAVE NOT YET ESTABLISHED TO DEPRESSIONAL CONDITIONS.

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): >10"

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): >10"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CARLI PROPERTY (VMC1601) City/County: SACRAMENTO Sampling Date: 05/10/2017

Applicant/Owner: TRIANGLE ROCK (VULCAN) State: CA Sampling Point: 19A

Investigator(s): A. VAN ZUUK, M. TRUEBLOOD Section, Township, Range: _____

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

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: CORRESPONDING UPLAND DATA POINT.

VEGETATION – Use scientific names of plants.

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: _____)			
1. TRIFOLIUM HIRTUM	40	Y	UPL
2. VICIA VILLOSA	5	N	UPL
3. MEDICAGO POLYMORPHA	30	Y	FACU
4. ERODIUM BOTRYS	10	N	FACU
5. BROMUS DIANDRUS	2	N	UPL
6. FESTUCA MYUROS	5	N	UPL
7.			
8.			
	92 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[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, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 19A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11"	10YR 3/4	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:

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 (2 or 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 on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >11"

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >11"

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

APPENDIX C

APPROVED JURISDICTIONAL DELINEATION FORM

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APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

Sacramento Aggregates Expansion Project

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Sacramento City: Sacramento
Center coordinates of site (lat/long in degree decimal format): Lat. 38°30'1.21" **N**, Long. 121°15'22.55" **W**.
Universal Transverse Mercator: 652054.8 (easting), 4262771.2 (northing), Zone 10
Name of nearest waterbody: Laguna Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Sacramento River
Name of watershed or Hydrologic Unit Code (HUC): HUC: 180201630404, California Region / Sacramento Subunit
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply): [1]

☐ TNWs, including territorial seas
☐ Wetlands adjacent to TNWs
☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
☒ Non-RPWs that flow directly or indirectly into TNWs
☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
☒ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐ Impoundments of jurisdictional waters
☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:
Non-wetland waters: 3385 linear feet: 1-193 width (ft) and/or 0.046 acres.
Wetlands: 1.831 acres.

c. Limits (boundaries) of jurisdiction based on: **1987 Delineation Manual**
Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable): [3]

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain: **Several man-made ditches were determined to be not jurisdictional since these ditches were excavated in and drain only uplands. Additional man-made basins and depressions containing wetlands were determined to be isolated**

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

(having no connectivity to TNWs or other nexus to interstate waters). Based on SWANCC these features have no value for interstate commerce and are considered not jurisdictional.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

Non-RPW-1 (See attached map) – Non-RPW-1 consists of an unnamed ephemeral ditch that flows south into a wetland adjacent to Laguna Creek.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 33.87 **acres**
Drainage area: 33.87 **acres**
Average annual rainfall: 18.51 inches
Average annual snowfall: 0.00 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **2** tributaries before entering TNW.

Project waters are **20-25** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Project waters are **10-15** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: n/a.

Identify flow route to TNW[5]: Flows south then east 0.4 mile into Laguna Creek, then flows southwest then northwest 20 miles to Morrison Creek, then flows southwest 3 miles to the Sacramento River.
Tributary stream order, if known: Third.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☒ Manipulated (man-altered). Explain: Tributary is channelized and serves as a drainage ditch during and after storm events.

Tributary properties with respect to top of bank (estimate):
Average width: 1 foot
Average depth: <1 feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☒ Vegetation. Type/% cover: Italian ryegrass (Festuca perennis) dominant, 90-95% relative cover, >100% absolute cover.
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Banks appear to be stable.
Presence of run/riffle/pool complexes. Explain: Flows tend to move slowly through the study area.
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: **Ephemeral flow**
Estimate average number of flow events in review area/year: **6-10**
Describe flow regime: Tributary collects surface runoff only; conveys ephemeral flows.
Other information on duration and volume: n/a.

Surface flow is: **Confined.** Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☒ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☒ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7] Ibid.

☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: no water observed.
Identify specific pollutants, if known: unknown.

(iv) Biological Characteristics. Channel supports (check all that apply):
☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW
None

Non-RPW-2 (See attached map) – Non-RPW-2 consists of an unnamed ephemeral ditch that flows southwest into Non-RPW-1.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 18.68 **acres**
Drainage area: 18.68 **acres**
Average annual rainfall: 18.51 inches
Average annual snowfall: 0.00 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **2** tributary before entering TNW.

Project waters are **20-25** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **10-15** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: n/a.

Identify flow route to TNW[8]: Flows west into Non-RPW-1 in the study area, then flows south then east 0.4 mile into Laguna Creek, then flows southwest then northwest 20 miles to Morrison Creek, then flows southwest 3 miles to the Sacramento River.
Tributary stream order, if known: Third.

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☒ Manipulated (man-altered). Explain: Tributary is channelized and serves as a drainage ditch during and after storm events.

Tributary properties with respect to top of bank (estimate):
Average width: 1 feet
Average depth: <1 feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):
☒ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☒ Vegetation. Type/% cover: Italian ryegrass (Festuca perennis) dominant, 90% relative cover, >100% absolute cover.

[8] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Banks appear to be stable.
Presence of run/riffle/pool complexes. Explain: Flows tend to move slowly through the study area.
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): 2 %

(c) Flow:
Tributary provides for: **Ephemeral flow**
Estimate average number of flow events in review area/year: **6-10**
Describe flow regime: Tributary collects surface runoff only; conveys ephemeral flows.
Other information on duration and volume: n/a.

Surface flow is: **Confined.** Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[9] (check all indicators that apply):
- ☐ clear, natural line impressed on the bank
- ☒ changes in the character of soil
- ☐ shelving
- ☐ vegetation matted down, bent, or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ other (list):
- ☐ the presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ the presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☒ multiple observed or predicted flow events
- ☐ abrupt change in plant community

☐ Discontinuous OHWM.[10] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gauges
- ☐ other (list):

☐ Mean High Water Mark indicated by:
- ☐ survey to available datum;
- ☐ physical markings;
- ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: no water observed.
Identify specific pollutants, if known: Unknown.

(iv) Biological Characteristics. Channel supports (check all that apply):
☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW
All wetland(s) being considered in the cumulative analysis: **3**
Approximately (1.715) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
Yes	1.589		

[9]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[10]Ibid.

No	0.005
No	0.121

Summarize overall biological, chemical and physical functions being performed: Seasonal wetland directly abutting Non-RPW-1. Tributary connectivity via ephemeral ditch. Small wetlands to the north do not directly abut and are connected via sheetflow (no wetlands in sheetflow area).

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: Non-RPW-1 is a ditch with seasonal flows into wetlands adjacent to Laguna Creek. Non-RPW-1 has the capacity to convey pollutants to TNWs, thus providing a significant nexus.

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: Non-RPW-2 consists of a ditch with seasonal flows into Non-RPW-1 and its adjacent wetlands. Non-RPW-2 has the capacity to convey pollutants to TNWs, thus providing a significant nexus.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: n/a.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: All RPWs in the study area have either intermittent "seasonal" flows or ephemeral flows with areas of seasonal ponding.

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters:
   - ☐ Other non-wetland waters: .

Identify type(s) of waters: .

3. **Non-RPWs[11] that flow directly or indirectly into TNWs.**
☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☒ Tributary waters: **Non-RPW-1: 1,690** linear feet **1 - 24** width (ft).
Non-RPW-2: 1,052 linear feet **1 - 33** width (ft).

☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: .

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☒ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: **1.832** acres.

7. **Impoundments of jurisdictional waters.[12]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[13]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[11] See Footnote # 3.
[12] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[13] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **The isolated wetlands are within or adjacent to non-RPWs that were excavated in and drain only uplands, and have no connection to TNWs.**

☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).

☐ Lakes/ponds: acres.

☒ Other non-wetland waters: 1.057 acres. List type of aquatic resource: Man-made water retention basin.

☒ Wetlands: 0.077 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).

☐ Lakes/ponds: acres.

☒ Other non-wetland waters: 1.114acres. List type of aquatic resource: Man-made ditch and basin created in and draining only uplands without direct or indirect connection to a TNW.

☒ Wetlands: 0.867 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☒ U.S. Geological Survey Hydrologic Atlas: .

☐ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: Carmichael and Elk Grove, 1:24,000.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Sacramento County.

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): NAIP (6/2016).

or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☐ Applicable/supporting case law: .

☐ Applicable/supporting scientific literature: .

☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

APPENDIX D

REPRESENTATIVE PHOTOS

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Data Point 1



Data Point 1a



Data Point 2



Data Point 2a

LSA

FIGURE 5
Page 1 of 8

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

I:\VMC1601\Indd\Figure 5.indd

PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 3



Data Point 3a



Data Point 4



Data Point 4a

LSA

FIGURE 5
Page 2 of 8

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 5



Data Point 5a



Data Point 6



Data Point 6a

FIGURE 5

LSA

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 7



Data Point 7a



Data Point 8



Data Point 8a

LSA

FIGURE 5
Page 4 of 8

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 9



Data Point 10



Data Point 11



Data Point 11a

LSA

FIGURE 5
Page 5 of 8

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 12



Data Point 13



Data Point 13a



Data Point 14

FIGURE 5
Page 6 of 8

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 14a



Data Point 15



Data Point 16



Data Point 18

FIGURE 5

LSA

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS



Data Point 18a



Data Point 19



Data Point 19a

LSA

FIGURE 5
Page 8 of 8

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California

SOURCE: LSA (04/2017).

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PRELIMINARY JURISDICTIONAL WATERS & WETLANDS DELINEATION PHOTOS

APPENDIX E

VERNAL POOL INVERTEBRATE SURVEY REPORTS

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BERKELEY
CARLSBAD
FRESNO
IRVINE
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

January 19, 2017

Sarah Markegard
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W2605
Sacramento, CA 95825

Subject: Results of 2016 Large Branchiopod Dry Season Surveys for the Sacramento Aggregates Expansion Project, Sacramento County (Reference Number 2016-TA-2123)

Dear Ms. Markegard:

This letter provides the results of the dry season presence/absence survey for listed large branchiopods at the Sacramento Aggregates Expansion Project site, Sacramento County (Reference Number 2016-TA-2123). The survey was performed by LSA on behalf of Vulcan Materials (Vulcan) to document the presence or absence of two listed vernal pool crustaceans: the federally threatened vernal pool fairy shrimp (anostroca) (*Branchinecta lynchi*; VPFS) and the federally endangered vernal pool tadpole shrimp (notostroca) (*Lepidurus packardi*; VPTS) in selected potentially suitable features located on the Sacramento Aggregates Expansion Project site (Study Site). The Study Site is located southeast of the City of Sacramento in eastern Sacramento County, California (Figure 1). The dry season survey was conducted according to the federal standards provided in the United States Fish and Wildlife Service (USFWS) Survey Guidelines for the Listed Large Branchiopods (Survey Guidelines) dated May 31, 2015, and serves as one part of the full protocol to determine the presence or absence of listed vernal pool branchiopods on the Study Site.

Vulcan is proposing to expand the Triangle Rock Products mining operations into the approximately 160-acre Study Site located southwest and adjacent to the existing Triangle Rock Plant site. The Study Site is located on the north side of Florin Road, and the east side of Eagles Nest Road, ½ mile west of Sunrise Boulevard in eastern Sacramento County, California (see Figure 1). The Study Site can be found in the SW ¼ of Section 31, Township 8 North, Range 7 East, on the USGS Carmichael and Elk Grove 7.5 minute quadrangle. The UTM coordinates for the approximate center of the site are 4262750N/652100E.

The majority of the Study Site has been extensively disturbed by historical agricultural/disking practices and grading/storage activities. The northern and eastern portions of the site are currently used as a commercial compost operation while the remainder of the site is fallow and is used intermittently to graze livestock. Historical imagery indicates the southern 2/3 of the property was converted into irrigated cropland prior to 1957, and that irrigation continued through at least 2007. The composting facility first appears in a photo from 1998. A residential/equipment storage area is located just north of the center of the site. A historical residence along Eagles Nest Road was present from 1937 through 1998, but appears to have been demolished sometime after 1998. The

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site is surrounded by open grazing and agricultural lands. The Triangle Rock quarry is located immediately north and east of the Study Site.

Based on the results of a focused field survey of the property, LSA determined that the site supported areas that appeared to be seasonally inundated and that may provide suitable habitat for listed vernal pool branchiopods (Figure 2). Multiple records from the California Department of Fish and Wildlife Service California Natural Diversity Data Base (CNDDB) document occurrences of VPFS and VPTS at the Triangle Rock Vernal Pool Preserve and Laguna Creek Preserve Enhancement Site, located immediately east and northwest of the Study Site. A CNDDB occurrence record documents the presence of the non-listed midvalley fairy shrimp (anostraca) (*Branchinecta mesovallensis*), on the Triangle Rock Vernal Pool Preserve, and the two fairy shrimp species are known to occur in the same features, occasionally.

METHODS

The 2016 dry season surveys of the Study Site were conducted by LSA Senior Biologist David Muth (under Federal 10(a)(1)(A) Permits TE-797234 and TE-839213) with assistance from LSA Senior Biologist Laura Belt (Permit TE-797234) in accordance with the 2015 Survey Guidelines. Authorization to conduct the surveys was provided by USFWS on August 29, 2016.

Mr. Muth and Ms. Belt collected a series of 10-milliliter soil aliquots from each of the potential habitat areas in the Study Site on October 5, 2016. The number of aliquots varied depending on the size of the feature, but followed the requirements specified in the Survey Guidelines. The soil was dry at the time of collection and stored in plastic zip-lock bags marked to indicate the site of collection.

The collected soil was sieved by Mr. Muth on October 26, 2016. Samples were processed individually by placing the collected material into 5-gallon buckets filled with 1 to 2 gallons of 5 percent brine solution to resaturate soils. During the approximately 10 to 15 minutes saturation period, the bucket was occasionally stirred to ensure all biological material was released and floated to the surface. In small aliquots, the biological material was poured through a series of four sieves with mesh sizes of 710, 355, 212 and 150 microns. The sieves were stacked with the largest mesh size at the top and the smallest mesh size on the bottom. Material was washed through the set with water. Particles trapped in the three smallest sieve sizes were saved for analysis by washing them onto blotter paper to dry.

The sieved material was examined by Mr. Muth on October 30 and November 16, 2016 using a 10 to 40 power Olympus stereo-optic scope. A reference cyst collection was available and could be used when necessary for comparison of any cysts found in the samples. Soil material is currently being stored with LSA until final deposition can be arranged.

RESULTS

Sampled features were dry during this protocol survey. Although all features on the Study Site showed signs of historical disturbance, either by grading or by agriculture, two features (9 and 13), appear to be remnant seasonal wetlands that could be discerned in a 1937 aerial photograph. The

remaining features showed signs of grading and disking, that appeared to be the result of human disturbances on the site after 1937 (feature characteristics are provided in Table A). See Figure 2 for soil sample locations.

Dry season samples were collected from a total of 14 separate features (Table A and Figure 2). Eggs from animals in the genus *Branchinecta* were recovered from one of the processed soil samples from Feature 13. No *Lepidurus* eggs were detected in any of the processed soil samples.

Table A – Feature Characteristics and Results of Dry Season Surveys, Sacramento Aggregates Expansion Site, Sacramento County

Feature	Feature Area (ft^2)	Description and Characteristics of Sampled Feature	Observation of Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) Eggs in Soil Samples
1	1376	Swale highly disturbed by agricultural practices and bermed by roadway (part)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
2	1255	Swale highly disturbed by agricultural practices and bermed by roadway (part)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
3	545	Swale highly disturbed by agricultural practices and bermed by roadway (part)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
4	366	Swale highly disturbed by agricultural practices and bermed by roadway (part)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
5	1395	Swale highly disturbed by agricultural practices and bermed by roadway (part)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
6	268	Compacted soils along agricultural ditch bank (old roadway?)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
7	3107	Compacted soils along agricultural ditch bank (old roadway?)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
8	10148	Agricultural runoff ditch (constructed between 1947 and 1957)	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs
9	993	Remnant feature in historically irrigated agricultural field	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
10	402	Compacted soils along old roadway	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs
11	213	Excavation in disturbed swale	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
12	1688	Recently graded disturbed swale segment.	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed
13	157	Remnant pool or swale (occasionally disked)	*Branchinecta* spp. (5) eggs present
14	667	Low graded area	No Fairy Shrimp (anostroca) or Tadpole Shrimp (notostroca) eggs were observed

CONCLUSIONS

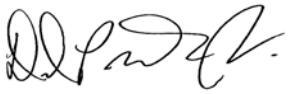
Eggs from the animals in the genus *Branchinecta* were found in soil samples collected from a single feature within the Study Site. Although records document the presence of midvalley fairy shrimp in the vicinity of the Study Site, based on site location and the previously documented presence of vernal pool fairy shrimp on adjacent properties during wet season surveys, the *Branchinecta* eggs detected during this dry season survey are likely *Branchinecta lynchi*.

The results of this survey in conjunction with the results of the 2016-2017 wet season survey (in progress) will complete the federal protocol to determine the presence or absence of listed large branchiopods on the Study Site.

Please contact me if you require any additional information.

Sincerely,

LSA ASSOCIATES, INC.



David Muth
Senior Herpetologist

Attachments: Certification
Figure 1: Project Vicinity
Figure 2: Sample Location
Figure 3: Representative Photos of Sample Sites
Data Sheets

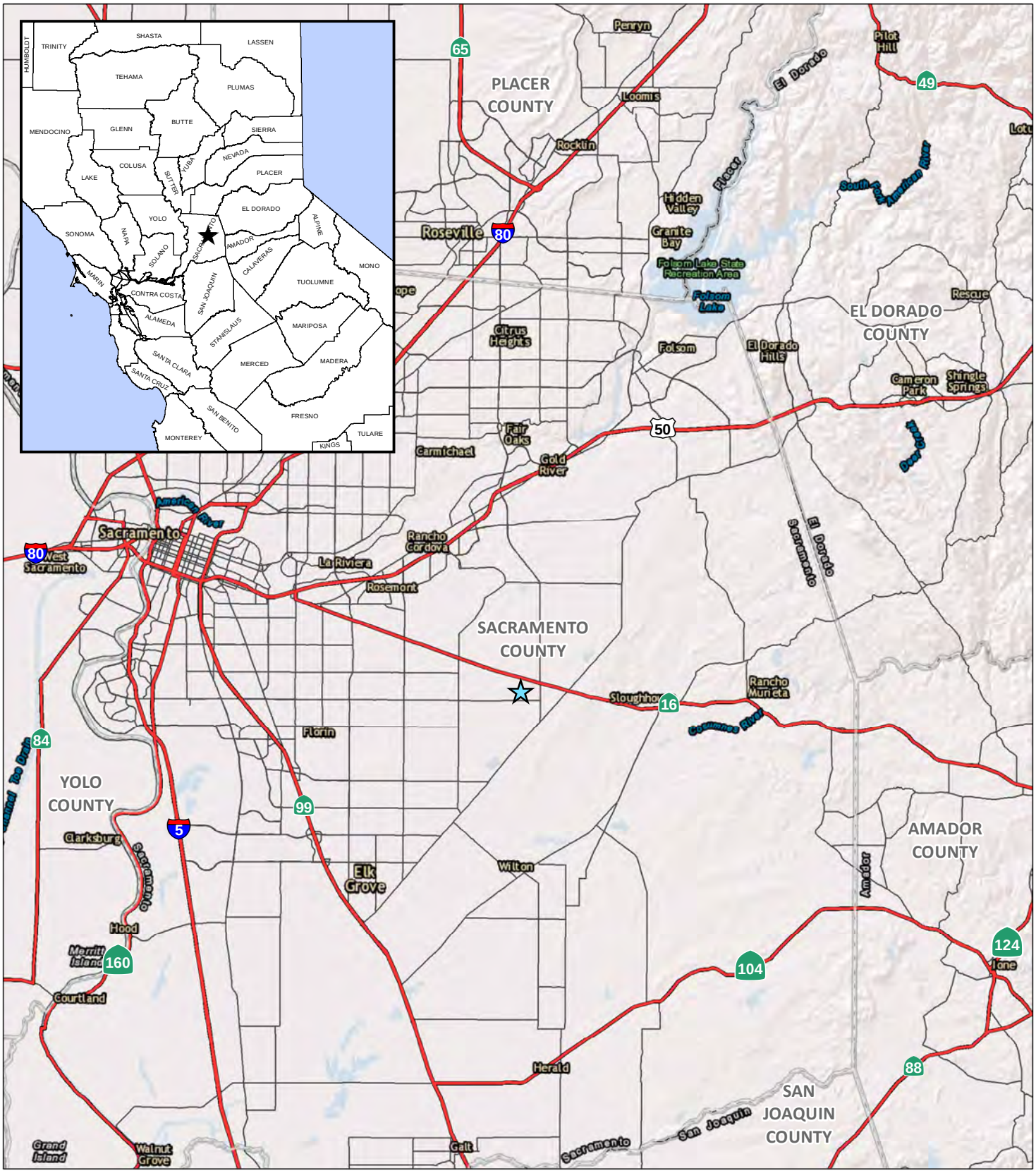
cc: Kevin Torell, Vulcan Materials - Western Region

ATTACHMENT 1 – CERTIFICATION

I CERTIFY THAT THE INFORMATION IN THIS SURVEY REPORT AND ATTACHED EXHIBITS FULLY AND ACCURATELY REPRESENTS MY WORK:

SURVEYOR:	PERMIT NUMBER	DATE:
	TE-797234/TE-839213	January 17, 2017
David Muth		

ATTACHMENT 2 – FIGURES



LSA

LEGEND

Project Location

FIGURE 1

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California
Vernal Pool Branchiopod Dry Season Surveys

Regional Vicinity Map

0 2.5 5
Miles

SOURCE: ESRI Imagery (4/2008)

I:\VMC1601\GIS\Reports\Fairy Shrimp\Figure 1_Reg_Loc.mxd (1/5/2017)



LSA

LEGEND

Study Area

Features Surveyed

Positive Results for Branchinecta spp. eggs

Negative Results for Branchinecta spp. eggs

0 150 300
FEET

SOURCE: Basemap - NAIP Aerial Imagery (06/2014); Mapping - LSA (2016)

I:\VMC1601\GIS\Reports\Fairy Shrimp\Figure 2_Sample_Loc1.mxd (1/5/2017)

FIGURE 2

Sacramento Aggregates Expansion Site
City of Sacramento, Sacramento County, California
Vernal Pool Branchiopod Dry Season Surveys

Sample and Species Locations

ATTACHMENT 3 – REPRESENTATIVE PHOTOS OF SAMPLE SITES



View of Feature 1-5 looking northeast (October 5, 2016).



View of Feature 8 looking north (October 5, 2016).



View of Feature 11 looking east (October 5, 2016).



View of Feature 13 looking northeast (October 5, 2016).

LSA

FIGURE 3

Sacramento Aggregates Expansion Site Project
City of Sacramento, Sacramento County, California
Vernal Pool Branchiopod Dry Season Surveys

Representative Photos

SOURCE: LSA (2016).

P:\VMC1601\Photos\10.05.2016_Dry Season Survey\Representative Photos\FSsurvey.indd(01\05\16).

ATTACHMENT 4 – DATA SHEET

U.S. Fish and Wildlife Service – Data Sheet for Dry Season Sample Analysis for Listed Large Branchiopods

Project Information

Project Name: **Carli Property**
USFWS Project Number: **2012-TA-.0388**
County: **Sacramento**
UTMs for center of site: 4262772N/652057E
Quad: **Carmichael / Elk Grove**
Township: **6 North**
Range: **7 East**
Section: **NE ¼ Sect 31**

Biologist Information

Name of Person(2) Who Conducted the Following Tasks and Permit Number(s):
Soil Collection: **David Muth TE-839213 and TE-797234** & Laura Bolt
Soil Processing: **David Muth TE-839213**
Soil Analysis/Cysts ID: **David Muth TE-839213**
Soil Collection Date: **October 5, 2016**

Pool/ Habitat/ Basin No.	Invertebrates Present (X)															Other Species	Comments
	Insect Exo-Skeletons	Micro-Turbellaria Cysts	Cladocera Ephippia	Ostracods Live/Cysts/ Carapaces	Copepods Live/Cysts	Number of Large Branchiopod Cysts: *Branchinecta* sp.	*Lepidurus packardi*	*Streptocephalus wootoni*	*Linderiella occidentalis*	*Lynceus brachyurus*	*Cyzicus californicus*	Hydracarina Live	Nematoda	Collembola		
1	X		X														Isotes
2	X																
3	X																
4	X		X														1 Sotes
5	X		X														1s otes
6			X														Isotes
7	X			X													1Sotes
8	X		X	X	X												isotes
9																	Upland silt
10																	isotes
11	X		X	X													
12	X																1Sotes
13	X		X		X	5											isotes
14	X																lots of plaster bottom seals

BERKELEY
CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

August 7, 2017

Sarah Markegard
Recovery Branch
U.S. Fish and Wildlife Service
2800 Cottage Way, West 2605
Sacramento, CA 95825

Subject: Results of 2016-2017 Wet Season Survey for Vernal Pool Branchiopods at the Sacramento Aggregates Expansion Project, Sacramento County (Reference Number 2016-TA-2123)

Dear Sarah:

This letter provides the results of the wet season presence/absence survey for listed large branchiopods at the Sacramento Aggregates Expansion Project site, Sacramento County (Reference Number 2016-TA-2123). The survey was performed by LSA on behalf of Vulcan Materials (Vulcan) to document the presence or absence of two listed vernal pool crustaceans: the federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*; VPFS) and the federally endangered vernal pool tadpole shrimp (*Lepidurus packardi*; VPTS) in selected potentially suitable features located on the Sacramento Aggregates Expansion Project site (project site). The project is located southeast of the City of Sacramento in eastern Sacramento County, California (Figure 1, attached). The wet season survey was conducted according to the federal standards provided in the United States Fish and Wildlife Service (USFWS) Survey Guidelines for the Listed Large Branchiopods (Survey Guidelines) dated May 31, 2015, and serves as the second part of the full protocol to determine the presence or absence of listed vernal pool branchiopods on the project site.

PROJECT DESCRIPTION

Vulcan is proposing to expand the Triangle Rock Products mining operations into the approximately 160-acre project site located southwest and adjacent to the existing Triangle Rock Plant site. The project site is located on the north side of Florin Road, and the east side of Eagles Nest Road, 0.5-mile west of Sunrise Boulevard in eastern Sacramento County, California (Figure 1, attached). The project site can be found in the SW ¼ of Section 31, Township 8 North, Range 7 East, on the USGS Carmichael and Elk Grove 7.5 minute quadrangle. The UTM coordinates for the approximate center of the site are 4262750N/652100E.

BACKGROUND

Project Site

The majority of the project site has been extensively disturbed by historical agricultural/disking practices and grading/storage activities. The northern and eastern portions of the site are currently used as a commercial compost operation while the remainder of the site is fallow and is used

201 Creekside Ridge Court, Suite 250, Roseville, California 95678 916.772.7450 www.lsa.net

intermittently to graze livestock. Historical imagery indicates the southern 2/3 of the property was converted into irrigated cropland prior to 1957, and that irrigation continued through at least 2007. The composting facility first appears in a photo from 1998. An equipment storage area is located just north of the center of the project site. A historical residence along Eagles Nest Road was present from 1937 through 1998, but appears to have been demolished sometime after 1998. The project site is surrounded by open grazing and agricultural lands. The Triangle Rock quarry is located immediately north and east of the project site.

Based on the results of a focused field survey of the project site, LSA determined that the project site supported areas that appeared to be seasonally inundated and that may provide suitable habitat for listed vernal pool branchiopods (Figure 2, attached). Multiple records from the California Department of Fish and Wildlife Service California Natural Diversity Data Base (CNDDB) document occurrences of VPFS and VPTS at the Triangle Rock Vernal Pool Preserve and Laguna Creek Preserve Enhancement Site, located immediately east and northwest of the project site. There are no CNDDB occurrences of VPFS or VPTS on the project sites.

PREVIOUS SURVEYS

Protocol Dry Season Survey

In 2016, protocol dry season surveys of the project site were conducted by LSA Senior Biologist David Muth (under Federal 10(a)(1)(A) Permits TE-797234 and TE-839213) with assistance from LSA Senior Biologist Laura Belt (Permit TE-797234) in accordance with the 2015 Survey Guidelines. Mr. Muth and Ms. Belt collected a series of soil samples from each of the 14 potentially suitable habitat areas on October 5, 2016 (Figure 2 and Figure 3 Representative Photos, attached). Mr. Muth sieved and processed each collected soil sample on October 26, 2016, and examined the samples on October 30 and November 16, 2016.

Although all features on the project site showed signs of historical disturbance, either by grading or by agricultural uses, two features (9 and 13), appeared to be potential remnant seasonal wetlands that could be discerned in the 1937 aerial photograph. The remaining features showed signs of grading and disking, that appeared to be the result of human disturbances on the project site after 1937 (feature characteristics are provided in Table A).

Eggs from animals in the genus Branchinecta were recovered from one of the processed soil samples from Feature 13. No Lepidurus eggs were detected in any of the processed soil samples.

Table A: Feature Characteristics and Locations, Sacramento Aggregates Expansion Site, Sacramento County

Feature	UTM Location	Feature Area (ft^2)	Description and Characteristics of Sampled Feature
1	4262406N 652339E	1376	Swale highly disturbed by agricultural practices and bermed by roadway (part)
2	4262414N 652303E	1255	Swale highly disturbed by agricultural practices and bermed by roadway (part)
3	426242N 652284E	545	Swale highly disturbed by agricultural practices and bermed by roadway (part)
4	4262410N 652272E	366	Swale highly disturbed by agricultural practices and bermed by roadway (part)
5	4262435N 652269E	1395	Swale highly disturbed by agricultural practices and bermed by roadway (part)
6	4262441N 6521190E	268	Compacted soils along agricultural ditch bank (old roadway?)
7	4262610N 652167E	3107	Compacted soils along agricultural ditch bank (old roadway?)
8	4262685N 652176E	10148	Agricultural runoff ditch (constructed between 1947 and 1957)
9	4262586N 651776E	993	Remnant feature in historically irrigated agricultural field
10	4262542N 652239E	402	Compacted soils along old roadway
11	4262928N 651956E	213	Excavation in disturbed swale
12	4262992N 651912E	1688	Recently graded disturbed swale segment.
13	4263000N 651948E	157	Remnant pool or swale (occasionally disked)
14	4263108N 6519678E	667	Low graded area

METHODS

Project Site

The 2016-2017 wet season surveys of the project site were conducted by LSA Senior Biologist Laura Belt with assistance from LSA Associate David Muth (under Federal 10(a)(1)(A) Permit (Permit TE-797234-10) in accordance with the 2015 Survey Guidelines. Authorization to conduct the surveys was provided by U.S. Fish and Wildlife Service (Service) on August 29, 2016.

On November 1, 2016, following multiple storm events, LSA conducted a reconnaissance project site visit and determined that there was sufficient inundation in several of the seasonal depressions to begin protocol wet season surveys. Per the Survey Guidelines, appropriate habitat is considered to be inundated when it holds greater than 3 centimeters, or 1 inch, of standing water 24 hours after a rain event.

Protocol surveys for listed vernal pool crustaceans were conducted by LSA biologist Laura Belt on November 11 and 23, and December 5 and 19, 2016, January 2, 16 and 30, February 13 and 27, March 13 and 27, 2017, and April 10, 2017.

Sampling procedures for vernal pool crustaceans consisted of two parts. The first was a visual examination of the water body to see individuals swimming in the water column and to search for shed tadpole shrimp carapace. Following visual inspection, a hand held net was pulled through the water to capture animals. The net was drawn through each sample site by holding the net mouth just above the pool bottom and walking through the sample site, moving the net through the water. The net was occasionally bumped along the pool bottom to stir up any benthic organisms. The net was periodically removed from the water and checked for presence of aquatic species. Sampling was continued until the net was pulled through a sufficient portion of the water body to capture vernal pool crustaceans or to satisfy the field researcher that these species were absent.

Reference Site

In addition to the project site, LSA also surveyed a seasonally inundated feature on the Triangle Rock Vernal Pool Preserve with attributes similar to some of the seasonally inundated features that occur at the project site that was known to provide suitable habitat for VPFS and VPTS. The reference site, labeled H-101, is comprised of three depressional features.

The reference site is located on the southwest side of the intersection of Eagles Nest Road and Highway 16, just northwest of the project site (Figure 3, attached).

LSA biologist Laura Belt surveyed the reference site concurrent with the surveys at the project site, with the exception of March 13 and March 27, 2017.

RAINFALL AND PRECIPITATION

The amount of rainfall during the 2016-2017 rainy season was well above average following the 5-year drought. The Sacramento area received 167 percent of the normal rainfall for the water year. Table A shows the precipitation amount (in inches) per month beginning October 1, 2016 through May 31, 2017, along with the total amount of precipitation, and the percent average precipitation during the water year period (NOAA 2017).

Table B: Precipitation (Inches) for the 2016-2017 Water Year (WY) through May

	Month											
Location	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**May**	**WY to Date**	**Normal Average**	**% Average To Date**	**% Total WY**
Sacramento 5 ESE	4.41	1.33	3.77	9.85	8.18	2.76	3.36	0.10	33.76	19.88	171	167

RESULTS

Project Site

A total of 12 protocol surveys for listed vernal pool crustaceans were conducted at the 14 features at the project site. No listed VPFS or VPTS, or non-listed fairy or tadpole shrimp were observed in any of the features during course of the surveys.

There was significant rainfall between October 1, 2016 and February 31, 2017; with the highest amount of rainfall occurring between the months of January and February 2017 (NOAA 2017). By the November 11, 2016 survey, approximately 30 percent of the features exhibited ponding and were able to be surveyed. The surveys began on November 11, 2016 and were completed on April 10, 2017 (Table C). The completed data sheets are attached.

During surveys conducted on December 19, 2016, January 16 and 30, 2017 all of the features were holding water. During the majority of the surveys, water was flowing in features 7, 8, and 12a and no listed VPFS or VPTS, or non-listed fairy or tadpole shrimp were observed. Features 1-5, 11, 12b, and 14 remained inundated for the majority of the survey period. Although these features held water for a continuous amount of time necessary to support common aquatic invertebrates such as corixid sp., ostracod sp. and copepods sp., no listed VPFS, VPTS or non-listed fairy or tadpole shrimp were observed. Feature 13 held enough water for a continuous amount of time necessary to common support aquatic invertebrates (see Figure 4A Representative Photos, attached) but no listed VPFS, VPTS or non-listed fairy or tadpole shrimp were observed.

Reference Site

During surveys conducted at the reference site on November 11 and 23, 2016, listed VPFS and VPTS were observed in reference feature H-101. Non-listed California fairy shrimp (CFS) (*Linderiella occidenatilis*) were also observed (Figure 4B Representative Photos, attached). During surveys conducted on December 5 and 19, 2016, January 2, 16 and 30, and February 13 and 27, both VPTS and CFS were observed in the seasonal feature. During the final survey conducted on April 10, 2017, VPTS were observed in the seasonal feature.

Table C: Results of the 2016-2017 Wet Season Survey for VPB

Feature	Survey Date											
	11-11-2016	**11-23-2016**	**12-5-2016**	**12-19-2016**	**1-2-2017**	**1-16-2017**	**1-30-2017**	**2-13-2017**	**2-27-2017**	**3-13-2017**	**3-27-2017**	**4-10-2017**
1	Dry	Dry	Dry	Ponding between Features 1-5 160 feet X 20 feet X 6 inches	Ponding on south side of Features 1-5 drainage 120 X 4 feet X 4 inches	Ponding on south side of Features 1-5 drainage 350 feet X 150 feet X 1 foot	Ponding on south side & between Features 1-5 300 feet X 150 feet X 4 inches	Ponding on south side & between Features 1-5 138 feet X 138 feet X 4-6 inches	Ponding on south side & between Features 1-5 450 feet X 75 feet X 6 inches	Ponding on south side of Features 1-5 200 feet X 2 feet X 3 inches	Ponding on south side of Features 1-5 300 feet X 100 feet X 8 inches	Ponding on south side & between Features 1-5 375 feet X 150 feet X 8 inches
2	Dry	Dry	Dry									
3	Dry	Dry	Dry									
4	Dry	Dry	Dry									
5	Dry	Dry	Dry	**None**	**None**	**None**	**None**	**None**	**None**	**None**	**None**	**None**
6	Dry	Dry	Dry	60 feet X 1.5 feet X 4 inches **None**	Dry	72 feet X 6 inches X 6 inches **None**	8 feet X 6 inches X 1 inches **None**	16 feet X 2 feet X 4 inches **None**	50 feet X 2 feet X 4 inches **None**	**Dry**	270 feet X 1.5 feet X 3 inches **None**	60 feet X 1 foot X 3 inches **None**
7	500 feet X 10 inches X 4 inches **None**	600 feet X 1 foot X 4 inches **None**	300 feet X 1 foot X 4 inches **None**	1,200 feet X 1 foot X 4 inches **None**	600 feet X 1 foot X 4 inches **None**	1,250 feet X 2 foot X 4 inches **None**	1,250 feet X 2 foot X 4 inches **None**	33 feet X 2 foot X 6 inches **None**	1,200 feet X 1.5 feet X 6 inches **None**	300 feet X 1 foot X 3 inches **None**	1,200 feet X 1 foot X 3 inches **None**	1,000 feet X 10 inches X 3 inches **None**
8	1,200 feet X 30 feet X > 3 feet **None**	1,200 feet X 36 feet X > 4 feet **None**	1,200 feet X 36 feet X > 4 feet **None**	1,200 feet X 36 feet X > 4 feet **None**	1,200 feet X 36 feet X > 4 feet **None**	1,250 feet X 40 feet X > 4 feet **None**	900 feet X 36 feet X > 4 feet **None**	1,250 feet X 40 feet X > 4 feet **None**	900 feet X 36 feet X > 4 feet **None**	800 feet X 24 feet X > 4 feet **None**	900 feet X 36 feet X > 4 feet **None**	800 feet X 30 feet X > 4 feet **None**
9	Dry	Dry	Dry	2 feet X 2 feet X 6 inches **None**	Dry	20 feet X 20 feet X 4 inches **None**	10 feet X 4 feet X 2 inches **None**	Dry	Dry	Dry	Dry	Dry
10	Dry	Dry	Dry	108 feet X 6 feet X 8 inches **None**	Dry	18 feet X 2 feet X 4 inches **None**	32 feet X 4 feet X 6 inches **None**	33 feet X 4 feet X 6 inches **None**	Dry	Dry	38 feet X 12 feet 8 inches **None**	Dry **None**
11	24 feet X 20 feet X 4 inches **None**	36 feet X 24 feet X 20 inches **None**	32 feet X 22 feet X 18 inches **None**	36 feet X 24 feet X 18 inches **None**	26 feet X 22 feet X 18 inches **None**	32 feet X 22 feet X 18 inches **None**	32 feet X 22 feet X 18 inches **None**	23 feet X 23 feet X 24 inches **None**	42 feet X 22 feet 14 inches **None**	26 feet X 12 feet X 16 inches **None**	38 feet X 18 feet X 14 inches **None**	24 feet X 18 Feet X 18 inches **None**
12 a	Dry	900 feet X 10 inches X 6 inches **None**	300 feet X 1 foot X 6 inches **None**	1,200 X 1 foot X 1 foot **None**	300 feet X 2 feet X 6 inches **None**	900 feet X 10 inches X 1 foot **None**	1,250 feet X 2 feet X 1 foot **None**	1,250 feet X 2 feet X 1 foot **None**	500 feet X 2 feet X 4 inches **None**	400 feet X 1 foot X 4 inches **None**	55 feet X 2 feet X 18 inches **None**	900 feet X 1.5 feet X 6 inches **None**
12 b	50 feet X 10 feet X 2 feet **None**	65 feet X 2 feet X 1 foot **None**	75 feet X 1 foot X 1 foot **None**	65 feet X 1 feet X 1 foot **None**	50 feet X 2 feet X 6 inches **None**	62 feet X 2 feet X 2 feet **None**	62 feet X 2 feet X 6 inches **None**	30 feet X 2 feet X 10 inches **None**	30 feet X 1.5 feet X 10 inches **None**	30 feet X 2 feet X 1 foot **None**	600 feet X 10 inches X 4 inches **None**	60 feet X 14 inches X 16 inches **None**
13	Dry	Dry	Dry	22 feet X 16 feet X 6 inches **None**	Dry	32 feet X 13 feet X 6 inches **None**	Dry	16 feet X 16 feet X 2 inches **None**	26 feet X 12 feet X 4 inches **None**	Dry	15 feet X 10 feet X 2 inches **None**	Dry
14	Dry	52 feet X 22 feet X 6 inches **None**	26 feet X 10 X 3 inches **None**	48 feet X 22 feet X 6 inches **None**	28 feet X 8 feet X 2 inches **None**	62 feet X 38 feet X 6 inches **None**	100 feet X 16 feet X 3 inches **None**	73 feet X 40 Feet X 4 inches **None**	85 feet X 32 Feet X 4 inches **None**	Dry **None**	68 feet X 42 feet X 6 inches **None**	96 feet X 34 feet X 7 inches **None**
Triangle Rock Preserve – Feature H-101												
H-101 North	48 feet X 30 feet X 8 Inches **LEPA, LIOC**	60 feet X 38 feet X 8 inches **BRLY, LEPA, LIOC**	72 feet X 26 feet X 6 inches **LEPA, LIOC**	75 feet X 50 feet X 8 inches **LEPA, LIOC**	70 feet X 45 feet X 6 inches **LEPA, LIOC**	70 feet X 45 feet X 6 inches **LEPA, LIOC**	65 feet X 40 feet X 6 inches **LEPA, LIOC**	60 feet X 35 feet X 6 inches **LEPA, LIOC**	65 feet X 30 feet X 4 inches **LEPA**	All Features were inundated	All Features were inundated	45 feet X 30 feet X 4 inches **LEPA**
H-101 South	50 feet X 38 feet X 8 inches **BRLY, LEPA, LIOC**	58 feet X 28 feet X 8 inches **BRLY, LEPA, LIOC**	78 feet X 32 feet X 6 inches **LEPA, LIOC**	150 feet X 75 feet X 10 inches **LEPA, LIOC**	125 feet X 70 feet X 8 inches **LEPA, LIOC**	125 feet X 70 feet X 8 inches **LEPA, LIOC**	120 feet X 65 feet X 8 inches **LEPA, LIOC**	100 feet X 65 feet X 8 inches **LEPA, LIOC**	85 feet X 55 feet X 4 inches **LEPA**			65 feet X 35 feet X 4 inches **LEPA**
H-101 East	Cow Hoof Tracks **None**	Cow Hoof Tracks **None**	22 feet X 18 feet X 4 inches **None**	50 feet X 45 feet X 6 inches **LEPA, LIOC**	45 feet X 40 feet X 4 inches **LEPA, LIOC**	45 feet X 40 feet X 4 inches **LEPA, LIOC**	40 feet X 35 feet X 4 inches **LEPA, LIOC**	35 feet X 30 feet X 4 inches **LEPA, LIOC**	30 feet X 25 feet X 4 inches **LEPA**			30 feet X 25 feet X 4 inches **None**
BRLY	*Branchinecta lynchi*											
LEPA	*Lepidurus packardi*											
LIOC	*Linderiella occidentalis*											

Feature	Survey Date											
	11-11-2016	11-23-2016	12-5-2016	12-19-2016	1-2-2017	1-16-2017	1-30-2017	2-13-2017	2-27-2017	3-13-2017	3-27-2017	4-10-2017
Cow Hoof Tracks	Inundation limited to cow hoof tracks											
None	No fairy shrimp or tadpole shrimp were observed											
Dry	No water in feature											

CONCLUSION

The 2016-2017 wet season surveys conducted for the Sacramento Aggregate Expansion project resulted in negative results for VPFS, VPTS, and non-listed fairy and tadpole shrimp.

Although rainfall totals during the 2016-2017 wet season were well above the normal average and features remained inundated for a length of time necessary to support common aquatic invertebrates, no VPFS, VPTS, or non-listed fairy or tadpole shrimp were observed.

Eggs from animals in the genus Branchinecta were observed in Feature 13 as a result of the protocol dry season surveys, however the feature did not remain inundated long enough to support VPFS or VPTS, or non-listed fairy or tadpole shrimp.

The reference feature was inundated by the start of first survey and remained inundated for the duration of the wet season surveys, and supported both listed VPFS, VPTS, and non-listed CFS, thereby documenting that these species successfully completed their lifecycle during the 2016-2017 rainy season.

In conclusion, the seasonally inundated features at the project site do not function to provide suitable habitat for VPFS, VPTS, or non-listed fairy shrimp or tadpole shrimp.

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



Laura Belt/ June 27, 2017
Permit # TE797234-10



David Muth/June 27, 2017
Permit #'s TE-797234 and TE-839213

Please let me know if you have any questions.

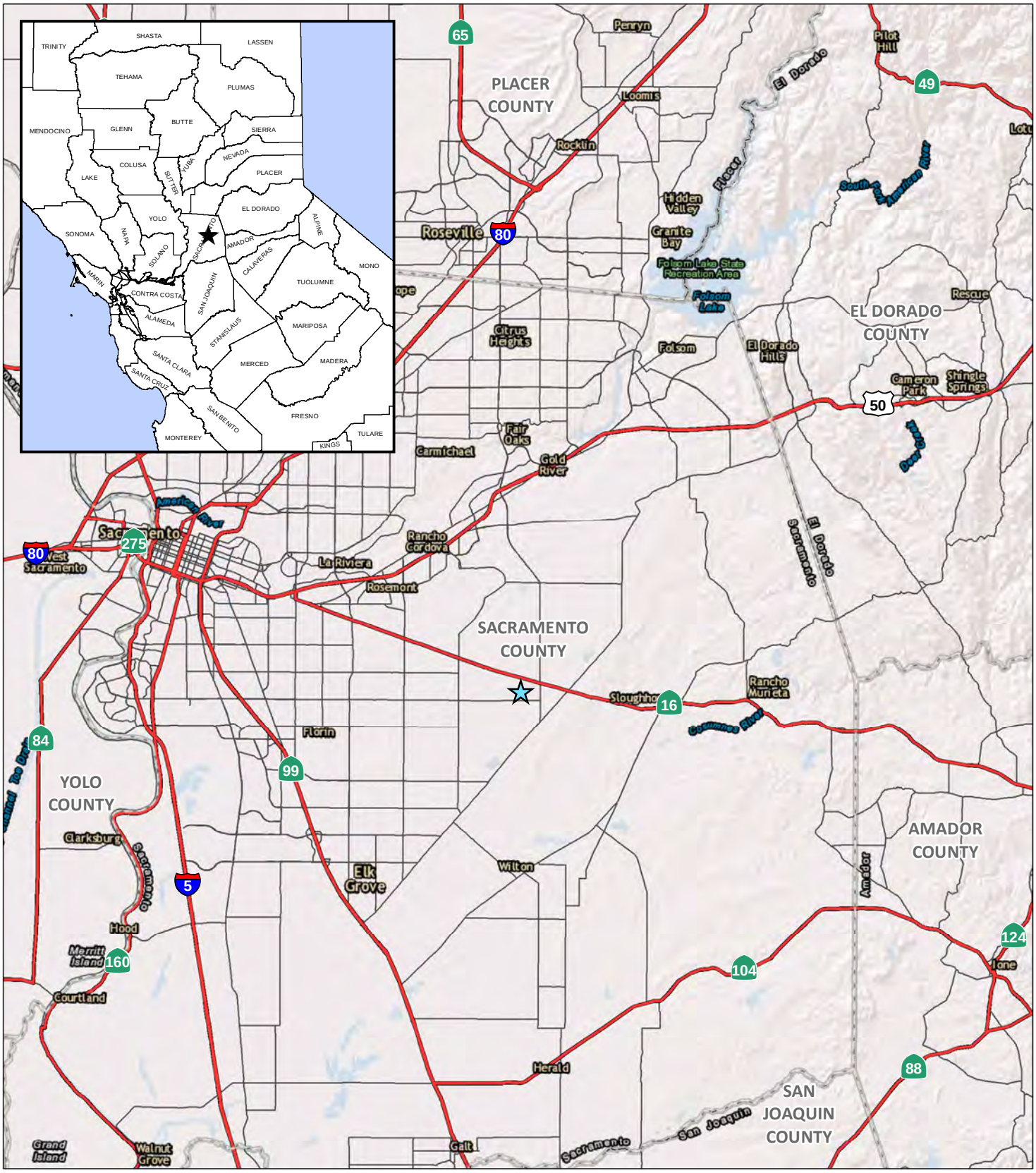
Sincerely,

LSA Associates, Inc.



Laura Belt
Senior Wildlife Biologist

Attachments: Figure 1: Project Vicinity
Figure 2: Sample Location
Figure 3: Reference Site
Figure 4A and 4B: Representative Photos of Project Sample Sites and Reference Site
Data Sheets
cc: Kevin Torell, Vulcan Materials - Western Region



LSA

LEGEND

Project Location

FIGURE 1

Sacramento Aggregates Expansion Site Project
Sacramento County, California
Wet Season Fairy Shrimp Survey

Regional Vicinity Map

0 2.5 5
Miles

SOURCE: ESRI Imagery (4/2008)

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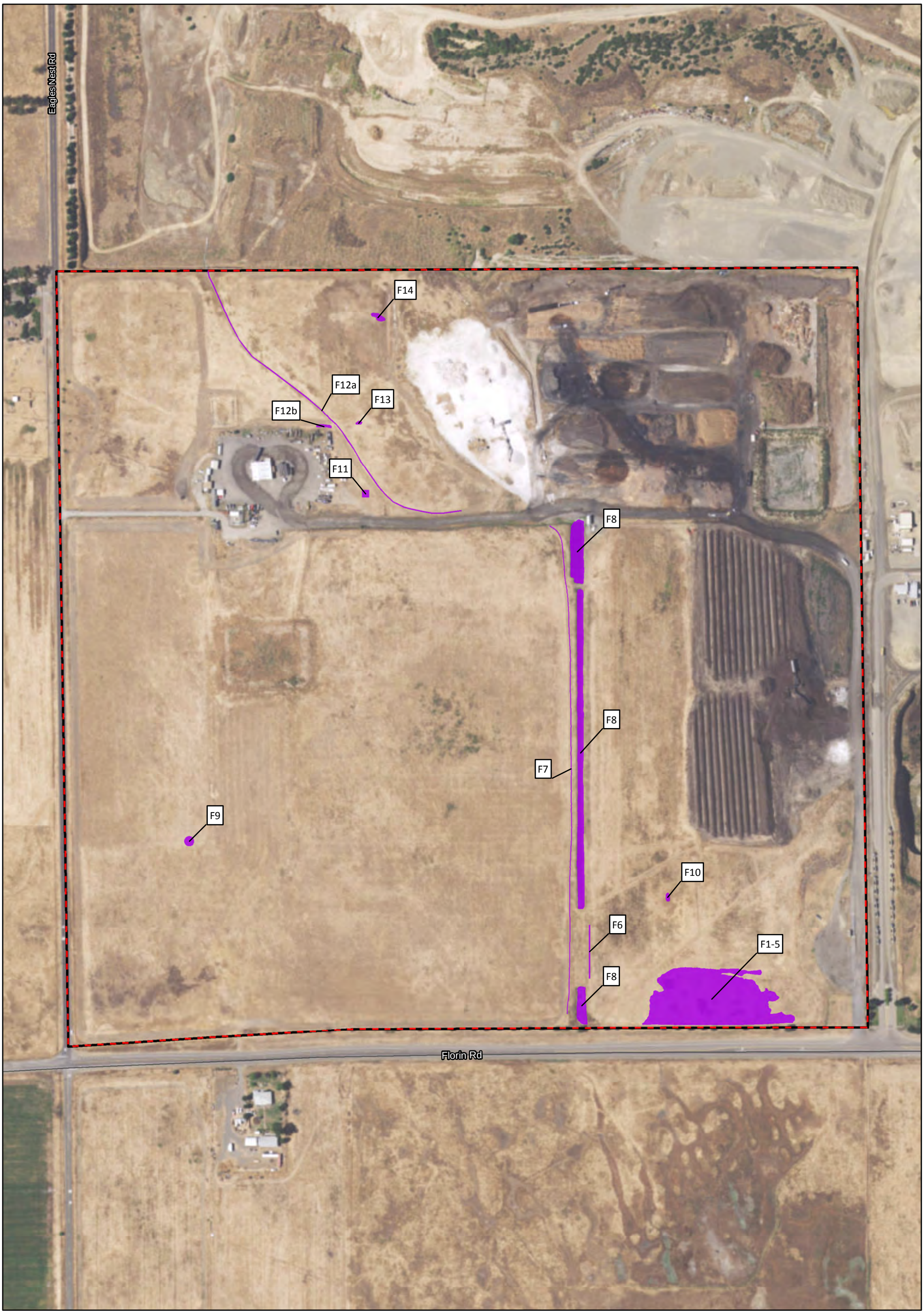

LSA

LEGEND

Review Area

Features

N

0 150 300

FEET

FIGURE 2

Sacramento Aggregates Expansion Site Project
Sacramento County, California
Wet Season Fairy Shrimp Survey

Potential Suitable Habitat Areas Map

SOURCE: Basemap - NAIP (06/2016); Mapping - LSA (06/2017)

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LSA

LEGEND

Review Area

Feature H-101

N

0 400 800

FEET

FIGURE 3

Sacramento Aggregates Expansion Site Project
Sacramento County, California
Wet Season Fairy Shrimp Survey

Reference Site Map

SOURCE: Basemap - NAIP (06/2016); Mapping - LSA (06/2017)

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View of Feature 5 looking northwest (November 11, 2017).



View of Feature 8 looking north (November 11, 2017).



View of Feature 11 looking east (November 11, 2017).



View of Feature 13 looking northeast (November 11, 2017).

LSA

FIGURE 4A

Sacramento Aggregates Expansion Site Project
City of Sacramento, Sacramento County, California
Vernal Pool Branchiopod Wet Season Surveys

SOURCE: LSA (2017).

Representative Photos

P:\VMC1601\Photos\06.23.2017_Wet Season Survey\Representative Photos\FSsurvey.ind(11\11\16).



View of Feature H-101 looking southeast (November 11, 2017).



View of Feature H-101 looking east (November 11, 2017).



View of Feature H-101 (November 11, 2017).



View of Branchinecta lynchi in Feature H-101 (November 11, 2017).

LSA

FIGURE 4B

Sacramento Aggregates Expansion Site Project
City of Sacramento, Sacramento County, California
Vernal Pool Branchiopod Wet Season Surveys - Triangle Rock Preserve

SOURCE: LSA (2017).

Representative Photos

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P1

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10; Julie McNamara

Date: 11/1/2016 **Time:** 950a **Weather Conditions:** Cool, 59°F, partly cloudy, wind up to 5mph, (veg ht. ± 6" new)

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	59°F	58°F	up to 18"		42'x 20'				✓	✓		✓		✓ mo LA		✓	D	tiny agimit ponded Bottom mix'd up ponded
12 (a)	4262992N 651912E	"	"	8"		±1'x 900'												D	created new cut to connect to culverts N & S. algae
13	4263000N 651948E	"																D	moist but no ponding
((	X	))																D	
14	4263108N 6519678E			up to 8"		40'x 20'												D	ponded-recent too tiny to ID sp algae - tiny ant
1	4262406N 652339E																	D	new plant growth-3" ht no ponding
2	4262414N 652303E																	D	damp not ponding

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli).*
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10; Julie McNamara

Date: 11/1/2016 **Time:** — **Weather Conditions:** (See page 1)

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
3	4262424N 652284E																	D	Dam, new growth no ponding
4	4262410N 652272E																		" "
5	4262435N 652269E																		" "
100	4262542N 652239E																		" "
8	4262685N 652176E	58F	58F	7-4'		50'x 150'				✓		✓							Ponded puddles cloudy/algae
7	4262610N 652167E	"	"	up to 3"		60'x 900'		need loading cut by feature extending N & S.											Ponded recent excavation on tire tracks
9	4262586N 651776E	Dry																	new growth Dump no ponding

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate	County: Sacramento	Quad: Carmichael	Township: T8N	Range: R7E	Section: 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10; Julie McNamara

Date: 11/1/2016 **Time:** — **Weather Conditions:** (See page 1).

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
6	4262441N 6521190E	Dry																D	Damp mud growth no ponding

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli).*
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 11/11/2016 **Time:** 750am **Weather Conditions:** Cool, high + thin clouds clear, air T 54°F warming to 74°F thick cloud cover 1:10 pm ± 1hr

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
8	4262685N 652176E	72°F	70°F	13'		36x'				✓	✓	✓		✓			✓	D	II III mosquito larvae (ml)
9	4262586N 651776E			dry															
10a b	4262542N 652239E			dry															
* 11	4262928N 651956E	54°F	52°F	13"		24' x 20'				✓	✓		✓	✓			✓	D	tiny aquatics (ml)
new 12	4262992N 651912E	"	"	2"		± 50" x10				✓	✓		✓	✓			✓		interpulvinata ponded (ml)
13	4263000N 651948E	"		dry															
14	4263108N 6519678E	"		dry															

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli).*

For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.

(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 11/11/2016 **Time:** 7:50am **Weather Conditions:**

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
1	4262406N 652339E	70°	—																
2	4262414N 652303E																		
3	dry 4262424N 652284E																		
4	4262410N 652272E																		
5	4262435N 652269E																		
6	dry, pooled, Heavily intermittent, Imagine wet in Rey Limits			4262441N 6521190E															
7	72F-70F			4262610N 652167E		600x8" up to 4" deep												D	newly blacked tiny, tiny ag. inclusions

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10; Rain: 11/19 + 11/20 + 11/22

Date: 11/23/2016 **Time:** 8:10 am **Weather Conditions:** 49°F, cool, last thin cloud cover. Sunny, breeze. light

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / ~~Voucher~~ information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	49°F	48°F	up to 20"		24' x 36'		—	—	√	√	—	—	L	—	—	√	D	water is clear.
12a	4262992N 651912E	11	11	up to 6"		±10' x 7900'		—	—	√	√	—	—	L	—	—	√	refilled D	water is clear
13	4263000N 651948E	11	11	dry				—	—	—	—	—	—	—	—	—	—	?	Soil is damp to touch.
14	4263108N 6519678E	11	11	up to 6"		±50' x 2'		—	—	—	—	—	—	—	—	—	—	refilled D	water is clear. No crustaceans responded
*	low area (see map) near east road ±50' west of bladed roadway. → Also small area – ponded	11	11	up to 4"		18' x 12'		—	—	√	√	—	—	L	—	—	—	D	tiny copepods + ostracods + fly larvae.
								2' x 4' to the N W											

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate	County: Sacramento	Quad: Carmichael	Township: T8N	Range: R7E	Section: 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10;

Date: 11/23/2016 **Time:** 1230pm **Weather Conditions:** (see page 1)

Feature ID #	UTM (Northing, Easting, Datum) 1230P 59°F	Temp (°C) Air	Temp (°C) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Crustaceans: Notostracans	Crustaceans: Copepods	Crustaceans: Ostracods	Crustaceans: Cladocera	Insects: Coleoptera	Insects: Hemiptera	Insects: Diptera Culicidae	Insects: Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
9	4262586N 651776E	Dry																D	
10 9 6	4262542N 652239E	Dry																D	
8	4262685N 652176E	59°F	57°F	>4'		36' x 1200'				✓		✓						D	
7	4262610N 652167E	11	11	up to 4"		12" x up to 600'				✓	✓	inundated		intermittently ponded.				D	(Newly bladed) tiny aq. inverts
6	4262441N 6521190E	Dry																D	
1-5	42624 652303E EAST ER	Dry																D	
12b	W 4262992N 651912E POOL	52°F	55°F	up to 1'		65' x 2'				✓								D	tiny (Boll) copepods water is cloudy

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 / J. McNamara

Date: 12/5/2016 | **Time:** 9:10a | **Weather Conditions:** 43°F, low thin clouds, lt. breeze

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	43°F	41°F	up to 18"		22'x 32'		—	—	✓	✓	✓	—	✓				D	Full! water is clear
12	4262992N 651912E	11	11	11 6"		up to 12"x300'		—	—	✓	✓	—	—	✓				D	Intermittent ponding
A		11	11	up to 12"		75'x up to 12'		—	—	✓	✓	—	—	✓	—	✓	.	D	juv. bull frog
13	4263000N 651948E	11	—	Dry														D	No water in feature
14	4263108N 6519678E	11	11	up to 3"		4'x4' up to 6'x22'		—	—	✓	—	—	—	—	—	—	—	D	tiny copepods only.
9	4262586N 651776E	11		—	Dry													D	

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 /J. McNamara

Date: 12/5/2016 | Time: 1:30pm | Weather Conditions: 55°F, Complete cloud cover; foggy; H. breeze

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
10(a&b)	4262542N 652239E	55F	—																Dry
8	4262685N 652176E	"	5ft	>4'		36' x 1200'				✓		✓						D	Observed water release @ N end into feature (photos)
—						12" x													
7	4262610N 652167E	"	"	up to 4'		up to 300' total				✓	✓					✓		D	Ponded intermittently throughout (1,200' feature)
6	4262441N 6521190E	"																D	Dry
5	4262435N 652269E	"																D	Dry
4	4262410N 652272E	"																D	Dry

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 J. McNamara

Date: 12/5/2016 | Time: 3:00pm | Weather Conditions: 55F, complete cloud cover; foggy; 17. breeze

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
3	4262424N 652284E	55°F																D	dry
2	4262414N 652303E	11																D	dry
1	4262406N 652339E	11																D	dry

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 12/12/2016 | Time: 1030 am | Weather Conditions: 45°F, low & thin cloud cover, wind up to 5mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
																			water is clear
11	4262928N 651956E	45°F	43°F	18"		24' x 36'		—	—	✓	✓	—	—	✓	—	—	—	D	spilling @ west end. Navicula
12 12' 65x1' +D	4262992N 651912E	11	11	up to 1'		1200x 1' (ave.)		—	—	✓	✓	✓	—	✓	—	—	—		water is clear to turbid — ice — tiny tiny aq. inverts.
13	4263000N 651948E	11	11	up to 6"		22' x 16'		—	—	✓	—	✓	—	✓	—	—	—		tiny aquatic inverts water is turbid
14	4263108N 6519678E	11	11	up to 6"		48' x 22'		—	—	✓	—	—	—	✓	—	—	—		· water is clear · tiny aquatic inverts · algae
9	4262586N 651776E	50°F	48°F	up to 6"		small + intermittent 2' x 2' x 2"		—	—	tiny ✓	—	—	—	—	—	—	—		· microscopic copepods in small areas of ponding
10a	4262542N 652239E	50°	11	up to 8"		100' x 6'		—	—	—	—	—	—	—	—	—	—		no aq. inverts were obsd water is clear
10b		Dry																	

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

8	4262685N 652176E	50°F	11	>4'		1,200' x 36'												D	· completely flooded

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 5/19/2016 | Time: 1450 | Weather Conditions: 50°F, cool, lt thin cloudcover, wind upto 5mph.

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	50'	48"	upto 4"		1,200' x 1'		0										D	water is flowing
6	4262441N 6521190E	"	"	up to 4"		600' x 1.5'		0											
5	4262435N 652269E	"	"																
4	4262410N 652272E	Area of ponding between features																	
3	4262424N 652284E	#3,		#2 &		#1:		total up to 160' x 20'											
2	4262414N 652303E	& south of & s drainage						x upto 6" in depth //no aquatic invertebrates											
1	4262406N 652339E	0																	water is tea colored

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 1/2/2017 | Time: 9:32 am | Weather Conditions: 40°F, Cool, high flow thick intermittent cloud cover. wind up to 10 mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	40°F	40°F	up to 18"		28' x 26'		—	—	✓	✓	✓	—	✓	—	—	—	D	Water is clear pooled intermittently
12	4262992N 651912E	"	"	up to 6"		2' x 300'		—	—	✓	✓	✓	—	✓	—	—	—	D	algae
		"	"	" " 8"		2' x 50'		—	—	✓	✓	✓	—	✓	—	—		D	
13	4263000N 651948E	Dry															✓	D	
14	4263108N 6519678E	"	"	up to 2"		24' x 4' + 4' x 4' (x2)		—	—	—	—	✓					—	D	Water is clear. Some algae.
9	4262586N 651776E	Dry															—	D	damp to touch
10	4262542N 652239E	Dry															—	D	damp to touch
8	4262685N 652176E	48°F	"	>4'		36' x 1,200'				✓		✓					—	D	tea colored water

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 1/2/2017 | Time: — | Weather Conditions: (See previous Sheet) (wind up to 15mph) warming to 50F

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	48F	48F	up to 4" (flowing)		± 1' x 600'		—	—	✓	✓	✓	—	—	—	—		D	ponding intermittent
6	4262441N 6521190E	—	—	Dry				—	—	—	—	—	—	—	—	—		D	
5	4262435N 652269E	48F	48F	up to 6"		2 lengths of up to 2' width * total 60'±		—	—	—	✓	—	—	—	—	—		D	* water is
4	4262410N 652272E	* Area of intermittent ponding																D	clear to
3	4262424N 652284E	on the south side of features #1 – #5																D	tea colored
2	4262414N 652303E	along the North side of property																D	
1	4262406N 652339E	by fencing – limited to tire track ruts.																D	

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

(rain events over the previous 2 weeks totaled = 4 inches for this area

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 1/16/2017 | **Time:** 1150am | **Weather Conditions:** cold, 48°F, low, thick cloudcover, intermittent warming to 50°F // wind up to 10mph // Sunshine

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	48°F	48°F	up to 8"		22'x 32'		—	—	✓	✓	✓	—			·		D	Water is clear dana etc. in lance water boatmen
12a	4262992N 651912E	"	"	up to 1'		up to 2' ± 900		—	—	✓	✓	✓	Water is clear					D	ponding intermittent
12b		"	"	" 2'		62'x 27'		—	—	✓	✓	✓	"	"clear		·		D	" "
13	4263000N 651948E	"	"	up to 6"		32'x 13'		—	—	✓	✓	✓	—			—		D	tiny aquatic invertebrates. water is turbid
14	4263108N 6519678E	"	"	up to 6"		62'x 38'		—	—	✓	✓	✓	—			—		D	algae, water is clear
9	4262586N 651776E	"	"	up to 4"		pooled 20'x 20'		—					—			—		D	water is clear intermittent ponded area
10	4262542N 652239E	50°F	50°F	up to 4"		18'x 2'		—					—					D	tiny water fleas.
8	4262685N 652176E	"	"	4'		1250'x 40'		—	—	✓	✓	✓	—			—		D	water level is down ± 2' in depth

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

tire track nuts (ponded area 5 of #10: water daphnia only) tea colored water

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 // wind up to 10 mph // w/ intermittent sunshine

Date: 1/10/2017 | **Time:** 3:15 pm | **Weather Conditions:** cool, 48°F, warming to 50°F, lav, thick cloudcover

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	50°F	50°F	up to 4"		1,250 2'		—	—	—	—	—	—	—	—	—	—	D	Water is flowing
6	4262441N 6521190E	—	—	4" 6		±72' 6"		—	—	—	—	—	—	—	—	—	—	D	tiny aq. insects too small to i.d.
5	4262435N 652269E	—	—	150' x 350' x up to 1' in depth									—	—	—	—	—	D	tiny aquatic insects
4	4262410N 652272E	Water pooling south between all 5 features (& to the east/west beyond feature) photos: (drum worms + sign here — Canada geese are feeding on them.)																	aquatic invertebrates are too small to i.d.
3	4262424N 652284E																		
2	4262414N 652303E																		
1	4262406N 652339E																		

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 / Jeremy Foreman

Date: 1/30/2017 | **Time:** 840am | **Weather Conditions:** cool, BW thin cloud cover, wind upto 5mph.

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	39F	45F	18"		20'x 30'		—	—	✓	✓	✓					—	D	water boatmen abundantly present
12a/12b	4262992N 651912E	11	46F	12"		up to 1,250 sf		—	—	✓	✓	✓					—		11
		11	45F	6"		60'x 1'		—		✓	✓	✓							abundantly.
13	4263000N 651948E	Dry																	Dry
14	4263108N 6519678E	39F	50F	3"		60'x 8' & 40'x 8'		—		✓	✓	✓							heavy Small aquatic invents
9	4262586N 651776E	11	11	2"		5'x 2' 2'x 5'		—									—		areas of ponding many invents
10 a	4262542N 652239E	50F	55F	6"		32'x 4'		—			✓					✓	—		algae / chironomid
		11	11	11															
8	4262685N 652176E	11	11	~4'		900'x 36'		—		✓	✓	✓					—		water level is not up

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 (Jeremy Foreman

Date: 1/31/2017 | Time: 1245 pm | Weather Conditions: (See page 1)

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	50°F	51°F	4" Flowing		120' x 2'		(Phalacrus)										D	caddisflies
6	4262441N 6521190E	11	11	up to 1"		6' x 8"				✓	✓								tiny crustacean nymphs & algae!
5	4262435N 652269E	50°F	52°F	4"		150' x 300'				✓	✓	✓							
4	4262410N 652272E																		
3	4262424N 652284E																		
2	4262414N 652303E																		
1	4262406N 652339E																		

Inundation to the south & between features.

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.



Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Carli Prop	**County:** Sacto	**Quad:** Elk Grove	Township: 8	Range: 7	Section: 31

SURVEYOR / Permit Number: TE-797234 David Muth

Date: **2/13/2017** Time: **1300** Weather Conditions: **Clear**

Feature ID:#	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths	Habitat Condition for Ig Branchiopods	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicida	Diptera Chironomida			
1		19	17	10-15	15	1800	1500				X	X						Poor	
2		19	17	10-15	15	1800	1800				X	X						Poor	
3		19	17	10-15	15	1800	1800				X	X						Poor	
4		19	17	10-15	15	1800	1800				X	X						Poor	
5		19	17	10-15	15	1800	1800				X	X						Poor	
6		19	18	10	10	30	30				X							Poor	
7		19	17	15	15	100	100											Flow	
8		20	17	15	15	210	210				X	X						Fish	crayfish gambusia
9		dry																~~Standing~~ dry	
10		20	17	60	60	50	50				X		X	X				Fair	mayfly, juv Bullfrog
11		20	18	15	15	100	100											Poor flow	
12		20	18	7	7	9	9				X							Fair	Gastropods
13		20	18	5	5	24	24											Fair	
14		20	18	10	10	95	95				X	X							

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed; with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

H-101 (same as previous survey)

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 2/27/2017 | **Time:** 945am | **Weather Conditions:** Cool, complete cloud cover, 48°F, wind up to 5mph.

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	48F	50F	14"		22' x 42'		—	—	✓	✓	✓	—	✓	—	—	—	▷	(bullfrogs) • water boatmen • water level down from last survey.
12a/12b	4262992N 651912E			~~0"~~ 11" 15'	~~30' x 10"~~	up to 2' x 500'		—	—	✓	✓	✓	—	✓	—	—	—		• algae • intermittently ponded (bullfrogs)
13	4263000N 651948E			2"		26' x 12'		—	—	✓	✓	✓	—	✓	—	—	—		• algae
14	4263108N 6519678E			4"		55' x 12'	30' x 10'	—	—	✓	—	—	✓	—	✓	✓	✓		isolated areas of ~~water~~ algae only.
9	4262586N 651776E	damp to touch						—	—	—	—	—	—	—	—	—	—		
10	4262542N 652239E	"	"					—	—	—	—	—	—	—	—	—	—		
8	4262685N 652176E	↓	↓	74'		900' x 30'		—	—	—	—	—	—	—	—	—	—	↓	inundated

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 warming to

Date: 2/27/2017 | **Time:** —— | **Weather Conditions:** 60°F, thin cloudcover, winds upto 5mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	60°F	58°F	up to 6"		1½ x 1,200'		——	——	——	✓	——	——	——	——	——	——	D	flowing water
6	4262441N 6521190E			up to 4"		2' x 50'		——	——	✓	✓	✓	——	——	——	✓	——		intermittently ponded algae
5	4262435N 652269E			ponded S side of 1-5 : up to 6" depth															Area of ponding is to the S.
4	4262410N 652272E			and 450' l x up to 75' width															of features ↑ algae
3	4262424N 652284E			Areas 1-5 :				——	——	✓	✓	✓	✓	✓	——	✓	✓		water is tea colored.
2	4262414N 652303E																		
1	4262406N 652339E																		

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

area N of 1-5: ± 20' x 100' x 6"d. (probs). (u.s.)

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 3/13/2017 | Time: 8:45am | Weather Conditions: Cool, 50°F, no cloud cover, wind up to 5mph warming to 58°F

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	50F	50F	16"		12'x 26'		—	—	√	√	√	—	√	—	—	—	D	Lots of algae conxido
12a/12b	4262992N 651912E	"	"	up to 1'		2' 30'x		—	—	√	√	√	—	—	—	—	—	P	Redswamp crayfish
		"	"	up to 4"		1' x 400'		—	—	√	√	√	—	—	—	—	—	D	Bullfrogs
13	4263000N 651948E	"	—	—		—		—	—	Dry	—	—	—	—	—	—	—	↓	Dry
14	4263108N 6519678E	"	—	—		—		—	—	Dry	—	—	—	—	—	—	—	↓	Dry
9	4262586N 651776E	55F	—	—		—		—	—	Dry	—	—	—	—	—	—	—	↓	Dry
10	4262542N 652239E	↓	—	—		—		—	—	Dry	—	—	—	—	—	—	—	↓	Dry
8	4262685N 652176E	↓	"	>4'		24' x 800'		—	—	√	√	√	—	—	—	—	—	↓	Bullfrogs Snails

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 3/13/2017 | Time: | Weather Conditions: (See page 1)

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	55F	57F	up to 3"		1' x 300'		—		✓	✓	✓	—			✓		D	drainage water is ponded intermittently —
6	4262441N 6521190E	55F	—	—	—	—	—	Dry											
5	4262435N 652269E			Damp to the touch but no standing water — drainage located on the north side of fenceline holding water (± 2' x 200' x up to 3" in depth.															
4	4262410N 652272E																		
3	4262424N 652284E																		
2	4262414N 652303E																		
1	4262406N 652339E																		

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 3/27/07 Time: 8:30 am Weather Conditions: Cool, intermittent cloud cover, wind up to 10 mph. 51°F, (rain last week & last night). warming to 64°F)

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	52°F	51°F	14"		18' x 38'		—	—	✓	✓	✓	✓	—	—	✓	—	D	Notonectids + Corixids
12a/12b	4262992N 651912E	"	"	18"		55' x 24'		—	—	✓	✓	✓	✓	—	—	✓	—	D	" bullfrogs.
		"	"	4"		10" x 600'		—	—	✓	✓	✓	✓	—	—	✓			
13	4263000N 651948E	"	55"	up to 2"		15' x 10'		—	—	✓	✓	✓	—	—	—	—	—	D	(tiny aquatic inverts.)
14	4263108N 6519678E	"	"	up to 6"		68' x 42'		—	—	✓	✓	✓	—	—	—	—	—	D	" " soil is damp to the touch
9	4262586N 651776E	60°F	—	—		—		—	—	Dry	—	—	—	—	—	—	—	D	
10	4262542N 652239E	"	60°F	up to 8"		38' x 12'		—	—	Tiny aquatic inverts too small to I.D.			—	—	—	—	—	D	water is tea colored. • snails
8	4262685N 652176E	"	60°F	>4'		36' x 900'		—	—	✓	✓	✓	✓	✓	—	✓	✓	D	Bullfrogs • Snails

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).

For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.

(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 3/27/2017 | Time: | ~~Weather Conditions:~~ (see page 1).

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	60F	60F	up to 3"		1'x 1200		—		✓	✓	✓	—				—	D	very tiny aquat. inverts.
6 (Veg)(N) (Non)(S)	4262441N 6521190E	60F	"	up to 3"		1½ x 270'		Pups to touch		✓	✓	✓	—				—	D	dry. (N) (S) tiny aq. invert
5	4262435N 652269E	S	limits of features - pooled area										W		100		E	D	↑ amt of algal growth.
4	4262410N 652272E	±	100' x 300' x up to 8" in depth.										—		300'				
3	4262424N 652284E							—		✓	✓	✓	—				—	D	tiny aquat. inverts.
2	4262414N 652303E																		
1	4262406N 652339E																		

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
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(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Section:** 31

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10

Date: 4/10/2017 | Time: 8:00 am | Weather Conditions: (See page 1).

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
7	4262610N 652167E	50°F	53°F	up to 8" 3		10' x 1,000'		—	—	✓	✓	✓	✓	—	—	—	—	D	Water is flowing.
6	4262441N 6521190E	53°	56°F	up to 3"		60 x 1'		—	—	✓	✓	—	—	—	—	—			water is clear.
5 (1-5)	4262435N 652269E	50°F	53°F	up to 8"	—	water ponded to the Southeast		—	—	✓	✓	✓	✓	—	—	—	✓		Snails
4	4262410N 652272E	Feature 1-5: 375' x 150'																	
3	4262424N 652284E	water is discolored and																	
2	4262414N 652303E	lots of algal growth.																	
1	4262406N 652339E																		

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Sacramento Aggregate | **County:** Sacramento | **Quad:** Carmichael | **Township:** T8N | **Range:** R7E | **Sect**

SURVEYOR / Permit Number: Laura Belt/ #TE-797234-10 (warming to 68°F 70°F

Date: 4/10/2017 | **Time:** 8 am | **Weather Conditions:** 50°F, cool, low thin cloud cover, wind up to 5 mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
11	4262928N 651956E	64°F	66°F	up to 18"		24' x 18'	1'	—	—	✓	✓	✓	✓	✓	—	—	—	D	Bullfrogs dragonfly Damsel
12a/12b	4262992N 651912E	"	"	6"		1½' x 90'		—	—	✓	✓	✓	✓	—	—	—	✓		Bullfrogs
		"	"	16"		14' x 60'		—	—	✓	✓	✓	✓	—	—	—	✓		" "
13	4263000N 651948E			(dry)				—	—	—	—	—	—	—	—	—	—		Dry.
14	4263108N 6519678E	64°F	66°F	up to 7"	*	64' x 22' 32' x 12'		—	—	✓	✓	✓	✓	✓	—	—			waters clear.
9	4262586N 651776E	53°F	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		Damp to touch
10	4262542N 652239E	53°F	50°F	up to 8"		30' x 8'		—	—	✓	✓	✓	—	—	—	—			waters is clear.
8	4262685N 652176E	"	"	7"		30+ 80'		—	—	✓	✓	✓	✓	✓	—	—	✓		Bullfrogs

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

APPENDIX F

PLANT AND WILDLIFE SPECIES OBSERVED IN THE BIOLOGICAL STUDY AREA

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PLANT AND WILDLIFE SPECIES OBSERVED WITHIN THE BSA

Common Name	Scientific Name
Plants	
Fiddleneck sp	*Amsinckia* sp.
Slender oat	*Avena barbata*
Wild oat	*Avena fatua*
Coyote brush	*Baccharis pilularis*
Black mustard	*Brassica nigra*
Common field mustard	*Brassica rapa*
Perennial quakinggrass	*Briza media*
Ripgut brome	*Bromus diandrus*
Soft (chess) brome	*Bromus hordeaceus*
Shepherd's purse	*Capsella bursa-pastoris*
Italian thistle	*Carduus pycnocephalus*
Narrow-leaved owl's clover	*Castilleja attenuata*
Miner's lettuce	*Claytonia parviflora*
Field bindweed	*Convolvulus arvensis*
Brass buttons	*Cotula coronopifolia*
Horned downingia	*Downingia bicornuta*
Common spikerush	*Eleocharis macrostachya*
Broad leaf filaree	*Erodium botrys*
Italian rye grass	*Festuca perennis*
Cut-leaved geranium	*Geranium dissectum*
Northern mannagrass	*Glyceria borealis*
Short-podded mustard	*Hirschfeldia incana*
Mediterranean barley	*Hordeum marinum*
Foxtail barley	*Hordeum murinum*
Smooth cat's ear	*Hypochaeris glabra*
Hairy cat's ear	*Hypochaeris radicata*
Baltic rush	*Juncus balticus*
Toad rush	Juncus bufonius
Pacific (bog) rush	*Juncus effusus pacificus*

Vernal pool goldfields	*Lasthenia fremontii*
Duckweed sp.	*Lemna* sp.
Hawkbit	*Leontodon saxatilis*
Scarlet pimpernel	*Lysimachia arvensis*
Mallow sp.	*Malva* sp.
Pineapple weed	*Matricaria discoidea*
Spotted burclover	*Medicago arabica*
Annual yellow sweetclover	*Melilotus indicus*
Popcornflower sp.	*Plagiobothrys* sp.
English plantain	*Plantago lanceolata*
Rabbitsfoot grass	*Polypogon monspeliensis*
Fremont cottonwood	*Populus fremontii*
Oaks	*Quercus* sp.
Carter's buttercup	*Ranunculus bonariensis*
Spiny buttercup	*Ranunculus muricatus*
Cultivated radish	*Raphanus sativus*
Common sheep sorrel	*Rumex acetosella*
Curly dock	*Rumex crispus*
Willow sp.	*Salix* sp.
Russian thistle	*Salsola tragus*
Black elderberry	*Sambucus nigra*
Redwood	*Sequoia sempervirens*
Milk thistle	*Silybum marianum*
Charlock mustard	*Sinapis arvensis*
Spiny sowthistle	*Sonchus asper*
Indian clover	*Trifolium albopurpureum*
Cowbag clover	*Trifolium depauperatum*
Shamrock clover	*Trifolium dubium*
Rose clover	*Trifolium hirtum*
White-tipped clover	*Trifolium variegatum*
Wooly clover	*Trifolium tomentosum*
Butter'n'eggs	*Triphysaria eriantha*
White brodiaea	*Triteleia hyacinthina*

Dwarf nettle	*Urtica urens*
Spring vetch	*Vicia sativa*
Winter vetch	*Vicia villosa*
Wildlife – Amphibians and Reptiles	
American bullfrog	*Rana catesbeiana*
Western fence lizard	*Sceloporus occidentalis occidentalis*
Terrestrial gartersnake	*Thamnophis elegans elegans*
Birds	
Canada goose	*Branta Canadensis*
Mallard	*Anas platyrhynchos*
Gadwall	*Anas strepera*
Cinnamon teal	*Anas cyanoptera*
California quail	*Callipepla californica*
Double-crested cormorant	*Phalacrocorax auritus*
Great blue heron	*Ardea herodias*
Great egret	*Ardea alba*
Black-crowned night-heron	*Nycticorax nycticorax*
Turkey vulture	*Cathartes aura*
White-tailed kite	*Elanus leucurus*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
Ferruginous hawk	*Buteo regalis*
American kestrel	*Falco sparverius*
Killdeer	*Charadrius vociferus*
Greater yellowlegs	*Tringa melanoleuca*
Wilson's snipe	*Gallinago delicata*
California gull	*Larus californicus*
Rock pigeon	*Columba livia*
Mourning dove	*Zenaida macroura*
Black phoebe	*Sayornis nigricans*
Western kingbird	*Tyrannus verticalis*

Tree swallow	*Tachycineta bicolor*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Cliff swallow	*Petrochelidon pyrrhonota*
Barn swallow	*Hirundo rustica*
Northern mockingbird	*Mimus polyglottos*
European starling	*Sturnus vulgaris*
American pipit	*Anthus rubescens*
Yellow-rumped warbler	*Setophaga coronata*
Savannah sparrow	*Passerculus sandwichensis*
Lincoln's sparrow	*Melospiza lincolnii*
Brewer's blackbird	*Euphagus cyanocephalus*
Great-tailed grackle	*Quiscalus mexicanus*
Red-winged blackbird	*Agelaius phoeniceus*
Tricolored blackbird	*Agelaius tricolor*
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*
Brown-headed cowbird	*Molothrus ater*
Western meadowlark	*Sturnella neglecta*
House finch	*Haemorhous mexicanus*
American goldfinch	*Spinus tristis*
House sparrow	*Passer domesticus*
Mammals	
California ground squirrel	*Otospermophilus beecheyi*
California vole	*Microtus californicus*
Coyote	*Canis latrans*