DRAFT AQUATIC RESOURCE DELINEATION REPORT

6225 Excelsior Road, Elk Grove, Sacramento County, CA
APN: 067-0050-042
August 25, 2023



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1. Executive Summary

The Sacramento County Planning Division has required Alpha Green Development and Construction to provide an Aquatic Resource Delineation study prior to the proposed construction of a Buddhist temple at 6225 Excelsior Road in Elk Grove, CA 95624. Alpha Green Development and Construction has tasked Soar Environmental Consulting Inc. with providing the Aquatic Resource Delineation study. Preliminary data was collected prior to the field delineation visit. The Aquatic Resource Delineation was performed in accordance with the United States Army Corps of Engineers *1987 Corps of Engineers Wetlands Delineation Manual*, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. Hydrophytic vegetation, wetland hydrology, and hydric soils were examined to determine the presence of potential wetlands as defined by the U.S. Army Corps of Engineers. On August 4, 2023, Soar Environmental Consulting, Inc. biologists, Danielle Aparicio and Casey Stewman, conducted the field site visit to delineate all potential jurisdictional waters and wetlands. The findings from the property as well as an assessment of each parameter (hydrophytic vegetation, wetland hydrology, and hydric soils) and corresponding indicators from the sample points are evaluated and described in this report.

One potential jurisdictional seasonal pool wetland within the bed of an ephemeral drainage crossing the property, 0.0307-acre (1,337 square feet) total, was evaluated and delineated on site. The ephemeral drainage and associated seasonal pool wetland drain onto and off of the property through one foot diameter metal culverts. No other jurisdictional waters or wetland features were located on the property. This drainage has direct oversurface connectivity to other waters of the U.S. in the form of a seasonal drainage that drains to a pond on the adjacent property south of the Project area.

The seasonal pool is a vernal pool with vernal pool associated species including smooth goldfields (*Lasthenia glaberrima*), an obligate (OBL) wetland species, stalked popcorn flower (*Plagiobothrys stipitatus*), a facultative wetland (FACW) species, and rye grass (*Festuca (Lolium) perennis*), a facultative (FAC) wetland species. The seasonal pool wetland is a wetland waters feature likely to be defined as jurisdictional wetland within waters of the U.S. under the Clean Water Act, Section 401 and 404 as it has hydrologic connectivity to adjacent jurisdictional waters, though the final determination will be made by the United States Army Corps of Engineers and other appropriate regulatory agencies.

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Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
CWA	Clean Water Act
NRCS	Natural Resources Conservation Service
NWPL	National Wetland Plant List
OHWM	ordinary high water mark
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
WETS	Climate Analysis for Wetlands
WUS	Waters of the United States
WWUS	Wetland Water of the United States

2. Introduction

2.1. Purpose and Scope of Report

Alpha Green Development and Construction (Client) proposes to construct a Buddhist temple (Project) at 6225 Excelsior Road, Elk Grove, CA 95826, on a 10-acre lot in Sacramento County. Sacramento County (County), per the California Environmental Quality Act (CEQA), requires the Client to provide an Aquatic Resource Delineation study. The County will use the technical studies in its review for granting a construction permit. The Client contracted Soar Environmental Consulting, Inc. (Soar Environmental) to perform an Aquatic Resource Delineation of the project site in accordance with Section 10 of the Rivers and Harbor Act of 1899, Section 401 and Section 404 of the Clean Water Act (CWA) and Section 1602 of the California Department of Fish and Wildlife (CDFW) Game Code.

On August 4, 2023, Soar Environmental Biologists, Danielle Aparicio and Casey Stewman conducted a wetland delineation for potential aquatic resources within the 10-acre Project site. The purpose of this survey was to document the location and extent of waters, including wetlands, that may qualify as jurisdictional Waters of the United States (WUS) by the U.S. Army Corps of Engineers (USACE) and to avoid or minimize impacts to aquatic resources during the design and construction of the Project. For purposes of Section 10 of the Rivers and Harbor Act of 1899, and Game Code Section 1602, the lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA Sections 401 and 404 jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands.

The delineation was conducted in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual*, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008b), and the 2008 *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE 2008a). The USACE, Regional Water Quality Control Board (RWQCB), and CDFW are ultimately responsible for determining the limits of the jurisdiction, and this report has been prepared to assist the agencies with their final determination.

2.2. Project Site Location

The project site is located in the Sacramento Valley at 6225 Excelsior Rd., Elk Grove, in Sacramento County, California, APN 067-0050-042, Section 35, Township 8 North, Range 6 East of the United States Geological Survey (USGS) 7.5-minute *Carmichael* Quadrangle at an elevation range of approximately 108 to 120 feet above mean sea level (**Figure 1**). The project site is surrounded by resident and ranch properties including a horse ranch to the north and horse property to the south and is approximately 10 miles east-southeast of downtown Sacramento and 0.37 mile south of Highway 16. The property has relatively flat topography with a slope of approximately 2 percent. Strawberry and vegetable gardens, a parking lot and large buildings cover the western portion of the property and disturbed grassland with planted palm trees cover the eastern portion. A small ephemeral drainage divides the property draining from the horse ranch to the north, draining to a seasonal wetland pool in the Project property then drains southward from the southern edge of the Project property through a one-foot metal culvert onto the horse property immediately to the south where it drains to a small pond.

To reach the Project site from Sacramento take Highway 16 east from Sacramento turn right on Excelsior Rd. Go south 0.37 mile on Excelsior Rd. and Project property is on the left.



SOAR ENVIRONMENTAL CONSULTING 559.547.8884 www.soarhere.com	Title Project Location	Facility Address 6225 Excelsior Road, Elk Grove, CA	Figure 1 Project Location
	Client Alpha Green Development and Construction		Revision Date 08/24/2023

3. Methodology

On August 4, 2023, Soar Environmental Biologists Casey Stewman and Danielle Aparicio performed a wetland delineation survey on the 10-acre project property. The survey was performed in accordance with USACE guidelines and consisted of preliminary data research, a field survey and GPS boundary determination and digital mapping using ArcGIS Collector and ArcGIS Online (ESRI).

3.1. Preliminary Data Gathering

Prior to conducting the field survey, the following information sources were reviewed:

- USGS 7.5-degree minute topographic quadrangle maps for *Elk Grove* and *Carmichael* and historic and current Google Earth aerial photography;
- United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) web soil survey maps and soils data;
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Maps;
- NRCS WETS Table using data from Sacramento Metropolitan Airport station;
- USACE National Wetland Plant List 2020 (USACE, 2020), in the Arid West Region

3.2. Determination Procedures

The purpose of the field determination was to identify all aquatic features that are subject to jurisdiction under federal, state, and local agencies within the Project area and, if present, to determine the boundary of each water feature.

The 10-acre Project area was surveyed and field verified by walking the property completely. The biologists surveyed within the Project boundary for any aquatic resource, searching for indicators of any potential wetlands in accordance with the *1987 USACE Wetlands Delineation Manual* and *Arid West Regional Supplement* as well as searching for indicators of any non-tidal waters using the 2008 *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States*. A subject area is determined to be a federally jurisdictional wetland if all three required parameters (hydrophytic vegetation, wetland hydrology, hydric soils) were present. At a minimum, one positive indicator for each parameter must be found to make a positive wetland determination. The OHWM is defined as a 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 soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. The biologists searched for changes in land topography, vegetation, and hydrology indicators that could potentially constitute a positive wetland or non-tidal water. Paired soil pits were dug near boundary lines where potential wetland and upland habitats were observed.

3.2.1. Hydrophytic Vegetation

Hydrophytic vegetation, also known as wetland plants, is present when the plant community is dominated by species that can tolerate prolonged inundation or substrate saturation during the growing period. Wetland plants are identified by using the National Wetland Plant List (USACE, 2020) and applying the wetland indicator status. Once each plant species is identified with their corresponding indicator status, the dominance test is applied. If the calculation from the dominance test (indicator 1) is over 50

percent, then hydrophytic vegetation is present. However, if the dominance test fails and in the case of positive indicators for both wetland hydrology and hydric soils are present, then the prevalence index (indicator 2) is applied which takes more than just the dominant species but all plant species into consideration. In addition, plant morphological adaptations (indicator 3) can be used when both wetland hydrology and hydric soils are present.

3.2.2. Wetland Hydrology

Wetland hydrology refers to the presence of water at or above the soil surface for a sufficient period of the year to significantly influence the plant types and soils that occur in the area. When surveys are conducted at a time of year when surface water, water table, or saturated soils cannot be observed, evidence of wetland hydrology is based on observation of the hydrologic indicators described in the wetland delineation manual. Evidence of wetland hydrology can include primary indicators such as surface soil cracks, nonriverine water marks, and nonriverine drift deposits, or secondary indicators such as drainage patterns or crayfish burrows. The occurrence of at least one primary indicator or two secondary indicators is required to confirm the presence of wetland hydrology.

3.2.3. Hydric Soils

Hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions that support the growth and regeneration of hydrophytic vegetation. If the soil in an area is listed as hydric by the Natural Resources Conservation Service (NRCS), the area may have a wetland. Sample soil pits are dug in areas of interest that have positive indicators of wetland hydrology and hydrophytic vegetation. Once a soil pit is dug, the Munsell Soil Color Book (2009) and Field Indicators of Hydric Soils in the United States v 8.2 are used to confirm the profile description of the hydric soil by depth.

4. Site Conditions

The primary plant community type within the project site is disturbed annual grassland (*Avena* spp.-*Bromus* spp. grassland alliance). Land use surrounding the project parcel is ranch land and residential and the property is surrounded by open residential horse properties. The Project site has relatively flat topography but drains north to south. Native shrubs and trees are largely absent on the property though one small elderberry shrub with stems less than one inch thick occurs along the southern edge of the parcel.

According to the United States Department of Agriculture (USDA) National Resources Conservation Service (NRCS) Climate Analysis for Wetlands (WETS) rainfall data from the Sacramento Metropolitan Airport station (**Appendix E**) and the WETS table analysis in **Table 1** below, the volume of precipitation in the three months prior to the initial site visit (May-July) was normal for the same timeframe of the previous 30 years. There was surface water present during the site visit in the pond on the adjacent property immediately south that the seasonal pool and drainage in the Project property drains to, and visible inundation on the Project property can be observed in previous years such as 2015 on aerial imagery from Google Earth (**Appendix F**).

The vernal pool seasonal wetland fed hydrologically by an ephemeral drainage and farm runoff has native and non-native wetland vegetation within it. The drainage drains onto the property through a one-foot

metal culvert from the SportHorse Ranch property to the north and has hydrologic connectivity to the upstream drainage channel as well as an adjacent small pond it drains to offsite on the horse property with a pond immediately South of the Project property. A review of historic aerial imagery, maps and the National Wetland Inventory show that the seasonal pool wetland and pond just south of property are part of an historic seasonal stream that flowed east to west through the area.

Table 1 – WETS Data Analysis

	Month	30% chance precip less than	Avg Precip	30% chance precip more than	Observed rainfall (inches)	Condition (dry, wet, normal)	Condition Value*	Weighing factor	Product of Previous two columns
1st month prior	May	0.20	0.54	0.59	1.12	normal	2	2	4
2nd month prior	June	0.0	0.14	0.12	Trace	normal	2	2	4
3rd month prior	July	0.00	0.00	0.00	0.0	normal	2	2	4
								SUM**	12

** 1 = Dry, 2 = Normal, 3 = Wet.*
*** 6-9 = prior period has been drier than normal, 10-14 = prior period has been normal, 15-18 = prior period has been wetter than normal.*

5. Results

The results of the vegetation, hydrology, and soils found within the sampling plots on the Project site are described in the following sections.

5.1. Vegetation

At the time of this evaluation the dominant vegetation within the ephemeral drainage channel on the property consisted of Dallis grass (*Paspalum dilatatum*), a perennial non-native facultative (FAC) wetland grass species and rye grass (*Festuca* (*Lolium*) *perennis*) a perennial native facultative (FAC) wetland indicator grass species. Wetland vegetation associated with the vernal pool seasonal wetland within only the bottom portion of the ephemeral drainage was smooth goldfields (*Lasthenia glaberrima*) an annual native herbaceous obligate (OBL) wetland wildflower species, stalked popcorn flower (*Plagiobothrys stipitatus*) a native annual wilflower species that is a facultative wetland (FACW) and prostrate knotweed (Polygonum aviculare) a facultative (FAC) species. Vascular plant species found within the project site along with their correlating National Wetland Plant List (NWPL) status are listed in **Table 2**.

Paired wetland and upland sample points (two points total) were evaluated and documented in the Wetland Determination Data Forms (**Appendix D**). The results of the wetland sample point (1 WET) calculations passed the dominance test, concluding that hydrophytic vegetation is present. Sampling point 1-WET was within the bed of the seasonal pool wetland and had a dominant species of prostrate knotweed (*Polygonum aviculare*) with FAC wetland indicator status and smooth goldfields (*Lasthenia glaberrima*) with OBL wetland indicator status. Other wetland plant species growing here included rabbitsfoot grass (*Polypogon monspeliensis)* FACW, stalked popcorn flower (*Plagiobothrys stipitatus*) FACW and rye grass (*Festuca* (*Lolium*) *perennis*) FAC. The upland sample point is approximately 20 inches vertically higher than 1-WET and is outside the edge of the wetland (1-UPL). It did not exhibit any hydrology, and therefore did not meet the hydrology requirement.

Table 2 – List of All Plants Identified During the Field Survey within the Study Area

Family	Scientific Name	Common Name	NWPL Indicator Status
Cyperaceae	*Cyperus eragrostis*	Tall flatsedge, nutsedge	FACW
Juncaceae	*Juncus bufonius*	Toad rush	FACW
	Juncus sp.	rush	--
Poaceae	*Avena barbata*	Slender wild oats	UPL
	Bromus diandrus	Ripgut brome	UPL
	Bromus hordeaceus	Soft chess	FACU
	Cynodon dactylon	Bermuda grass	FACU
	Festuca perennis (Lolium perenne)	Rye grass	FAC
	Hordeum marinum var. gussoneanum	Mediterranean barley	FAC
	Hordeum murinum	Wall barley	FACU
	Paspalum dilatatum	Dallis grass	FAC
	Polypogon monspeliensis	Rabbitsfoot grass	FACW
Amaranthaceae	*Amaranthus blitoides*	Procumbent pigweed	FACU
Asteraceae	*Carduus tenuiflorus*	Italian thistle	UPL
	Centaurea calcitrapa	Purple star-thistle	UPL
	Centaurea solstitialis	Yellow star-thistle	UPL
	Centromadia fitchii	Fitch's tarplant	FACU
	Deinandra kelloggii	Kellogg's tarplant	UPL
	Lasthenia glaberrima	Smooth goldfields	OBL
	Lactuca serriola	Wild prickly lettuce	FACU

Boraginaceae	*Amsinckia menziesii*	Fiddleneck	UPL
	Plagiobothrys stipitatus	Stipitate popcorn flower	FACW
Brassicaceae	*Brassica nigra*	Black mustard	UPL
Caprifoliaceae	*Sambucus mexicana (Sambucus nigra* var. *caerulea)*	Blue elderberry	FACU
Caryophyllaceae	*Spergularia rubra*	Red sand spurry	FAC
Chenopodiaceae	*Chenopodium album*	Goosefoot	FACU
Convolvulaceae	*Convolvulus arvensis*	Bindweed	UPL
Euphorbiaceae	*Croton setiger*	Doveweed, turkey mullein	UPL
Fabaceae	*Acmispon parviflorus*	Small flower lotus	UPL
Lamiaceae	*Mentha pulegium*	Penny royal	OBL
Onagraceae	*Epilobium brachycarpum*	Willowherb	FAC
Plantaginaceae	*Plantago lanceolata*	European plantain	FAC
Polygonaceae	*Polygonum aviculare*	Prostrate knotweed	FAC
	Rumex conglomeratus	Clustered dock	FACW
	Rumex crispus	Curly dock	FAC
Portulacaceae	*Claytonia perfoliata*	Miner's lettuce	FAC
Verbenaceae	*Phyla nodiflora*	Lippia	FACW

Indicator Status Description:
OBL—Obligate wetland plants, occurrence in wetlands >99%
FACW—Facultative wetland plants, occurrence in wetlands 67-99%
FAC—Facultative plants, occurrence in wetlands 34-66%
FACU—Facultative upland plants, occurrence in wetlands 1-33%
UPL—Obligate upland plants, occurrence in wetlands <1%

5.2. Hydrology

During the late summer site visit, there was no surface water present in the ephemeral drainage or seasonal pool wetland. Cracked clay soils were present in the seasonal pool and water marks were also evident. This met primary hydrology indicator requirements. The seasonal pool wetland with wetland vegetation had a defined bed and bank and inundation was visible on aerial imagery (B7 primary indicator) in 2015. The sample point outside of the drainage channel wetland was approximately 18 inches topographically higher and did not have any wetland hydrology indicators and therefore did not have wetland hydrology present.

5.3. Soils

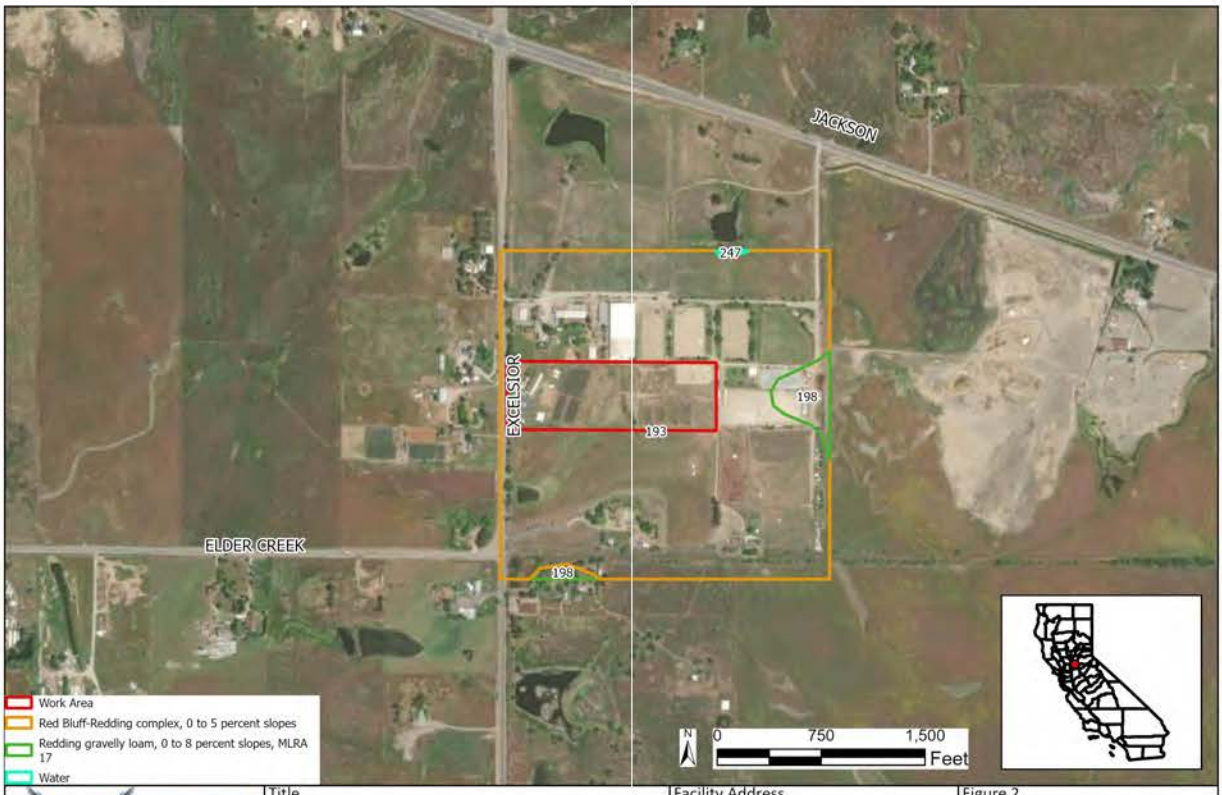
Analysis of the NRCS web soil survey showed one major type of soil unit within the project site (**Figure 2**). At 99.9%, the majority of the soil type is 193—Red Bluff-Redding complex, 0 to 5 percent slopes with no hydric soil rating. At 15%, the remaining soils are composed from minor components, 0 to 5 percent slopes with no hydric soil rating. This is a well-drained to moderately well drained gravelly clay loam formed from alluvium on terraces.

One pair of sampling points were dug near the wetland boundary line. The biologist used the 2009 Munsell Soil Color Book and the 2021 Pocket Guide to Hydric Soil Field Indicators Based on Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils V 8.2 (2018) to determine the soil color (hue, value, and chroma) and indicators. Redoximorphic features and soil texture were documented.

The soil from sampling point 1-WET was determined to be a hydric soil with positive indicator Vernal Pools (F9) and Red Parent Material (TF2). The soil profile description that verifies those indicators is listed in **Table 3**. The sampling point outside of the wetland did not have any hydric soil indicators and therefore did not have hydric soil present.

Table 3 – Soil Profile Description

Depth (inches)	Matrix		Redox Features				Texture	Sampling Point
	Color (moist)	%	Color (moist)	%	Type	Loc		
0-3	10 YR 4/6	92	10R 3/3	8	Concentration	Matrix	Gravelly clay loam	1 WET
3-16	7.5 YR 4/4	81	2.5 YR 4/6	12	Concentration	Matrix		
			Gley 1 2.5N	7	Concentration			



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	Client Alpha Green Development and Construction		Revision Date 08/24/2023

5.4. Aquatic Resources

The results of the aquatic resources found on the Project site are described below in **Table 4**. One ephemeral drainage drains across the middle of the property from north to south. The drainage enters the property through a culvert, drains under a dirt road through a culvert, drains to a seasonal pool wetland and exits the property through a culvert to the south. These potentially jurisdictional features were observed and delineated using a sub-meter Arrow GPS unit, ArcGIS Collector, and ArcGIS ESRI (**Appendix A**). The drainage channel entering the property from the north and draining south across the project area was evaluated and delineated by identifying positive waters and wetland parameters.

Table 4 – Aquatic Resource Within the Project Area

Aquatic Resource Name	Cowardin Classification Code*	Aquatic Resource Size (acre)	Aquatic Resource Size (feet)	Length (feet)
Culverted ephemeral drainage (CWUS-1)	Palustrine ephemeral stream	0.0016	71.4	71.4
Ephemeral Drainage (WUS-1)	Palustrine ephemeral stream	0.0256	1,115	486.4
Culverted ephemeral drainage (CWUS-2)	Palustrine ephemeral stream	0.0005	22	22
Ephemeral Drainage (WUS-2) Agricultural field runoff	Palustrine ephemeral stream	0.0009	43.2	43.2
Vernal pool/Seasonal pool wetland (WWUS-1)	Palustrine seasonal wetland water	0.0307	1,337	207
Culverted ephemeral drainage (CWUS-3)	Palustrine ephemeral stream	0.0008	39	39
Total Waters of the United States		0.0601	2,627.6	869

6. Conclusions

The findings and conclusions presented in this report, including the location and extent of waters subject to regulatory jurisdiction, represent the professional opinion of the consultant biologists. These findings and conclusions should be considered preliminary until verified by the USACE and appropriate regulatory agencies.

A subject area is determined to be a wetland under federal jurisdiction if all three required parameters (hydrophytic vegetation, wetland hydrology, hydric soils) are present. At a minimum, one positive indicator for each parameter must be found in order to make a positive wetland determination.

During the survey, all three parameters were present within the seasonal pool wetland that receives hydrology both from a small farm runoff ephemeral drainage and the larger ephemeral drainage that crosses the property from north to south. The water source for the larger ephemeral drainage is surface runoff from both the SportHorse property north of the Project property and surface runoff from the Project property. This drainage and associated wetland are connected hydrologically to other waters both upstream and downstream of the project area. The ephemeral drainages and seasonal pool wetland fed by the drainages are likely jurisdictional under the Clean Water Act, Section 401 and Section 404, and would likely be classified as other waters of the U.S. and a wetland water of the U.S. (WWUS). though the final determination will be made by the appropriate regulatory agencies.

7. References

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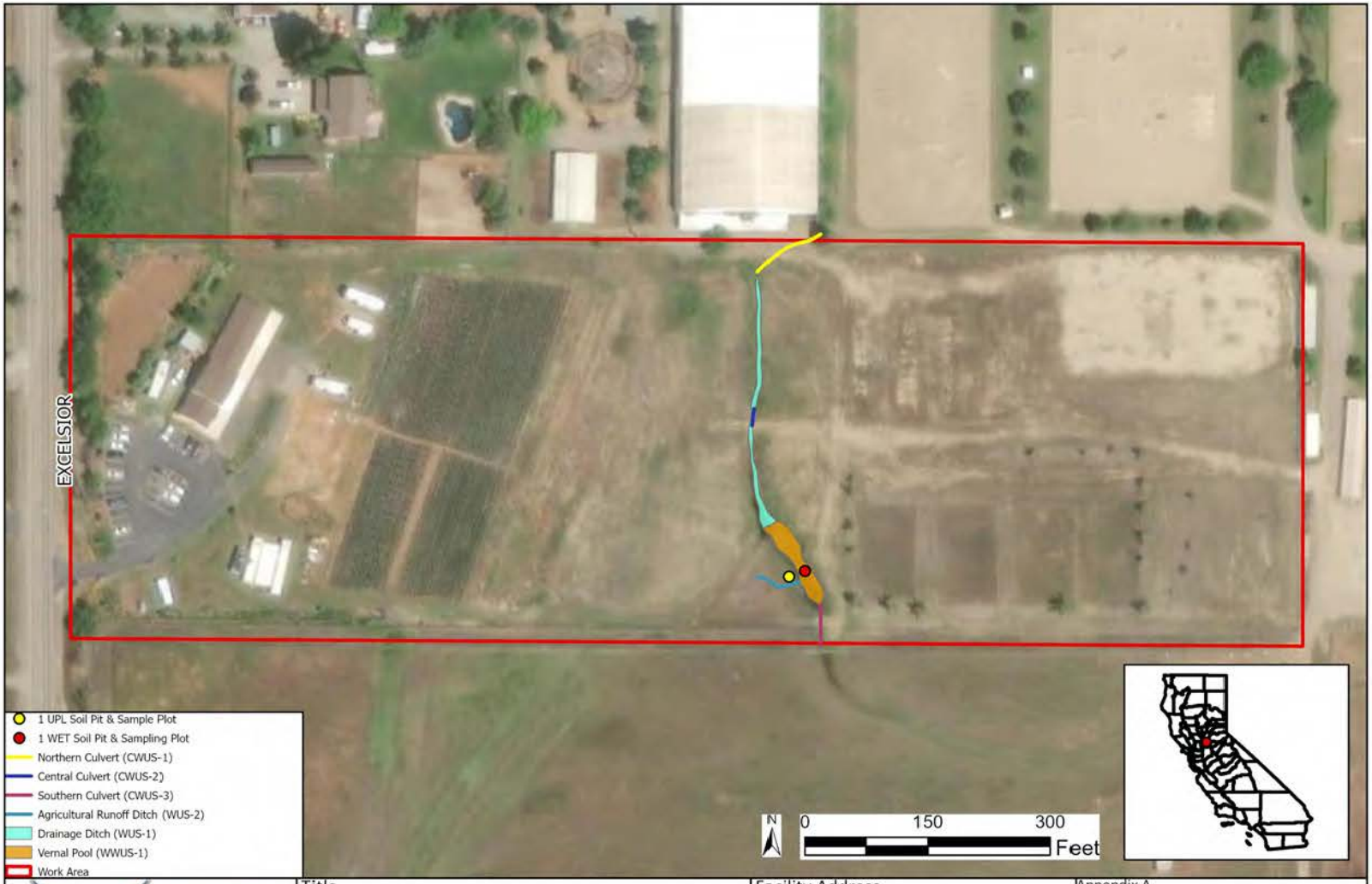
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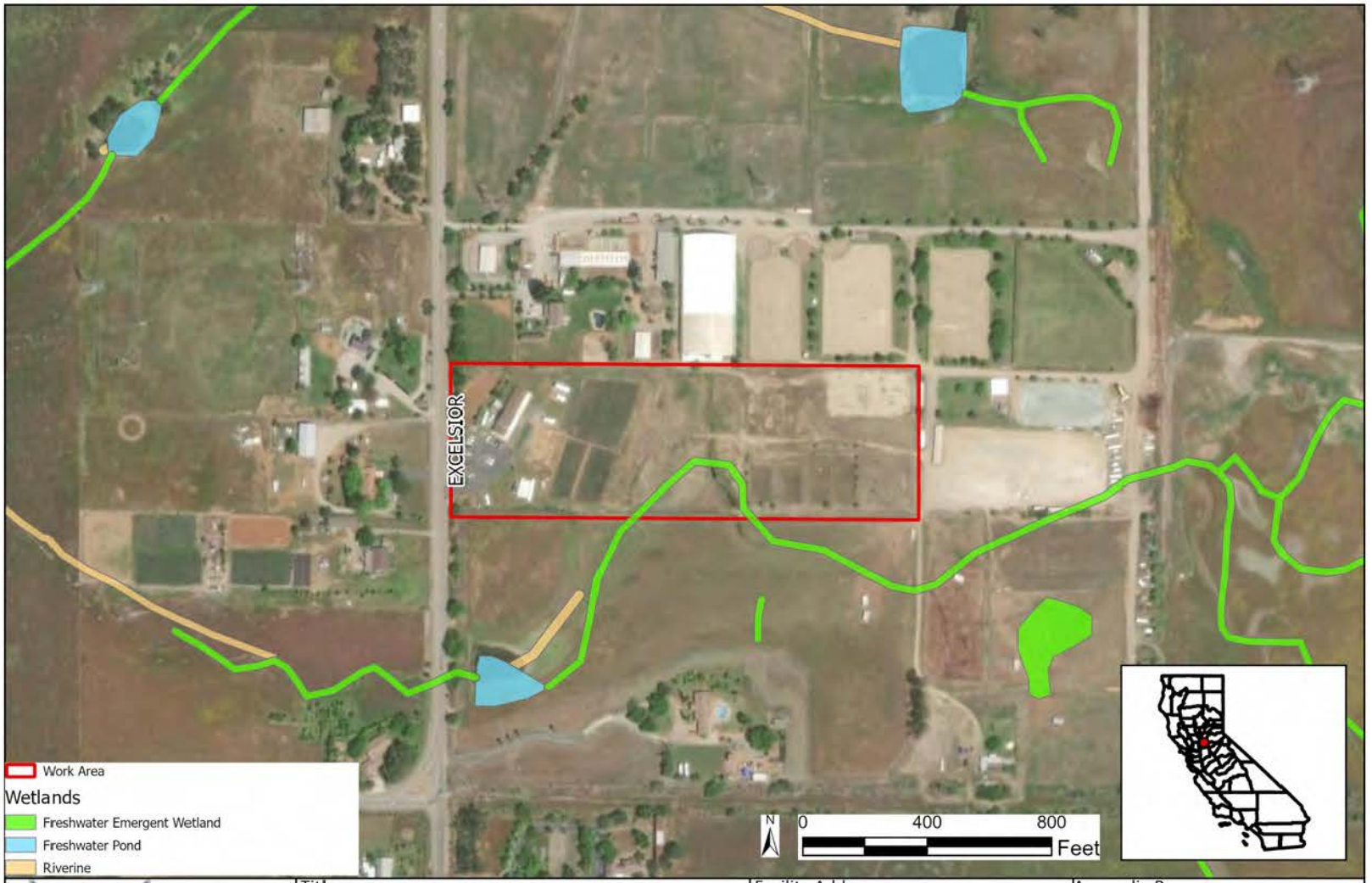
Appendix A: Aquatic Resources within the Project Area



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	Client Alpha Green Development and Construction		Revision Date 08/24/2023

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Appendix B: USFWS National Wetland Inventory Map



SOAR ENVIRONMENTAL CONSULTING 559.547.8884 www.soarhere.com	Title USFWS National Wetland Inventory Map	Facility Address 6225 Excelsior Road, Elk Grove, CA	Appendix B USFWS National Wetland Inventory Map with Surrounding
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Appendix C: Photographs



Photograph 1 – Bed of seasonal pool fed by ephemeral drainage with dominance of hydrophytic vegetation including prostrate knotweed (*Polygonum aviculare*) and smooth goldfields (*Lasthenia glaberrima)*

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Photograph 2 – 1WET wetland sample point in bed of seasonal pool fed by an ephemeral drainage crossing the property from an adjacent Horse ranch.



Photograph 3 – Matrix clay loam at wetland sample point 1WET with gravelly alluvium

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Photograph 4 – Non-native grassland dominated by rye grass (*Lolium perenne = Festuca perennis*) FAC at upland sample point 1UP



Photograph 5 – View of short section of one-foot wide ephemeral drainage with gravel in bed draining farm land runoff into seasonal pool in southern project area



Photograph 6 – Ephemeral drainage from adjacent horse ranch to the north crosses property from north to south, drains under dirt road through 1-foot metal culvert



Photograph 7 – Landscaped upland disturbed grassland in eastern portion of property



Photograph 8 – Strawberry farm on western portion of property



Photograph 9 – One-foot metal culvert draining seasonal pool wetland from property to south

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Appendix D: Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Buddhist Temple City/County: Elk Grove/Sacramento Sampling Date: 8/4/23
Applicant/Owner: Alpha Green State: CA Sampling Point: 1WET
Investigator(s): C. Stewman, D Aparicio Section, Township, Range:
Landform (hillslope, terrace, etc.): depressional swale Local relief (concave, convex, none): concave Slope (%): 0-5
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: Freshwater Emergent
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: cracked soils, water from stormwater and agricultural runoff in historical floodplain of seasonal wetland.

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: 10x10)			
1. Polygonum aviculare	38	Y	FAC
2. Lolium Perenne	5	N	FAC
3. Lasthia glaberrima	22	Y	OBL
4. Hordium Marinum	4	N	FAC
5. Polypogon monspeliensis	3	N	FACW
6. Plagiobothrys stipitatus	1		
7.			
8.			
	73 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

50% 36
20% = 14.4

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 5

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:

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SOIL

Sampling Point: 1WET

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
0-3	10YR 4/6	92	10R 3/3	8	C	M	CLO	Gravel throughout
3-16	7.5YR 4/4	81	2.5YR 4/6	12	C	M	CLO	0-16 inches
			Gley1 2.5/N	7	C	M	CLO	

[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): _____

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:

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Buddhist Temple City/County: Elk Grove/Sacramento Sampling Date: 8/4/23
Applicant/Owner: Alpha Green State: CA Sampling Point: 1 UPL
Investigator(s): C Steuman, D. Aparicio Section, Township, Range:
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): convex Slope (%): 0-5
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A
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: 10x10)			
1. Lolium perenne	70	Y	FAC
2. Rumex crispus	4	N	FAC
3. Hemizonia fitchii	15	N	UPL
4. Hordeum marinum	10	N	FAC
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

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SOIL

Sampling Point: UPL

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
½-2	10YR 4/4	96	5YR 4/6	3	C	M	SCL	Gravel throughout
			Gley1 2.5/N	1	C	M	SCL	½-16 inches
2-16	10YR 3/6		—	—	—	—	SCL	
0-½	10YR 2/1	100	—	—	—	—	L	organic top layer with medium roots

[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): _____

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:

Terrace is about 1.5 ft higher than wetland area

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Appendix E: WETS Data

WETS Table

WETS Station: SACRAMENTO METROPOLITAN AP, CA
Requested years: 1998 - 2023

Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	56.0	38.1	47.0	3.16	1.15	3.68	6	-
Feb	60.8	39.8	50.3	2.95	1.58	3.51	6	-
Mar	66.0	43.1	54.5	2.55	1.06	3.10	6	-
Apr	72.5	46.0	59.3	1.22	0.41	1.47	3	-
May	81.5	52.0	66.7	0.54	0.20	0.59	2	-
Jun	89.2	57.3	73.2	0.14	0.00	0.12	1	-
Jul	93.9	59.8	76.8	0.00	0.00	0.00	0	-
Aug	92.7	58.9	75.8	0.03	0.00	0.00	0	-
Sep	88.8	56.0	72.4	0.13	0.00	0.11	0	-
Oct	78.5	48.8	63.6	0.95	0.26	0.91	2	-
Nov	64.2	41.6	52.9	1.65	1.07	1.98	4	-
Dec	55.6	37.7	46.6	3.47	1.14	4.15	7	-
Annual:					12.90	19.23		
Average	75.0	48.3	61.6	-	-	-	-	-
Total	-	-	-	16.79			36	-

GROWING SEASON DATES

Years with missing data:	24 deg = 1	28 deg = 1	32 deg = 2
Years with no occurrence:	24 deg = 24	28 deg = 4	32 deg = 0
Data years used:	24 deg = 25	28 deg = 25	32 deg = 24
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	1/15 to 12/26: 345 days	2/24 to 11/25: 274 days
70 percent *	No occurrence	1/1 to 1/9: 373 days	2/16 to 12/3: 290 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1998					M1.76	0.14	T	T	0.21	M0.92	M2.49	0.65	6.17
1999	2.33	4.00	1.12	M2.07	0.07	T	MT	T	T	0.20	1.70	0.06	11.55
2000	5.81	7.91	1.72	1.34	0.62	0.02	0.00	T	0.15	1.21	0.89	0.54	20.21
2001	3.43	5.03	2.20	1.39	T	0.12	0.00	0.00	0.21	0.41	2.88	5.87	21.54
2002	2.44	0.89	2.80	0.36	1.14	T	T	0.00	0.00	0.00	2.52	7.33	17.48
2003	1.92	1.42	3.34	2.82	0.93	T	0.02	0.79	0.00	0.04	1.60	4.68	17.56
2004	1.90	7.04	0.73	0.17	0.08	T	T	0.00	0.22	2.15	2.90	3.61	18.80
2005	4.21	3.29	2.48	1.03	1.19	0.55	T	T	0.05	0.06	1.55	8.22	22.63
2006	2.63	1.84	4.46	3.38	0.38	T	T	0.00	T	0.	1.45	2.	17.

										04		97	15
2007	T	3.48	0.35	1.28	0.39	T	T	T	0.03	1.06	0.86	3.03	10.48
2008	M7.11	2.34	0.01	0.01	T	0.00	T	T	0.00	0.98	1.90	1.54	13.89
2009	1.09	4.51	2.15	0.67	0.92	0.43	T	0.00	0.14	3.18	0.63	2.47	15.19
2010	5.60	2.63	1.50	2.80	0.68	T	T	T	0.05	0.86	2.64	5.64	22.40
2011	1.35	3.74	6.54	0.04	1.43	1.37	0.00	0.00	T	1.08	0.94	0.06	16.55
2012	2.90	M1.14	3.66	1.91	0.06	0.04	0.05	T	T	1.12	3.41	6.14	20.43
2013	0.85	0.51	1.50	0.68	0.19	0.38	0.00	T	0.53	0.00	0.47	0.30	5.41
2014	0.16	3.02	1.10	1.53	0.19	0.00	T	0.04	0.37	0.91	1.22	8.04	16.58
2015	0.05	2.39	0.14	1.45	0.07	0.10	T	T	0.02	0.05	1.89	1.34	7.50
2016	M4.91	0.73	6.31	0.51	0.49	T	0.00	0.00	T	2.63	1.24	2.92	19.74
2017	9.38	6.50	2.79	3.11	0.14	M0.22	T	T	MT	0.26	1.95	0.09	24.44
2018	4.25	0.45	5.10	1.85	0.26	T	0.00	0.00	T	1.70	3.16	2.22	18.99
2019	4.66	7.71	4.06	M0.39	2.54	T	M0.00	0.00	M0.23	T	M0.46	5.36	25.41
2020	1.33	MT	1.67	0.85	0.40	T	0.00	T	0.00	T	0.66	1.09	6.00
2021	2.43	0.98	1.48	M0.03	T	0.00	M0.00	M0.00	0.01	4.92	0.56	M6.01	16.42
2022	0.03	T	1.43	0.71	0.09	M0.27	T	T	1.01	T	1.23	6.67	11.44
2023	8.12	2.24	5.04	0.23	1.12	T	0.00	MT					16.75

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

Data missing for all days in a month or year is blank.

Creation date: 2023-08-21

										04		97	15
2007	T	3.48	0.35	1.28	0.39	T	T	T	0.03	1.06	0.86	3.03	10.48
2008	M7.11	2.34	0.01	0.01	T	0.00	T	T	0.00	0.98	1.90	1.54	13.89
2009	1.09	4.51	2.15	0.67	0.92	0.43	T	0.00	0.14	3.18	0.63	2.47	16.19
2010	5.60	2.63	1.50	2.80	0.68	T	T	T	0.05	0.86	2.64	5.64	22.40
2011	1.35	3.74	6.54	0.04	1.43	1.37	0.00	0.00	T	1.08	0.94	0.06	16.55
2012	2.90	M1.14	3.66	1.91	0.06	0.04	0.05	T	T	1.12	3.41	6.14	20.43
2013	0.85	0.51	1.50	0.68	0.19	0.38	0.00	T	0.53	0.00	0.47	0.30	5.41
2014	0.16	3.02	1.10	1.53	0.19	0.00	T	0.04	0.37	0.91	1.22	8.04	16.58
2015	0.05	2.39	0.14	1.45	0.07	0.10	T	T	0.02	0.05	1.89	1.34	7.50
2016	M4.91	0.73	6.31	0.51	0.49	T	0.00	0.00	T	2.63	1.24	2.92	19.74
2017	9.38	6.50	2.79	3.11	0.14	M0.22	T	T	MT	0.26	1.95	0.09	24.44
2018	4.25	0.45	5.10	1.85	0.26	T	0.00	0.00	T	1.70	3.16	2.22	18.99
2019	4.66	7.71	4.06	M0.39	2.54	T	M0.00	0.00	M0.23	T	M0.46	5.36	25.41
2020	1.33	MT	1.67	0.85	0.40	T	0.00	T	0.00	T	0.66	1.09	6.00
2021	2.43	0.98	1.48	M0.03	T	0.00	M0.00	M0.00	0.01	4.92	0.56	M6.01	16.42
2022	0.03	T	1.43	0.71	0.09	M0.27	T	T	1.01	T	1.23	6.67	11.44
2023	8.12	2.24	5.04	0.23	MT								15.63

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

Data missing for all days in a month or year is blank.

Creation date: 2023-05-02

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Appendix F: UAV Imagery of Aquatic Resources on Project Area



Entire view of project area

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Seasonal vernal pool on right center connecting to adjacent property by culvert

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Ephemeral drainage on top center connecting to season vernal pool on the right. 1-foot drainage dumps into vernal pool from ag runoff on the left

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Ephemeral drainage runs North to South under unpaved road by culvert

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North end of ephemeral drainage connects to adjacent property by culvert

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Appendix G: Historic Aerial Imagery of Project Area



2002



2013

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2015



2023