Preliminary Jurisdictional Wetland and Other Waters Delineation

Emerald Family Farms, LLC
Willow Creek, California

Prepared for:

Emerald Family Farms, LLC

SHN Engineers & Geologists

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September 2016
016225.003

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QA/QC: GCR___

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Abbreviations and Acronyms

APN	Assessor's parcel number
CDEC	California Data Exchange Center
CFR	Code of Federal Regulations
CT	control point
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
ERDC/CRREL	U.S. Army Engineer Research and Development Center/Cold Regions Research and Engineering Laboratory
FAC	facultative wetland plant species
FACU	facultative-upland wetland plant species
FACW	facultative-wet wetland plant species
GIS	geographic information system
GPS	global positioning system
NCDC	National Climatic Data Center
NL	not listed Wetland plant species
NOAA	National Oceanic & Atmospheric Administration
NR	no reference
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland plant species
OHWM	ordinary high water mark
Redox	redoximorphic
RWQCB	California Regional Water Quality Control Board
SHN	SHN Engineers & Geologists
SS	scrub-shrub
SWRCB	State Water Resources Control Board
TP	test pit
U	upland site
UPL	upland wetland plant species
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	United States Department of Agriculture
USFWS	U. S. Fish & Wildlife Service
USGS	United States Geological Survey
W	wetland site
WDRs	waste discharge requirements
WETS	Climate Analysis for Wetlands Tables
WoS	waters of the State
WoUS	waters of the United States

1.0 Introduction

SHN Engineers & Geologists has prepared this preliminary jurisdictional wetland and other waters delineation for Emerald Family Farms, LLC in Willow Creek, California. Fieldwork was performed by SHN staff.

1.1 Purpose

The purpose of this report is to identify potential jurisdictional wetlands and other waters of the U.S. and State at the project site, as defined by the United States Army Corps of Engineers (USACE) methodology. The delineation of these features will help guide the design and construction of future development within the study area and avoid impacts to potential jurisdictional wetlands. The results of this report will be used to facilitate the permitting process for the proposed project.

1.2 Project Location

The project is located in Willow Creek, California, an incorporated town of Humboldt County (Figure 1; United States Geological Survey [USGS] Willow Creek and Salyer 7.5-minute Quadrangles, Township 7 North, Range 5 East, Sections 28 and 33, Humboldt Meridian). The project is located in a 19.5-acre portion of a 42.2-acre parcel (Assessor's parcel number [APN] 522-201-01) with a central location latitude and longitude of 40.9429° and -123.6270°, respectively. The site is approximately a quarter mile northeast from central downtown Willow Creek at 131 Flower-McNeil Road off of Country Club Road.

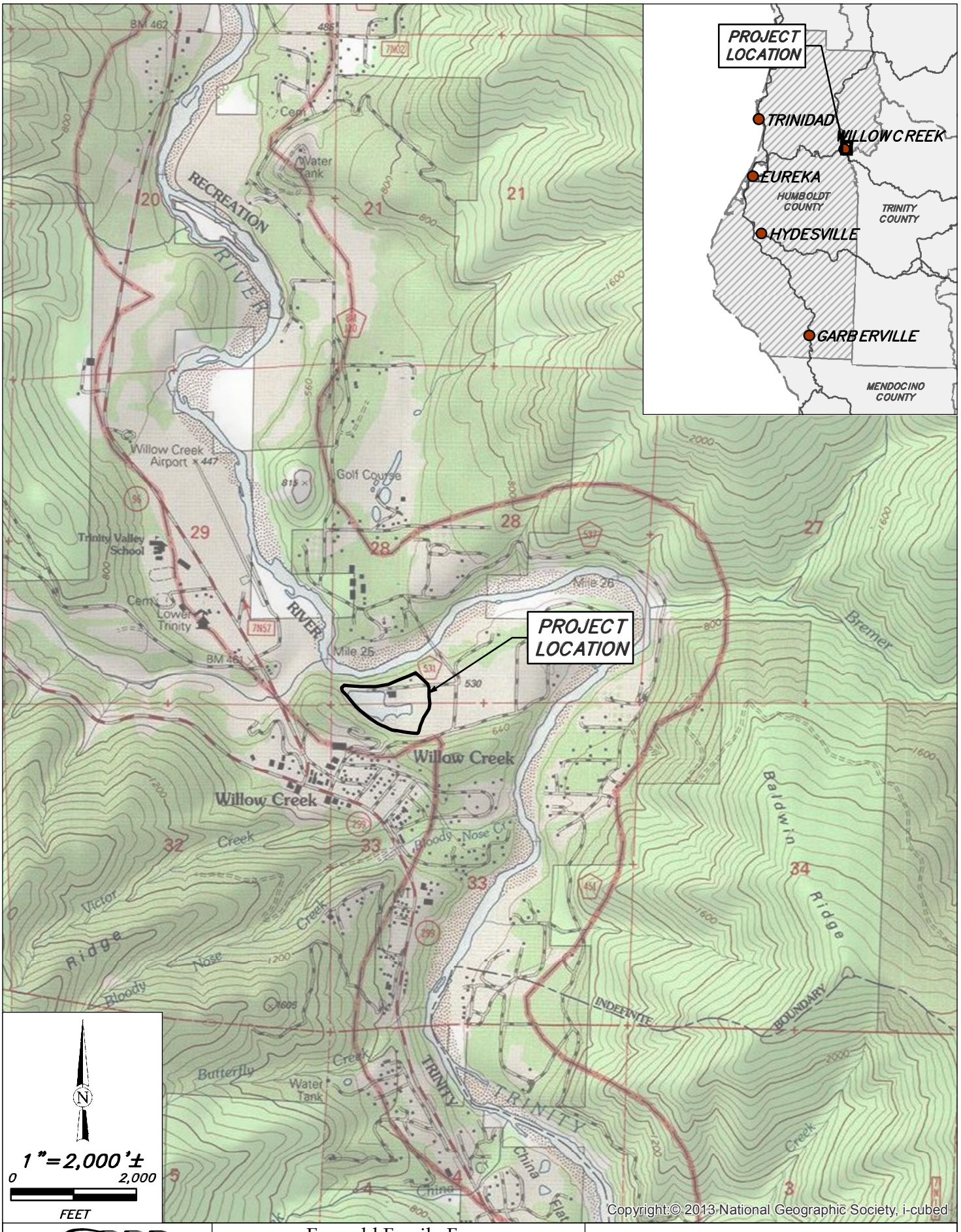
2.0 Project Description

Agricultural-related uses are being considered for the study area. This report will assist in the project planning phase and determining the location for construction activities.

3.0 Environmental Setting

The study area is situated at the approximate 530-foot elevation above mean sea level on a large, flat terrace with a steep uphill slope on its southern boundary and the Trinity River riparian embankment on the northern boundary (See Figure 2 and Appendix A). The study area has functioned as an industrial facility for the past half century, possibly longer. Its main use was as a lumber mill with a mill pond constructed on the western portion of the study area (Figure 1). Portions of the pond have been filled leaving a network of depressional features and catchment ponds formed by man-made berms (see Figure 2 and Appendix B, photos B1 and B2).
The majority of the project site has experienced extensive fill and grading. Reviewing the history of the site on Google Earth shows that the majority of the grading activity pre-dates their oldest aerial photo of 1988. There are several existing outbuildings within the study area; the eastern portion of the study area has been used as a wildlands firefighter staging area and base camp for emergency fire activities.

The average 30-year precipitation (1980 to 2010) for this area from October 1 through August 31 is 54.79 inches (NOAA, 2016). Rainfall for the period from October 1, 2015 through August 31, 2016, is 62.16 inches (CDEC, 2016), indicating that the 2015-2016 rain season is in an above-normal



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SHN
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Emerald Family Farms
Wetland Delineation
Willow Creek, California

Project Location Map

SHN 016225.003

September 2016 | Figure1_ProjectLocationMap | Figure 1

STUDY AREA BOUNDARY (19 ACRES)

FLOWER-MCNEIL ROAD

WETLAND #3 (678 SQFT)

WETLAND #1 (1,470 SQFT)

WETLAND #2 (1,205 SQFT)

TP3W

TP3U

TP1W

TP1U

TP2W

TP2U

TP4

TP5

TP6

210

100

LATITUDE: 40.942832
LONGITUDE: -123.629460

LATITUDE: 40.942986
LONGITUDE: -123.624362

EXPLANATION

TEST PIT LOCATIONS

- UPLAND TEST PIT
- WETLAND TEST PIT
- WETLANDS
- SOIL CLASS BOUNDARY
- STUDY AREA
- PARCELS

N

1"= 100'±

0 100

FEET

NOTES:
100 = TYPIC XEROFLUVENTS-RIVERWASH ASSOC.
210 = SKALAN-GOLDRIDGE-CLALLAMFAMILIES ASSOC.
AIR PHOTO: GOOGLE EARTH (5/26/2016), SOILS (USGS, 1995-2001); PARCELS (MODIFIED FROM COUNTY OF HUMBOLDT, 2016)

Consulting Engineers & Geologists, Inc.

Emerald Family Farms
Wetland Delineation
Willow Creek, California

Delineated Wetlands
Site Map
SHN 016225.003

October 2016 | Figure2_WetlandSiteMap | Figure 2

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category. Using the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) Climate Analysis for Wetlands Table (WETS) method that reviews the previous three months before the investigation (or the same month and two prior if after the 15th) indicates that these most current months are considered a normal rainfall (Table 1; USDA-NRCS, 2016).

Table 1
WETS Rainfall Data
Emerald Family Farms Property, Willow Creek, CA

Month	WETS data	Rank	Weight	Value
August 2016	Normal	2	3	6
July 2016	Normal	2	2	4
June 2016	Normal	2	1	2
			Total	**12**
A sum of 10-14 prior to site investigation is considered normal rainfall				

4.0 Vegetation

The study area is a flat graded surface, with considerable influx of non-native species, predominantly Himalayan blackberry (*Rubus armeniacus*, facultative [FAC]), wild oat (*Avena sativa*, upland [UPL]), and yellow star thistle (*Centaurea solstitialis*; not listed [NL]). The old lumber mill logging pond has been drained, but small depressional areas remain. These swales are predominantly vegetated with Himalayan blackberry, but the deeper swales also contain the native arroyo willow (*Salix lasiolepis* [FACW]), pacific willow (*Salix lasiandra var. lasiandra* [facultative wet FACW]), and black cottonwood (*Populus trichocarpa* [FAC]). A complete list of plants observed within the study area is compiled in Table C-1 in Appendix C.

5.0 Geologic and Soil Composition

The site is set in the coastal mountains approximately 26 miles east of the Pacific Ocean coast. It is located on a fluvial floodplain terrace above the Trinity River, composed of the Galice formation sediments, which consists of Jurassic-aged marine sediments.

The underlying soils in the project site have a USDA classification of Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes (map unit 100) in 90% of the project area (Figure 2), and 10% Skalan-Goldridge-Clallam families association, deep, 20 to 70 percent slopes (map unit 210). Due to the unknown source of fill found onsite, these descriptions are the general depiction of what may be encountered. The actual soil description at each exploratory soil test pit is described in the field data forms found in Appendix D.

100- Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes

Description of Typic Xerofluvents
Typical profile
H1 - 0 to 10 inches: gravelly sandy loam
H2 - 10 to 60 inches: stratified extremely gravelly loamy sand to silt loam
Properties and qualities
Slope: 2 to 10 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 4.1 inches)

Description of Riverwash
Typical profile
H1 - 0 to 60 inches: very bouldery loamy sand
Properties and qualities
Slope: 2 to 10 percent
Percent of area covered with surface fragments: 2.0 percent
Natural drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Frequency of flooding: Frequent

210—Skalan-Goldridge-Clallam families association, deep, 20 to 70 percent slopes

Description of Skalan, Deep
Typical profile
H1 - 0 to 12 inches: very gravelly loam
H2 - 12 to 56 inches: very gravelly clay loam
H3 - 56 to 60 inches: unweathered bedrock
Properties and qualities
Slope: 20 to 55 percent
Depth to restrictive feature: 56 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.5 inches)

Description of Goldridge, Deep
Typical profile
H1 - 0 to 4 inches: very gravelly loam
H2 - 4 to 30 inches: gravelly clay loam
H3 - 30 to 43 inches: gravelly clay
H4 - 43 to 47 inches: unweathered bedrock
Properties and qualities
Slope: 20 to 35 percent
Depth to restrictive feature: 43 to 47 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: More than 80 inches
Custom Soil Resource Report 14
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.7 inches)

Description of Clallam, Deep
Typical profile
H1 - 0 to 4 inches: very gravelly loam
H2 - 4 to 30 inches: extremely gravelly loam
H3 - 30 to 53 inches: extremely gravelly loam, very gravelly loam
H3 - 30 to 53 inches: unweathered bedrock
H4 - 53 to 57 inches:
Properties and qualities
Slope: 50 to 70 percent
Depth to restrictive feature: 53 to 57 inches
(USDA, 2016b)

6.0 Regulatory Setting

6.1 Federal Laws

6.1.1 Section 401 and 404 of the Clean Water Act

Under Section 404 (33 U.S. Code [USC] 1344) of the Clean Water Act (CWA), as amended, the USACE and the Environmental Protection Agency (EPA) retain primary responsibility for permits to discharge dredged or fill material into "navigable waters of the United States." All discharges of dredged or fill material into jurisdictional waters of the United States (WoUS) that result in permanent or temporary losses of WoUS are regulated by the USACE. A permit from the USACE must be obtained before placing fill or grading in wetlands or other WoUS, unless the activity is exempt from CWA Section 404 regulation (for example, certain farming and forestry activities).

In summary, the definition of WoUS as defined by 33 Code of Federal Regulations (CFR) Section 328.3 includes:

1. waters used for commerce,
2. interstate wetlands,
3. all other waters (including lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds),
4. impoundments of water,
5. tributaries to aforementioned waters,
6. territorial seas, and
7. wetlands adjacent to waters.

Under 33 CFR 328.3, WoUS do not include prior converted cropland or waste treatment systems.

In 2008, the EPA and USACE released a guidance memorandum implementing the Supreme Court's decision in the cases of the Rapanos v. U.S. and Carabell v. U.S. Because of these cases, the agencies will apply a significant nexus standard to the following categories to determine if it meets the definition of a WoUS:

- Non-navigable tributaries that are not relatively permanent
- Wetland adjacent to non-navigable tributaries that are not relatively permanent
- Wetland adjacent to but that does not directly abut a relatively permanent tributary

Section 401 of the CWA (33 USC 1341) requires applicants for a federal license or permit to obtain a certification from the state in which the discharge originates or would originate, or if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. The responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs).

6.1.2 Rivers and Harbors Appropriation Act of 1899

The River and Harbors Appropriation Act of 1899 addresses activities that involve the construction of dams, bridges, dikes, and other structures across any navigable water. Placing obstructions to navigation outside established federal lines and excavating from or depositing material in such waters require permits from the USACE Section 10 (33 USC 403) of the Rivers and Harbors Appropriation Act and prohibits the unauthorized obstruction or alteration of any navigable WoUS.

6.2 State Laws–Porter-Cologne Water Quality Act

The state maintains independent regulatory authority over the placement of waste, including fill, into waters of the State (WoS) under the Porter-Cologne Water Quality Act. WoS are defined by the Porter-Cologne Water Quality Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The SWRCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. WoS are regulated by the RWQCBs under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act.

Projects that require an USACE permit, or fall under other federal jurisdiction, and have the potential to impact WoS are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge to WoS, then the local RWQCB has the option to regulate such activities under its state authority in the form of waste discharge requirements (WDRs) or certification of WDRs. Water Quality Order No. 2004-0004-DWQ specifies general WDRs for dredge or fill discharges to waters deemed by the USACE to be outside of federal jurisdiction under Section 404 of the CWA.

7.0 Methodology

Wetland delineation methods described in *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and *The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE, 2010) were used to identify potential wetlands and other waters. The routine method for wetland delineation described in the USACE 1987 manual was used to identify potential wetlands within the study area. The USACE method relies on a three-parameter approach, in which criteria for hydrophytic vegetation, hydric soils, and wetland hydrology must each be met (present at the point of field investigation) to conclude that an area qualifies as a wetland.

Hydrophytic vegetation refers to plant species known to be adapted to wetland sites. To classify the hydrophytic plants onsite, the most recent *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List* was used (USACE, 2016). Hydric soils are soils that are formed under saturated conditions, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (USDA, 2010). Wetland hydrology is demonstrated through direct evidence (primary indicators) or indirect evidence (secondary indicators) of flooding, ponding, or saturation for a significant portion of the growing season (USACE, 2010).

At each investigation point, two test pits (TP) were excavated to find the boundary of the wetland: a wetland site (W) and an upland site (U). These are called "paired plots." Paired upland and wetland test pits are located as close together as possible, while avoiding transitional areas. If a suspected wetland test pit was not determined to be a USACE-designated wetland, a second upland paired plot was not performed.

Prior to conducting the field investigation, SHN staff reviewed the USGS topographic quadrangle map (Figure 1); USDA-NRCS Web Soil Survey website (USDA, 2016); and NWI map (USFWS, 2016) (Appendix A). During the field investigation, sample points were characterized at the site for the aforementioned botanical, hydrological, and soil parameters.

Point locations were selected to:

- achieve appropriate coverage and characterization of wetland and upland habitats,
- document potential changes in the vegetative community (such as, a shift in the dominant species), and
- determine the approximate boundary line between wetlands and uplands by determining the extent of key wetland criteria (hydrology, hydric soils, and hydrophytic vegetation).

Field investigations were conducted on August 26 and September 1, 2016. Three paired test pits and three investigative pits (nine test pits total), were excavated to characterize the area and record information for soils, vegetation, and hydrology on USACE Wetland Determination Data Forms (Appendix D). Locations of TPs are shown on Figure 2. Photos of the study area are included in Appendix B.

All field mapping was completed with a Trimble pro 6t global positioning system (GPS) antenna connected to a Panasonic Toughbook CF-19 with geographic information system (GIS) software. SHN downloaded the appropriate aerial photos and digitized relevant site plan mapping (Google Earth, 2016). Several fixed locations (for example fence angles) were marked as control points (CT) with the Trimble Pro 6t to get an estimate of aerial imagery accuracy.

7.1 Vegetation Methodology

Prior to the field investigation, a review of plant species reported to be within the project area was performed by querying the "Consortium of California Herbaria" database records and "Calflora" observations. It was determined that the site investigation was performed during an above-normal rainfall period by reviewing rainfall data from October 2015 through August 2016 (see Section 3.0). Absolute percent cover of each plant species was visually estimated within the sample point and within each vegetation stratum. The tree stratum was inspected at a 30-foot radius centered on the sample point, the herbaceous and sapling/shrub strata at a 5-foot radius. Botanical nomenclature follows *The Jepson Manual, Vascular Plants of California* (Baldwin et al., 2012) in addition to the online Jepson Interchange (U. C. Berkeley, 2016) for verification of species whose taxonomy may have changed since its publication.

The wetland indicator status of plant species for this investigation was based on the *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List* (USACE, 2016). Synonyms were checked for species that did not appear on the USACE wetland plant list. Plant species were classified as:

- Obligate (OBL)–usually occurs within a wetland (estimated probability 99%)
- Facultative-wet (FACW)–usually occurs in wetlands (estimated probability 67-99%)
- Facultative (FAC)–equally likely to occur in wetlands or non-wetlands (estimated probability 33-67%)
- Facultative-upland (FACU)–usually occurs in non-wetlands (estimated probability 1-33%)
- Upland (UPL)–occurs almost always in non-wetlands (estimated probability 99%)
- Not listed (NL)-scored as an upland plant and calculated as such on wetland determination forms

The 50/20 method[1] was applied to each stratum to determine the dominant plant species and to satisfy the hydrophytic vegetation criteria. If either hydric soils or wetland hydrology were present, the prevalence index[2] was applied. The occurrence and type of plant cover determine whether jurisdictional areas are identified as satisfying the vegetation criteria of a wetland or other waters. Those sites with little or no hydrophytic plant cover, or other sites not capable of supporting hydrophytic plant communities in normal circumstances, are identified as other waters, provided they have an ordinary high water mark (OHWM).

7.2 Soils Methodology

Soils were field-verified for the presence or absence of hydric conditions. All test pits were dug to a minimum depth of 20 inches, and the thickness of each soil horizon was measured. The Munsell Soil Color Chart (Kollmorgen Instruments Corporation, 1998) was referenced to determine the

1. The 50/20 rule: for each stratum of the plant community, dominant species are the most abundant species that (when ranked in descending order of abundance and cumulatively totaled) immediately exceed 50% of total dominance measure for the stratum, plus any additional species that individually comprise 20% or more of the total dominance measure for the stratum (USACE, 2010).
2. The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot or other sampling unit, where each indicator status category is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance (absolute percent cover).

colors of the moist soil matrix and redoximorphic (redox) features (if present). Soils were closely inspected for hydric soil indicators, as defined by the NRCS "Field Indicators of Hydric Soils in the United States" (Version 7.0; USDA, 2010).

7.3 Hydrology Methodology

The presence (or lack) of wetland hydrology indicators was determined by direct observation of surface water, groundwater, or shallow soil saturation during the field investigation. In some cases, hydrology determinations were made based on hydrology indicators (for example, drainage patterns, geomorphic placement, and water-stained leaves) rather than actual direct evidence from saturation or inundation itself. Additionally, observations were made that would indicate if the site is subject to flooding or standing water. Potential indicators would include water marks, drift deposits, sediment deposits, and similar features. Indicators of extended period saturation would include oxidized rhizospheres surrounding living roots or the presence of reduced iron or sulfur in the soil profile. A site location must contain at least one primary indicator or two secondary indicators to have the hydrology parameter.

7.4 Ordinary High Water Mark Methodology

For purposes of Section 404 of the CWA, the lateral limits of jurisdiction over non-tidal water bodies in the absence of adjacent wetlands extend to the OHWM. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. For purposes of Sections 9 and 10 of the Rivers and Harbors Act of 1899, the lateral extent of federal jurisdiction, which is limited to the traditional navigable waters of the United States, extends to the OHWM, whether or not adjacent wetlands extend landward of the OHWM (USACE, 2014).

USACE regulations define the term OHWM for the purposes of the CWA lateral jurisdiction as follows:

> *The term "ordinary high water mark" means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as 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 at 33 CFR 328.3(e).*

The OHWM in non-perennial streams corresponds with the boundaries of the active channel, which are typically expressed by some combination of three primary indicators: a topographic break in slope, change in sediment characteristics, and change in vegetation characteristics (USACE, 2014). The following supporting features should be considered when making an OHWM determination, to the extent that they can be identified and are deemed reasonably reliable (USACE, 2014):

- Drift/wrack
- Erosion/scour
- Bank undercutting
- Root exposure
- Point bars
- Water staining
- Litter Water staining
- removal
- Silt deposits
- Shelving
- Headcut/knickpoint
- Macroinvertebrates

8.0 Results

Field investigations were conducted on August 26 and September 1, 2016. Test pits (TP) were installed to characterize the area and record information for soils, vegetation, and hydrology. Locations of TPs are shown on Figure 2; completed "Wetland Determination Data Forms" are presented in Appendix D. Photos of the study area are shown in Appendix B.

8.1 TP1 Test Site

The TP1 site is located in a 10-foot wide diameter depression basin on an old logging pond site (Appendix B, Photo B-3), within a swale incised by erosion and a built-up berm. It is in part of a series of detention basins created by berms placed down-gradient. There is one paired plot for this depression: TP1W and TP1U.

TP1W has all three parameters present: vegetation, hydric soils, and hydrology and is, therefore, considered a wetland site. The vegetation contains the following: tree stratum–60 percent arroyo willow (*Salix lasiolepis* [FACW]); sapling/shrub stratum–15 percent arroyo willow and 5 percent Himalayan blackberry (*Rubus armeniacus* [FAC]).

The soils have the F6 redox dark surface indicator. The hydrology has the primary A2 high water table at 12 inches, B1 watermarks, and the C4 presence of reduced iron (tested positive to alpha-alpha Dipyridyl solution) indicators and two secondary indicators: D2 geomorphic position and D5 FAC-Neutral test.

TP1U is situated on an eroded slope approximately 10 feet above TP1W and only has the vegetation parameter met. Therefore, TP1U is considered out of the wetland depression. The vegetation consists of the following: tree stratum–35 percent arroyo willow; sapling/shrub stratum–20 percent arroyo willow, 5 percent coyote brush (*Baccharis pilularis* [NL]), and 5 percent Scotch broom (*Cytisus scoparius* [NL]); herb stratum–15 percent rattlesnake grass (*Briza maxima* [NL]) and 5 percent common velvet grass (*Holcus lanatus* [FAC]).

No hydric soils or hydrology indicators are present.

8.2 TP2 Test Site

The TP2 site is situated in an approximate 25-foot wide depression basin on another branch of the incised swale (Appendix B, Photo B-4). There is one paired plot for this site: TP2W and TP2U.

TP2W has all three parameters present: vegetation, hydric soils, and hydrology and is, therefore, considered a wetland site. The vegetation consists of the following: tree stratum–50 percent arroyo willow and 20 percent pacific willow (*Salix lasiandra* var. *lasiandra* [FACW]); sapling/shrub stratum–35 percent Himalayan blackberry and 10 percent arroyo willow.

The soils have the F6 redox dark surface and the F8 redox depressions indicators. The hydrology has the primary A2 high water table mark at 14 inches, A3 saturation at 6 inches, the C4 presence of reduced iron (tested positive to alpha-alpha Dipyridyl solution), and C3 oxidized rhizospheres along living roots indicators. It also has the secondary D2 geomorphic position and FAC-Neutral test indicators.

TP2U is situated on an eroded slope approximately 5 feet above TP2W; it only meets the vegetation parameter. Therefore, TP2U is considered out of the wetland depression. The vegetation consists of the following: tree stratum–40 percent arroyo; sapling/shrub stratum–45 percent Himalayan blackberry and 15 percent arroyo willow.

There are no hydric soils indicators present and only the secondary hydrology FAC-Neutral indicator is met.

8.3 TP3 Test Site

The TP3 site is downgradient from TP2, separated by a berm (Appendix B, Photo B-5). This depression is a shallower feature, and it has another berm downgradient of TP3. There is one paired plot at this site: TP3W and TP3U.

TP3W is situated in a broad swale with an approximate 25-foot width. It has all three wetland parameters present: vegetation, hydric soils, and hydrology, and is, therefore, considered a wetland site. The vegetation consists of the following: tree stratum–35 percent arroyo willow and 25 percent black cottonwood (*Populus trichocarpa* (*Populus balsamifera*) [FAC]; sapling/shrub stratum–20 percent arroyo willow and 15 percent Himalayan blackberry; herb stratum–5 percent common bog rush (*Juncus effusus* [FACW]).

The soils have the S5 sandy redox indicator. There are the primary hydrology B1 water marks and B4 algal mat or crust indicators, and the secondary D2 geomorphic position and D5 FAC-Neutral test indicators.

TP3U is 23 feet away from TP3W due to a broad transitional area where the algal mats stop and hydric soils end. Vegetation is the only parameter met, and it consists of the following: tree stratum–20 percent arroyo willow; sapling/shrub stratum–60 percent Himalayan blackberry and 5 percent arroyo willow; herb stratum–5 percent tall cyperus (*Cyperus eragrostis* [FACW]) and 5 percent bent grass (*Agrostis exarata* [FACW]).

There are no hydric soils indicators present and only the secondary hydrology FAC-Neutral indicator present.

8.4 TP4 Test Site

TP4 (Appendix B, Photo B-6) is in a local topographic low of a closed basin approximately 20 feet wide and 120 feet long. There is buried metal and debris in this location, and it took several attempts to find a site that could be penetrated to 24 inches. The soils appear to be in situ longer than five years, and considered to be within "normal circumstances." None of the wetland parameters was present, and this basin is determined not to be a wetland. A second, paired test pit was not performed due to the lack of three wetland parameters in the most likely location for wetlands to occur in this vicinity.

The onsite vegetation found is as follows: sapling/shrub stratum–60 percent Himalayan blackberry; herb stratum–80 percent wild oat (*Avena sativa* [UPL]), 10 percent blue wildrye (*Elymus glaucus* [FACU]), and 2 percent medusa head (*Elymus caput-medusae* [NL]).

There are no hydric soils indicators present and only the secondary hydrology geomorphic position indicator present.

8.5 TP5 Test Site

TP5 was excavated to see if this closed basin is a wetland site (Appendix B, Photo B-7). There is a berm between this basin and the TP1 site. It was difficult to find "normal circumstances" because of the loose soils spilling into the swale. One area was found to be representative of "normal circumstances" (a surface at least older than five years). None of the wetland parameters was present, and this basin is determined not to be a wetland site. A second, paired test pit was not performed due to the lack of three wetland parameters in the most likely location for wetlands to occur in this vicinity.

The onsite vegetation found is as follows: sapling/shrub stratum–70 percent Himalayan blackberry; herb stratum–30 percent wild oat and 5 percent black mustard (*Brassica nigra* [NL]).

There are no hydric soils indicators present and only the secondary hydrology geomorphic position indicator present.

8.6 TP6 Test Site

This site was chosen to determine if this zone of Himalayan berries in the eastern portion of the study area is supporting a wetland (Appendix B, Photo B-8). Several exploratory pits were performed, but the soils encountered were recently moved and not considered "normal circumstances." The soils at TP6 aren't native according to the USDA NRCS soils survey (See Section 5.0), but has been in situ long enough to be considered "normal circumstances." None of the wetland parameters was present, and this area is determined not to be a wetland site. A second, paired test pit was not performed due to the lack of three wetland parameters in the most likely location for wetlands to occur in this vicinity.

The onsite vegetation found is as follows: sapling/shrub stratum–70 percent Himalayan blackberry; herb stratum–50 percent Kentucky blue grass (Poa pratensis [FAC]), 10 percent blue wildrye, 2 percent Queen Anne's lace (*Daucus carota* [FACU]), and 2 percent orchard grass (*Dactylis glomerata* [FACU]).

There are no hydric soils or hydrology indicators present.

8.7 Ordinary High Water Mark (OHWM)

Additional constructed swales exist in portions of the study area; however, these swales were not delineated as wetlands. Within these areas, no OHWM was observed. These constructed swales (outside of wetlands) consist of man-made depressional features with constructed banks and berms that facilitate water detention, preventing water flowing in a continuous stream channel across the study area. In evaluating whether or not the constructed swales contain an active channel, we determined that some of the swales contained a man-made break in slope but that there were not identifiable changes in sediment or vegetation characteristics.

9.0 Conclusions

The USFWS NWI website (Appendix A) does not show NWI designations in the study area. The site investigation occurred during an above-normal rainfall year during the summer season of 2016. Following the USACE 3-parameter guidelines, TP1W, TP2W, and TP3W have the vegetative, hydric soil, and hydrology indicators necessary to place them within wetland boundaries (Figure 2; Table 2). TP1U, TP2U, TP3U, and TP6 have the one vegetative parameter but not the hydrology or hydric soils parameters. TP4 and TP5 have none of the 3-parameter qualifications.

The wetlands occur in a drainage system where a logging pond used to exist. Man-made berms have turned the mill pond into a series of catchment ponds that do not appear to drain into one another. There were no OHWM observed within the project site.

Table 2
Wetland Delineation and OHWM[1] Results
Emerald Family Farms Property, Willow Creek, CA

Waterbodies	Cowardian Type	Latitude/Longitude	Area (square feet)
Wetland #1	Palustrine SS[2]1[3]	40.942990, -123.627599	1,470
Wetland #2	Palustrine SS1	40.942859, -123.627838	1,205
Wetland #3	Palustrine SS1	40.943100, -123.627771	678
Total			**3,353**

1. OHWM: ordinary high water mark
2. SS: scrub-shrub
3. broad-leaved deciduous

10.0 Limitations

The conclusions in this report represent a "snapshot in time" and it is possible that some species were not present at the time of the fieldwork. This report documents the investigation by using the best professional judgment of SHN's botanist and soil scientist. The conclusions should be verified by the USACE through receipt of a jurisdictional determination letter.

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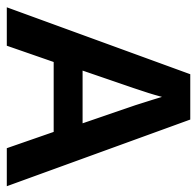

National Wetlands Inventory

U.S. Fish and Wildlife Service

National Wetlands Inventory

Emerald Family Farms, LLC

September 7, 2016

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

B

Site Photographs

Photo B1: Project Area Terrain

Photo B2: South-North Drainage

Photo B3: TP1 Site

Photo B-4: TP2 Site

Photo B-5 TP3 Site

Photo B-6 TP4 Site

Photo B-7 TP5 Site

Photo B-8 TP6 Site

Plant List

Table C-1 Plant List Emerald Family Farms, Willow Creek		
Scientific Name	**Common Name**	**Indicator 2016[1]**
Acer macrophyllum	big leaf maple	FACU
Adiantum jordanii	California maidenhair fern	FAC
Agrostis exarata	bentgrass	FACW
Alnus rhombifolia	white alder	FACW
Anisocarpus madioides	woodland madia	NL
Arbutus menziesii	madrono	NL
Arctostaphylos manzanita ssp. *manzanita*	common manzanita	NL
Artemisia douglasiana	California mugwort	FACW
Artemisia sp.	sage	NL
Athyrium filix-femina var. *cyclosorum (Athyrium cyclosorum)*	western lady fern	FAC
Avena sativa	wild oat	UPL
Baccharis pilularis	coyote brush	NL
Brassica nigra	black mustard	NL
Briza maxima	rattlesnake grass	NL
Bromus hordeaceus	soft chess	FACU
Carex nudata	torrent sedge	OBL
Ceanothus integerrimus	deer brush	NL
Centaurea solstitialis	yellow star thistle	NL
Cercis occidentalis (Cercis canadensis)	western redbud	UPL
Cichorium intybus	chicory	FACU
Cirsium vulgare	bull thistle	FACU
Cornus nuttallii	dogwood	FACU
Corylus cornuta ssp. *californica*	beaked hazelnut	FACU
Croton setigerus	turkey mullein	NL
Cynodon dactylon	Bermuda grass	FACU
Cynosurus echinatus	dogtail grass	NL
Cyperus eragrostis	tall cyperus	FACW
Cytisus scoparius	Scotch broom	NL
Dactylis glomerata	orchard grass	FACU
Darmera peltata	umbrella plant	OBL
Daucus carota	carrot	FACU
Deschampsia danthonioides	annual hair grass	FACW
Deschampsia elongata	hair grass	FACW
Digitaria sanguinalis	crab grass	FACU
Elymus caput-medusae	Medusa head	NL
Elymus glaucus	blue wild rye	FACU
Epilobium ciliatum ssp. *ciliatum*	fringed willow herb	FACW
Eriogonum nudum	naked buckwheat	NL
Erodium brachycarpum	white stemmed filaree	NL
Erodium brachycarpum	white stemmed filaree	NL
Euphorbia maculata	spotted spurge	UPL
Festuca idahoensis	blue fescue	FACU
Fragaria vesca	wild strawberry	FACU

Table C-1 Plant List Emerald Family Farms, Willow Creek		
Scientific Name	**Common Name**	**Indicator 2016[1]**
Frangula californica	California coffeeberry	NL
Fraxinus latifolia	Oregon ash	FACW
Galium sp.	bedstraw	NL
Hedera helix	English ivy	FACU
Heterotheca oregona	Oregon golden aster	FACU
Heuchera micrantha	alum root	NL
Heuchera micrantha	alum root	NL
Hieracium albiflorum	white flowered hawkweed	NL
Holcus lanatus	common velvet grass	FAC
Holodiscus discolor	ocean spray	FACU
Hordeum marinum	seaside barley	FAC
Hypericum perforatum	Klamath weed	FACU
Hypochaeris radicata	hairy cats ear	FACU
Juncus bufonius	common toad rush	FACW
Juncus effusus	Common bog rush	FACW
Leucanthemum vulgare	ox- eye daisy	FACU
Lonicera hispidula	pink honeysuckle	FACU
Lysimachia arvensis	scarlet pimpernel	FAC
Malus X	cultivated apple	NL
Melilotus albus	white sweet clover	NL
Mentha pulegium	pennyroyal	OBL
Nicotiana quadrivalvis	Indian tobacco	FACU
Notholithocarpus densiflorus var. *densiflorus*	tanoak	NL
Panicum capillare	witch grass	FAC
Pinus ponderosa	ponderosa pine	FACU
Plantago lanceolata	ribwort	FACU
Poa pratensis	Kentucky blue grass	FAC
Polystichum munitum	western sword fern	FACU
Populus trichocarpa *(Populus balsamifera)*	black cottonwood	FAC
Prosartes smithii	largeflower fairybells	NL
Pseudotsuga menziesii var. *menziesii*	douglas fir	FACU
Pteridium aquilinum	western bracken fern	FACU
Quercus chrysolepis	gold cup live oak	NL
Quercus garryana	Oregon oak	FACU
Quercus kelloggii	California black oak	NL
Rubus armeniacus	Himalayan blackberry	FAC
Rubus ursinus	California blackberry	FACU
Rumex crispus	curly dock	FAC
Salix exigua	narrow leaf willow	FACW
Salix lasiandra var. *lasiandra*	pacific willow	FACW
Salix lasiolepis	arroyo willow	FACW
Sonchus asper ssp. *asper*	sow thistle	FACU
Spergularia rubra	purple sand spurry	FAC
Toxicodendron diversilobum	poison oak	FAC

Table C-1
Plant List
Emerald Family Farms, Willow Creek

Scientific Name	Common Name	Indicator 2016[1]
Tribulus terrestris	puncture vine	NL
Trichostema lanceolatum	vinegar weed	FACU
Trifolium repens	white clover	FAC
Trisetum cernuum	nodding oat grass	FACU
Vicia sativa	spring vetch	UPL
Vitis californica	California wild grape	FACU
Whipplea modesta	modesty	NL
Woodwardia fimbriata	western chain fern	FACW
Zeltnera muehlenbergii	Muehlenberg's centaury	FACW

1. Indicators are abbreviated as follows:
   OBL: Obligate
   FACW: Facultative
   FAC: Facultative
   FACU: Facultative upland
   UPL: Upland
   NL: Not listed

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16
Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP1W
Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt
Soil Map Unit Name: Typic Xerofluvents-Riverwash association NWI classification: none
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? N Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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: Above average annual rain fall
Stake from previous study?

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	60	Y	FACW
2.			
3.			
4.			
	60 = Total Cover		

Sapling/Shrub Stratum (Plot size: 5ft)			
1. Salix lasiolepis	15	Y	FACW
2. Rubus armeniacus	5	Y	FAC
3.			
4.			
5.			
	20 = Total Cover		

Herb Stratum (Plot size: 5ft)			
1.			
2.			
3.			
4. Ø			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	Ø = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1. Ø			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 100%

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:
✓ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ 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: Bare ground in herb stratum contains leaf litter 1-3 inches thick.

Exp. 1 - 24" disturbed soil moist @ 24" no hydric. piezometer 25' SW

SOIL

Sampling Point: TP1W

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"	10YR 2/1	100					L	
2-8"	10YR 2/1	97	5YR 5/8	3	C	M	cobbly L	groundwater 12"
8-20"	10YR 2.5/1	100					cobbly SL	alpha-alpha dipyridyl reaction
water - can't auger deeper								

[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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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:

Test pit at lowest spot in depression. Approximate 10' wide basin

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ✓ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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): _____

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

B1 = water stains on surface cobbles

Tested positive to alpha-alpha dipyridyl solution

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16
Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP1U
Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E
Landform (hillslope, terrace, etc.): hill slope Local relief (concave, convex, none): convex Slope (%): 45
Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt
Soil Map Unit Name: Typic Xerofluvents-Riverwash association NWI classification: none
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? N Are "Normal Circumstances" present? Yes ✓* No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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: Above average annual rain fall
* berm dozed pile > 5yrs. On hillslope above TP1W on cutbank.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	35	Y	FACW
2.			
3.			
4.			
	35	= Total Cover	

Sapling/Shrub Stratum (Plot size: 5)			
1. Salix lasiolepis	20	Y	FACW
2. Baccharis pilularis	5	N	NL
3. Cytisus scoparius	5	N	NL
4.			
5.			
	30	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Briza maxima	15	Y	NL
2. Holcus lanatus	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1. Ø			
2.			
	Ø	= Total Cover	

% Bare Ground in Herb Stratum 80

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (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:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ 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: leaf litter 1-2 inches thick

SOIL

Sampling Point: TP14

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"								surface duff
.5"-24"	10YR 3/1	100					gravelly sand w/ cobbles	

[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)
- ___ 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) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: Pit on eroded slope above TP1W

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5) NO (n=7 50%)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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 – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16

Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP2W

Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 2-5%

Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt

Soil Map Unit Name: Typic Xerofluvents-Riverwash association NWI classification: none

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? N Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? N (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: Above average annual rainfall. Atypical soil texture, source from another area. Appears >5yrs ago.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	50	Y	FACW
2. Salix lasiandra	20	Y	FACW
3.			
4.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5')			
1. Rubus armeniacus	35	Y	FAC
2. Salix lasiolepis	10	Y	FACW
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4. Ø			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. Ø			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (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:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ✓ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ 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: 1-2 inch layer of leaf litter. Adventitious roots on willows.

SOIL

Sampling Point: TP2W

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) 0-6"	10YR 2/1	80	5YR 5/6	20	CS	M/PL	L	organic layer w/ oxidized
(2) 6-24"	2.5YR 2/1	90	10YR 5/4	10	CS	M	SiL	root layers
			5-2					Δ2hue 5-2
	La.							
							F8 =	Horizon 1 10YR 2/1 (-) 5YR 5/6
								Δ hue = 2
								Δ 5/6 - 2/1 = 3/5
								prominent

[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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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): 6"

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: adventitious roots. Depression approximately 15' in diameter

Tested positive to alpha-alpha dipyridyl solution

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16

Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP2U

Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E

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

Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt

Soil Map Unit Name: Typic Xero-fluvents-Riverwash association NWI classification: none

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? NO Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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: Above average annual rain fall. On hill slope above TP2W on cut bank. Atypical amount of clay in texture. Brought in from another source.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	40	Y	FACW
2.			
3.			
4.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. Rubus armeniacus	45	Y	FAC
2. Salix lasiolepis	15	Y	FACW
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Ø			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Ø			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 100

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:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ 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: 1-2 inch leaf litter

SOIL

Sampling Point: TP2U

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
0-24"	2.5Y 3/2	99	2.5Y 6/4	1	CS	M	SiL	Leaving transition zone

[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)
- ___ 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) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: Exposed bank above TP2W

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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 – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16
Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP3W
Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E
Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 0-2
Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt
Soil Map Unit Name: Typic Xerofluvents-Riverwash association NWI classification: none
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? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (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: Above average annual rain fall

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus trichocarpa (balsamifera)	25	Y	FAC
2. Salix lasiolepis	35	Y	FACW
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. Salix lasiolepis s	20	Y	FACW
2. Rubus armeniacus	15	Y	FAC
3.			
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Juncus effusis	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 95

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (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:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ 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: 1" leaf litter & dried algal mats

SOIL

Sampling Point: TP3W

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"	2.5Y 7/1	100					gravelly LS	
4-12"	2.5Y 7/1	90	2.5Y 6/8	10	CS	M	gravelly LS	slight increase in moisture ~12"
							Δ hue = 0	
							Δ value = 1	prominent
							Δ chr = 7	

[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)
- ___ 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) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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:

berm down stream blocking flow

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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:

Using algal mats to determine extent of wetland depression

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 9/1/16

Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP34

Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E

Landform (hillslope, terrace, etc.): drainage bed Local relief (concave, convex, none): flat Slope (%): 3

Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt

Soil Map Unit Name: Typic Xerofluvents-Riverwash association NWI classification: none

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? N Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (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: Above average annual rainfall.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	20	Y	FACW
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. Rubus armeniacus	60	Y	FAC
2. Salix lasiolepis	5	N	FACW
3.			
4.			
5.			
	70 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Cyperus eragrostis	5	Y	FACW
2. Agrostis exarata	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 90

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (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:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ 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: a lot of leaf debris & dead Rubus cane litter

SOIL

Sampling Point: TP34

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	2.5Y 3/3	100	10YR 6/8	<1	CS	M	LS	roots. Redox color in knots on roots
6-24	2.5Y 3/2	80					LS	
	10.5YR 4/3	20						

[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)
- ___ 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) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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 – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16

Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP4

Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 2-5%

Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt

Soil Map Unit Name: Typic Xero-fluvents-Riverwash association NWI classification: none

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? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (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: Above average annual rain fall. Lowest spot in drainage w/in 50'. Fill material, greater than 5yrs (google). Drainage approximately 12' wide

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: 5)			
1. Rubus armeniacus	60	Y	FAC
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. Avena sativa	80	Y	UPL
2. Elymus glaucus	10	N	FACU
3. Elymus caput-medusae	2	N	NL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	92 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 8

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ 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: _____

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"								TP4
2-24	10YR 3/2	100					gravelly SL	grassy area in drainage way

[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)
- ___ 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) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: Had to start several pits before finding a site w/o metal debris w/in 20'. Pit w/ woody debris & loose gravelly sandy loam. 3" diameter metal pipe at side of pit. Old log pond.

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5) No
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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 – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16

Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP5

Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S.20 & 33, T7N, R5E

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 2-5

Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt

Soil Map Unit Name: Typic Xerofluvents-Riverwash association NWI classification: none

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? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (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: Above average annual rain fall. Most of the branch of this drainage has recent fill material. Soils forming on recent loose material. Appears > 5yrs from Google images.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. Ø			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. Rubus armeniacus	70	Y	FAC
2.			
3.			
4.			
5.			
	70 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Avena sativa	30	Y	UPL
2. Brassica nigra	5	N	NL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Ø			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 65

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ 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:
- Layer of blackberry bramble
- old fire present within veg plot.

SOIL

Sampling Point: TP5

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 3/2	100						
7-24"	10YR 3/2	99	10YR 5/8	<1%	RM	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)
- ___ 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) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: very dry loose soil

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5) No
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

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 – Western Mountains, Valleys, and Coast Region

Project/Site: Emerald Family Farms City/County: Humboldt Co. Sampling Date: 8/26/16

Applicant/Owner: S&S Cornerstone Development State: CA Sampling Point: TP6

Investigator(s): Greg O'Connell, Cindy Wilcox Section, Township, Range: S. 20 & 33, T7N, R5E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): flat Slope (%): 0-2

Subregion (LRR): LRR A Lat: 40.9429° Long: -123.6270° Datum: Humboldt

Soil Map Unit Name: Typic Xero-fluvents- Riverwash association NWI classification: none

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: Above average annual rain fall
Not as disturbed as soil further north.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2. Ø			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. Rubus armeniacus	70	Y	FAC
2.			
3.			
4.			
5.			
	70 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Poa pratensis	50	Y	FAC
2. Elymus glaucus	10	N	FACU
3. Daucus carota	2	N	FACU
4. Dactylis glomerata	2	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	64 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. Ø			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 36

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:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ 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: TP6

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'	10YR 4/3	100						Krotovinas - 1-2" roots
2-24	7.5YR 4/4	100	7.5YR 8/1	<1%	C	M	SL	40cc. gravel
								very dry

[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)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2) NO
- ___ Very Shallow Dark Surface (TF12)
- ___ 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: Farther north soils disturbed - recent grading? with loose loamy duff. The TP6 soils appear undisturbed >5yrs still in the Rubus armen. zone, thought by D of T & W to be a potential wetland area. Soil color much redder than described in local soil descrip. (Typic Xeralfluvents-Riverwash, or older Etherberg series name)

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5) NO
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

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: