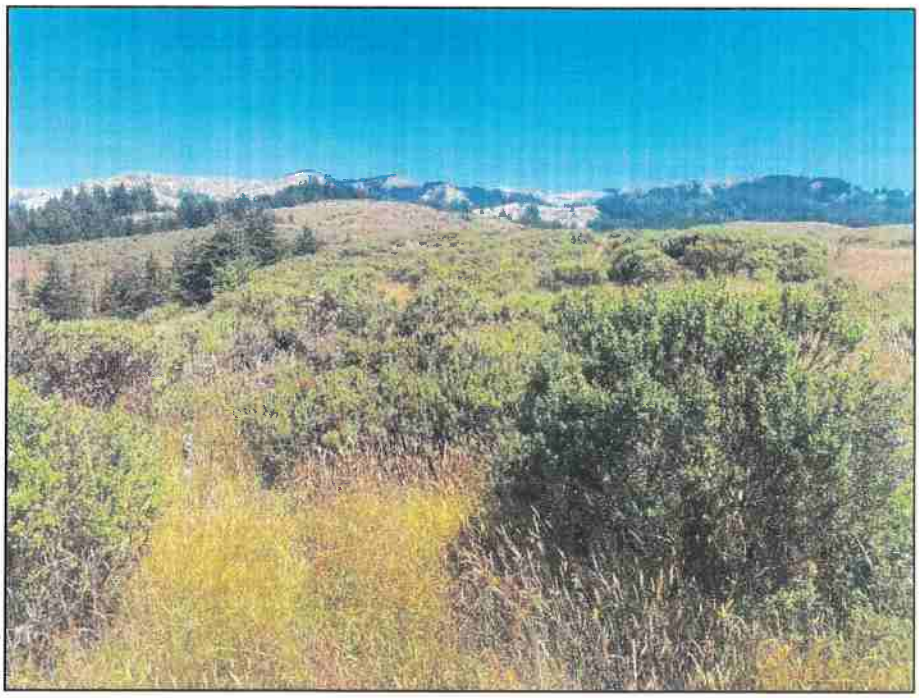
WETLAND DELINEATION REPORT

for

APN: 104-261-006
Petrolia, Humboldt County

July 2020



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Prepared for:
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Cover Photo: View looking to the northeast of TP-5 at coyote brush scrub habitat. (Photo: June 25, 2020)

1.0 INTRODUCTION

The subject property historically has been used for cattle grazing and timber harvest activities. Currently, the parcel is being utilized for permitted cannabis cultivation under the Humboldt County Land Use Ordinance and the State Water Resources Control Board General Order for Cannabis Cultivation (Order WQ 2019-0001-DWQ).

The purpose of this report is to identify and describe wetlands within an 8.5-acre survey area of the property. This report facilitates efforts to avoid impacts to aquatic resources/functions and serves as a planning tool for proposed grading by establishing a 100-foot buffer for wetlands identified within the survey area.

1.1 Location

The property is located in a coastal hillside setting within the McNutt Gulch drainage basin, which outlets into the Pacific Ocean and is approximately 2.8 miles northwest of the town of Petrolia. The property is located within the USGS Petrolia 7.5-minute Quadrangle, Township 1S, Range 2W, in the southeast portion of Section 30, Humboldt County, California (Appendix A, Figure 1).

2.0 METHODS

An assessment was conducted on the property for jurisdictional waters and wetlands of the United States pursuant to the *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (WMVC Supplement, ACOE 2010). Sampling locations were chosen based on representative plant communities and topography within the project site (Appendix A, Figure 2). The sampling locations were evaluated for the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Wetland boundaries were delineated by sampling paired data points to determine wetland to upland transitional areas (Appendix B *"Wetland Determination Data Forms"*).

Federal regulations define wetlands as:

> *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil"* [33CFR328.3(b)].

This definition expresses that, under normal conditions, three parameters must be met to classify a site as a jurisdictional wetland, which includes hydrophytic vegetation, hydric soils, and wetland hydrology.

The United States Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI) has wetlands documented within the subject parcel, but not within the survey area (Appendix A, Figure 3). Due to the lack of field data, this general categorization by NWI is not intended for planning purposes as noted in the "Data Limitations, Exclusions, and Precaution" disclaimer:

> *The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high-altitude imagery. Wetlands are identified based on*

vegetation, visible hydrology, and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.
(USFWS, 2020)

2.1 Vegetation

The presence of hydrophytic vegetation for each site was determined by applying the wetland indicator status (see Table 1, below) of each plant species present in multiple strata using the *WMVC 2016 Wetland Plant List* (Lichvar, 2016). A plant species list of the collective sampling points is provided in Appendix C of this report.

Table 1. Wetland Indicator Status Ratings for Determining Presence of Hydrophytic Vegetation

Indicator Status	Indicator Code	Description	% Occurrence in Wetlands
Obligate	OBL	Occur almost always under natural conditions in wetlands.	99%
Facultative Wetland	FACW	Usually occur in wetlands but occasionally found in non-wetlands.	67-99%
Facultative	FAC	Equally likely to occur in wetlands and non-wetlands.	33-67%
Facultative Upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands.	1-33%
Upland	UPL	Occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified.	1%

The methodology used for determining the presence of hydrophytic vegetation is dependent on the dominant plant species observed at a sampling location using the 50/20 rule. The WMVC Regional Supplement (ACOE 2008) describes the 50/20 rule as:

"*...a repeatable and objective procedure for selecting dominant plant species and is recommended when data are available for all species in the community.*

Dominant species are chosen independently from each stratum of the community. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total."

Hydrophytic vegetation was determined at the sampled locations by using the Dominance Test, which is met when more than 50 percent of the dominant plant species across all strata are rated OBL, FACW, or FAC. If the Dominance Test for hydrophytic vegetation was not met, then the Prevalence Index was applied.

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). It is a more comprehensive analysis of the hydrophytic status of the community than one based on just a few dominant species. It is particularly useful (1) in communities with only one or two dominants, (2) in highly diverse communities where many species may be present at roughly equal coverage, and (3) when strata differ greatly in total plant cover (e.g., total herb cover is 80 percent but sapling/shrub cover is only 10 percent). The prevalence index is used in this supplement (WMVC) to determine whether hydrophytic vegetation is present on sites where indicators of hydric soil and wetland hydrology are present, but the vegetation initially fails the dominance test.

The following procedure is used to calculate a plot-based prevalence index. The method was described by Wentworth et al. (1988) and modified by Wakeley and Lichvar (1997). It uses the same field data (i.e., percent cover estimates for each plant species) that were used to select dominant species by the 50/20 rule, with the added constraint that at least 80 percent of the total vegetation cover on the plot must be of species that have been correctly identified and have an assigned indicator status (including UPL). For any species that occurs in more than one stratum, cover estimates are summed across strata. Steps for determining the prevalence index are as follows:

1. Identify and estimate the absolute percent cover of each species in each stratum of the community. Sum the cover estimates for any species that is present in more than one stratum.
2. Organize all species (across all strata) into groups according to their wetland indicator status (i.e., OBL, FACW, FAC, FACU, or UPL) and sum their cover values within groups. Do not include species that were not identified.
3. Calculate the prevalence index using the following formula:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

where:

PI	= Prevalence index
A_{OBL}	= Summed percent cover values of obligate (OBL) plant species;
A_{FACW}	= Summed percent cover values of facultative wetland (FACW) plant species;
A_{FAC}	= Summed percent cover values of facultative (FAC) plant species;
A_{FACU}	= Summed percent cover values of facultative upland (FACU) plant species;
A_{UPL}	= Summed percent cover values of upland (UPL) plant species.

For the prevalence index to be met, the value calculated based on the existing cover of plant species must be 3.0 or less.

2.2 Soils

Prior to the site inspection, existing soil data was accessed from the USDA Web Soil Survey to identify potential hydric soils located within the project site (Appendix A, Figure 3). Refer to Table 2 below for a description of the soil map units on the subject parcel. Oceanhouse soils, which make up 35 percent of the Mattole-Oceanhouse Complex, was the only component in the Web Soil Survey results that was rated to have hydric soils. The Oceanhouse soil series is classified as fine, mixed,

active, mesic Typic Endoaquolls and the typical pedon is described having multiple hydric soil indicators including but not limited to the Redox Dark Surface (F6) indicator.

Table 2. NRCS Web Soil Survey Results for APN 104-261-006

Map Unit Symbol	Map Unit Name	Hydric Soil Rating
144	Garberville-Parkland Complex	Not Hydric
152	Benbow	Not Hydric
505	Northbear-Caperidge-Taylorpeak Complex	Not Hydric
506	Caperidge-Taylorpeak-Northbear Complex	Not Hydric
507	Northbear-Caperidge-Capetown Complex	Not Hydric
4415	Mattole-Oceanhouse Complex	Partially Hydric

Soil profiles were examined for hydric soil indicators listed in the WMVC Regional Supplement. The soil profiles for each test pit within the project site was documented on the associated wetland determination data forms (Appendix B). The Munsell color chart (Gretag/Macbeth, 2000) was used to determine the hue, value, and chroma of soil matrices and redoximorphic features. Soil textures were determined using the texture by feel technique. When characterizing soil profiles, each sampling location was also inspected for wetland hydrology indicators.

2.3 Hydrology

At each test pit, primary and secondary wetland hydrology indicators were documented on the associated wetland determination data forms, if present (Appendix B). Indicators for wetland hydrology are derived from four groups, (A) observation of surface water or saturated soils; (B) evidence of recent inundation; (C) evidence of current or recent soil saturation; and (D) evidence from other site conditions or data. Additional remarks regarding hydrology are included in the field data forms.

Site hydrology was evaluated prior to conducting the assessment of the Project Site by utilizing the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) Climate Analysis for Wetlands Tables (WETS). Precipitation data from the WETS tables was interpreted by using the Direct Antecedent Rainfall Evaluation Method or DAREM (Sprecher and Warne, 2000). The DAREM method utilizes data from the three months prior to inspection to determine whether precipitation, and inherently site hydrology, is "normal", "drier than normal", or "wetter than normal" (Sumner et al. 2009). Prior to the June 25, 2020 inspection, rainfall data for March, April, and May was compared to the 30-year rainfall average sourced from the nearest WETS station in Scotia, CA (1990-2020). Normal precipitation for a given month is defined by falling within the 30th and 70th percentile of the 30-year average rainfall for a given area. Based on the assessment of the WETS table, precipitation was considered to be normal at the time inspection (Table 3).

NOTE: in Appendix B, all field data forms incorrectly indicate that conditions were "drier than normal" in the hydrology remarks, "Normal Conditions" were not present, hydrology was "naturally problematic", and that hydrologic conditions on the site were not typical for this time of year. Prior to the site inspection, the condition value for the most recent month in Table 3 was classified as "2"

surface, as well as the secondary indicators Geomorphic Position (D2) and the FAC-Neutral Test (D5). The extent of Wetland #1 was delineated by the paired sampling points TP-1, TP-2, and TP-3. Wetland #1 slopes towards a confined swale below the old road alignment where the feature transitions into a Class III watercourse (See Appendix A, Figure 2).

4.0 RECOMMENDATIONS

The following recommendation are based on current regulatory standards and policies:

- The State Water Resources Control Board General Order specifies that a 100-foot riparian buffer should be applied for any intermittent watercourses or wetlands.
    - As per Attachment A of the Cannabis Cultivation Policy the following is also indicated:

      "Cannabis cultivators enrolled in a Regional Water Board order adopting WDRs or a waiver of WDRs for cannabis cultivation activities prior to October 17, 2017, may retain reduced setbacks applicable under that Regional Water Board order unless the Regional Water Board's Executive Officer determines that the reduced setbacks applicable under that order are not protective of water quality."
    - If any state or other local regulatory agency, including Humboldt County, has a different buffer specified, provide the buffer of whichever setback is larger.
- Continue to monitor the decommissioned road bed, avoid storing materials in close proximity to Wetland #1, and consider installing exclusionary fencing on the flat area, adjacent to the cultivation area, setback 25-feet from the wetland to avoid potential disturbance and limit access.
- If any additional earth-moving work is to be proposed elsewhere on the property, consult with a qualified professional to identify any sensitive biological resources or habitats.

In my professional opinion, the features described within this report satisfy the criteria to be wetlands/waters of the state and/or US pursuant to the Army Corps of Engineers' Regional Supplement and pursuant to confirmation by appropriate regulatory staff including but not limited to the Army Corps of Engineers.

Greg Davis, Staff Wetland Scientist
July 1, 2020

5.0 REFERENCES

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Appendix A

Maps

Rainmaker Wetland Delineation Report

July 2020

Figure 1. Site Location Map

Figure 2. Wetland Delineation Maps

Figure 3. NWI and Web Soil Survey Map

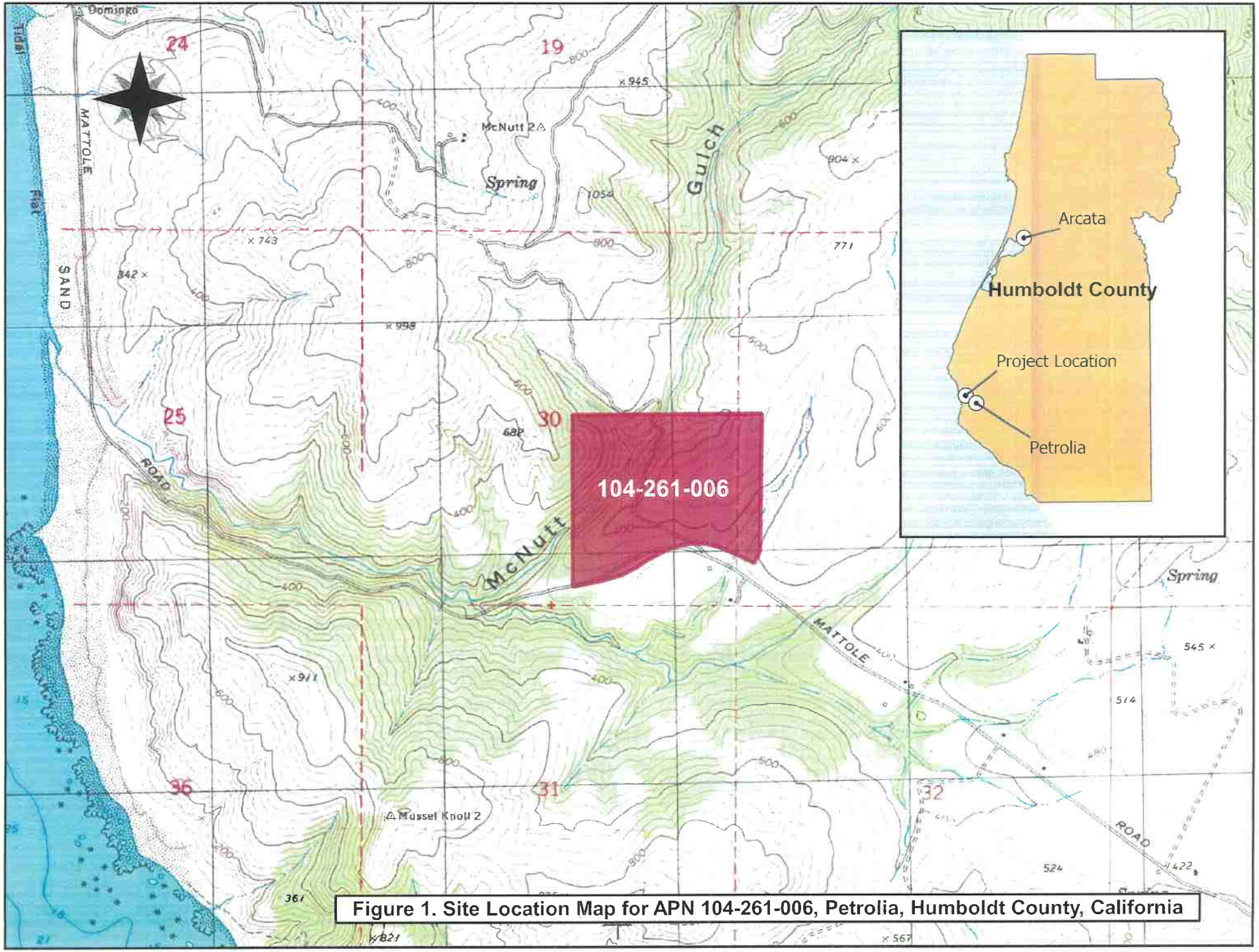
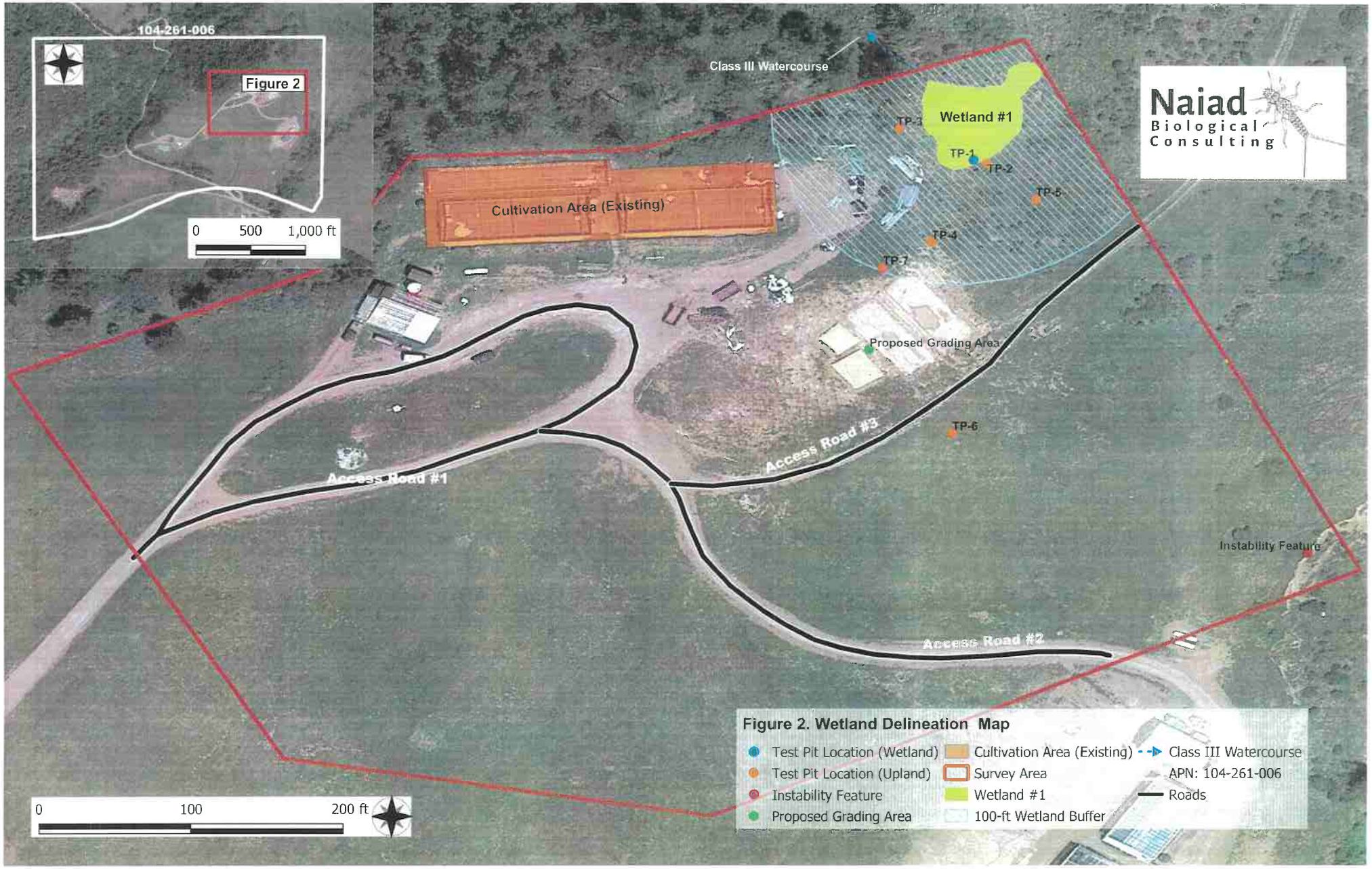
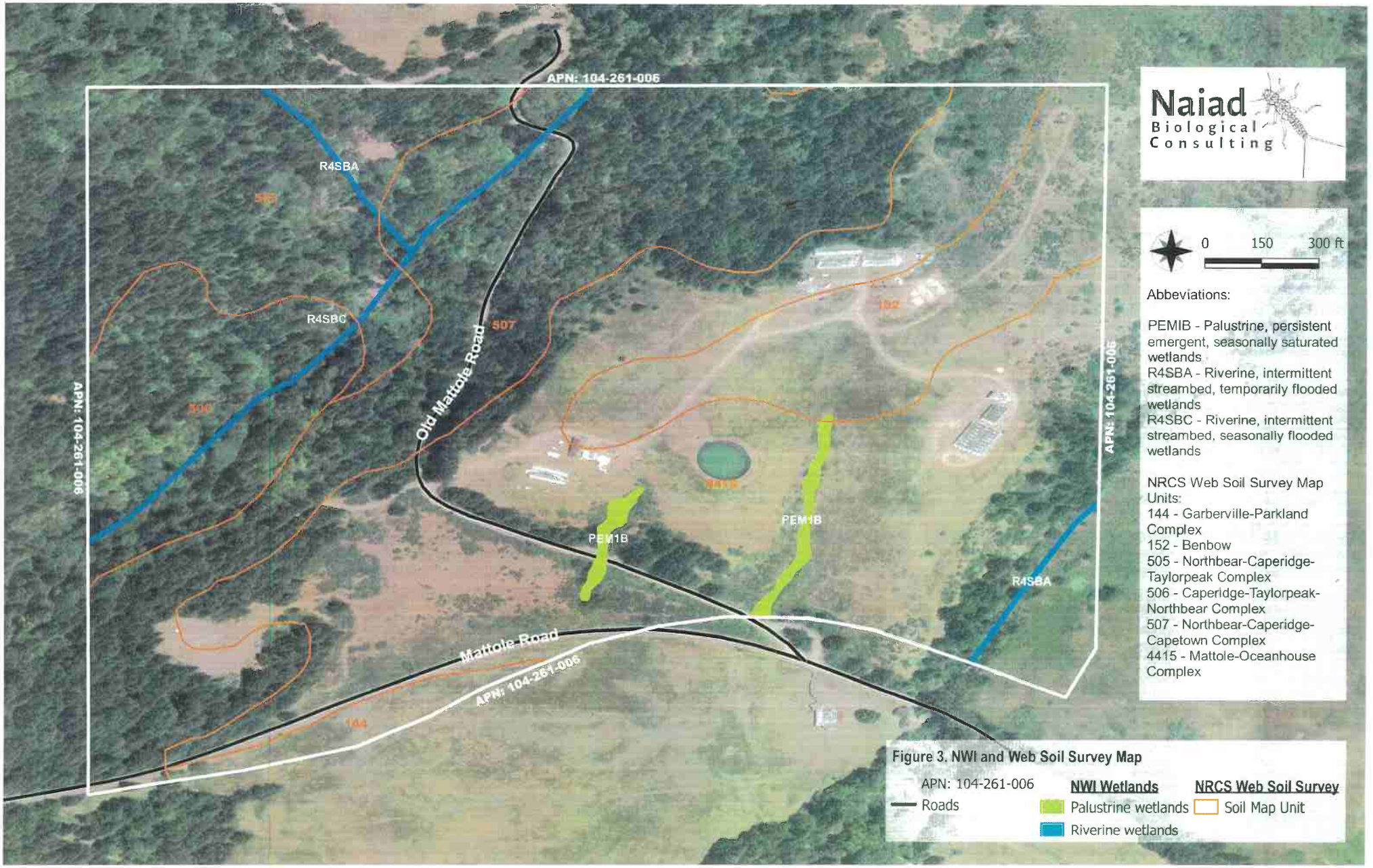


Figure 1. Site Location Map for APN 104-261-006, Petrolia, Humboldt County, California


104-261-006
Figure 2
0 500 1,000 ft
Class III Watercourse
Wetland #1
TP-3
TP-1
TP-2
TP-5
TP-4
TP-7
Cultivation Area (Existing)
Proposed Grading Area
TP-6
Access Road #3
Access Road #1
Access Road #2
Instability Feature
Naiad Biological Consulting
0 100 200 ft
Figure 2. Wetland Delineation Map
Test Pit Location (Wetland)
Test Pit Location (Upland)
Instability Feature
Proposed Grading Area
Cultivation Area (Existing)
Survey Area
Wetland #1
100-ft Wetland Buffer
Class III Watercourse
APN: 104-261-006
Roads


APN: 104-261-006
R4SBA
R4SBC
505
506
507
Old Mattole Road
PEM1B
PEM1B
R4SBA
Mattole Road
APN: 104-261-006
APN: 104-261-006
APN: 104-261-006
144
152
4415
Naiad
Biological
Consulting
0
150
300 ft
Abbeviations:
PEMIB - Palustrine, persistent emergent, seasonally saturated wetlands
R4SBA - Riverine, intermittent streambed, temporarily flooded wetlands
R4SBC - Riverine, intermittent streambed, seasonally flooded wetlands
NRCS Web Soil Survey Map Units:
144 - Garberville-Parkland Complex
152 - Benbow
505 - Northbear-Caperidge-Taylorpeak Complex
506 - Caperidge-Taylorpeak-Northbear Complex
507 - Northbear-Caperidge-Capetown Complex
4415 - Mattole-Oceanhouse Complex
Figure 3. NWI and Web Soil Survey Map
APN: 104-261-006
Roads
NWI Wetlands
Palustrine wetlands
Riverine wetlands
NRCS Web Soil Survey
Soil Map Unit

Appendix B

Wetland Determination Data Forms

Rainmaker Wetland Delineation Report

July 2020

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

Project/Site: APN: 104-261-006 City/County: Petrolia / Humboldt Sampling Date: 6-25-2020
Applicant/Owner: Rainmaker LLC State: CA Sampling Point: TP-1
Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): None Slope (%): 5
Subregion (LRR): A Lat: 40.351428 Long: -124.328747 Datum: WGS84
Soil Map Unit Name: 4415 - Matfole-Occanhouse Complex 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: TP is located on old, restored roadbed (decommissioned 2017)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 10x10)			
1. Baccharis pilularis	10	✓	N1
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 10x10)			
1. Juncus patens	60	✓	FACW
2. Holcus lanata	20	✓	FAC
3. Elymus glauca	10		FACU
4. Senecio jacobaea	8		FACU
5. Vicia hirsuta	2		N1
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 10x10)			
1. Rubus ursinus	10	✓	FACU
2.			
	10 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	20	x 3 =	60
FACU species	28	x 4 =	112
UPL species	12	x 5 =	60
Column Totals:	120 (A)		352 (B)

Prevalence Index = B/A = 2.93

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: TP-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	-	-	-	-	S.L	
4-13	10YR 3/1	95	10YR 5/4	5	C	PL	SiCL	

[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): 10

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks: Drier than normal conditions (see WETS data)

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

Project/Site: APN: 104-261-006 City/County: Petrolia / Humboldt Sampling Date: 6-25-2020
Applicant/Owner: Rainmaker, LLC State: CA Sampling Point: TP-2
Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 8-10
Subregion (LRR): A Lat: 40.351419 Long: -124.328716 Datum: WGS84
Soil Map Unit Name: 152 - Benbow 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: —)	Absolute % Cover	Dominant Species?	Indicator Status
1. —			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10 x 10)			
1. Toxicodendron diversilobum	2		FAC
2. Baccharis pilularis	5	✓	UPL
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 10 x 10)			
1. Holcus lanatus	60	✓	FAC
2. Festuca californica	25	✓	FACU
3. Cynosurus echinatus	5		FACU
4. Rumex acetosella	5		FACU
5. Taraxacum officinale	3		FACU
6. Danthonia californica	2		FAC
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 10 x 10)			
1. R. ursinus	10	✓	FACU
2.			
	10 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: .25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	64	x 3 =	192
FACU species	48	x 4 =	192
UPL species	5	x 5 =	25
Column Totals:	117 (A)		409 (B)

Prevalence Index = B/A = 3.50

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: TP-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100	—	—	—	—	L	Fibrous
4-14	10YR 3/2	100	—	—	—	—	SiCL	SBK structure, big increase in clay

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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: Drier than normal conditions (see WETS data). No hydric soils present so hydrology rejected

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

Project/Site: APN: 104-261-006 City/County: Petrolia / Humboldt Sampling Date: 6-25-2010
Applicant/Owner: Rainmaker LLC State: CA Sampling Point: TP-3
Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 8
Subregion (LRR): A Lat: 40.351503 Long: -124.328923 Datum: WGS84
Soil Map Unit Name: 4415 - Mattole - Occanhouse Complex 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: Area adjacent to graded flat and greenhouses on more or less natural hillslope

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: 10 x 10)			
1. Baccharis pilularis	25	✓	N1
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 10 x 10)			
1. H. lanatus	55	✓	FAC
2. Dactylis glomerata	35	✓	FACU
3. Danthonia californica	5		FAC
4. Cirsium eyenocephalus	2		N1
5. Heracleum maximum	2		FAC
6. Brassica nigra	1		N1
7.			
8.			
9.			
10.			
11.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 10 x 10)			
1. R. ursinus	5	✓	FACU
2.			
	5 = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	62	x 3 =	186
FACU species	40	x 4 =	160
UPL species	38	x 5 =	190
Column Totals:	140 (A)		536 (B)

Prevalence Index = B/A = 3.83

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: TP-3

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100	—	—	—	—	SiL	
3-12	10YR 4/1	100	—	—	—	—	CL	
12-24	10YR 4/1	95	10YR 4/4	5	C	M	CL	Redox features may be expression of Parent material

[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: *See profile description 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: No saturation even a 24" bgs. Drier than normal conditions (See WETS data)

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

Project/Site: APN: 104-261-006 City/County: Petrolia/Humboldt Sampling Date: 6-25-2020
Applicant/Owner: Rainmaker LLC State: CA Sampling Point: TP-4
Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W
Landform (hillslope, terrace, etc.): hillslope/depression Local relief (concave, convex, none): Concave Slope (%): 8-10
Subregion (LRR): A Lat: 40.351233 Long: -124.328847 Datum: WGS84
Soil Map Unit Name: 152-Benbow 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: Depressional area between abandoned road upslope and abandoned road downslope. Depression functions as sediment basin from old road that is now vegetated

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: —)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10x10)			
1. Baccharis pilularis	10	✓	NI
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 10x10)			
1. Aira caryophyllea	55	✓	FACU
2. Holcus lanatus	20	✓	FAC
3. Juncus patens	10		FACW
4. Festuca californica	MOSS 5		FACU
5. Lotus corniculatus	5		FAC
6. Taraxacum officinale	2		FACU
7.			
8.			
9.			
10.			
11.			
	97 = Total Cover		
Woody Vine Stratum (Plot size: 10x10)			
1. —			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 3

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	62	x 4 =	248
UPL species	10	x 5 =	50
Column Totals:	107 (A)		393 (B)

Prevalence Index = B/A = 3.67

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: Ruderal/weedy area. Cow pies, evidence of grazing

SOIL

Sampling Point: TP-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/4	100	—	—	—	—	SiL	see below
5-11	10YR 3/2	100	—	—	—	—	CL	
11-18	10YR 4/1	100	—	—	—	—	CL	SBK structure, increase in clay content

[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: Top of profile likely influenced by road runoff, acts as sediment basin, seems relatively inactive now except during rain events

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: Pretty dry throughout, drier than normal (see WETS data)

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

Project/Site: APN: 104-261-006 City/County: Petrolia/Humboldt Sampling Date: 6-25-2020
Applicant/Owner: Rainmaker, LLC State: CA Sampling Point: TP-5
Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 10
Subregion (LRR): A Lat: 40.351334 Long: -124.328600 Datum: WGS84
Soil Map Unit Name: 152 - Benbow 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: —)	Absolute % Cover	Dominant Species?	Indicator Status
1. —			
2. —			
3. —			
4. —			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10 x 10)			
1. B. pilularis	60	✓	N1
2.			
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: 10 x 10)			
1. Anthoxanthum odoratum	40	✓	FACU
2. Danthonia californica	15	✓	FAC
3. Avena barbata	15	✓	N1
4. Plantago lanceolata	15	✓	FACU
5. Senecio jacobaea	5		FACU
6. Carex subbracteata	5		FACW
7. Linaria vulgaris	5		N1
8. Taraxacum officinale	5		FACU
9.			
10.			
11.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	15	x 3 =	45
FACU species	65	x 4 =	260
UPL species	80	x 5 =	400
Column Totals:	155 (A)		715 (B)

Prevalence Index = B/A = 4.6

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: TP-5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					L	
3-10	10YR 4/2	100					SiL	
10-18	10YR 4/1	100	~	~	~	~	CL	
18-22	10YR 4/1	MAX 18	10YR 5/4	5	C	M	CL	
22+	REFUSAL							

[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: Rock

Depth (inches): 22

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: See WETS data (drier than normal), Soil very dry even at depth, seems well drained

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

Project/Site: APN: 104-161-006 City/County: Petrolia / Humboldt Sampling Date: 6-25-2020

Applicant/Owner: Rainmaker LLC State: CA Sampling Point: TP-6

Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): A Lat: 40.350781 Long: -124.328797 Datum: WGS84

Soil Map Unit Name: 152 - Benbow 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 ____	
Hydric Soil Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: —)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: —)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 10 x 10)			
1. Holcus lanatus	25	✓	FAC
2. Rumex acetosella	15		FACU
3. Anthoxanthum odoratum	10		FACU
4. Dactylis glomerata	5		FACU
5. Aira caryophyllea	5		FACU
6. Avena barbata	5		NI
7. Eschscholzia californica	5		NI
8. Bradiaea terrestris	5		NI
9. Cyperus echinatus	25	✓	NI
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

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	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	35	x 4 =	140
UPL species	40	x 5 =	200
Column Totals:	100 (A)		415 (B)

Prevalence Index = B/A = 4.15

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: TP-6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	10YR 2/1	100	—	—	—	—	grvl	gravelly
6-24	10YR 2/1	100	—	—	—	—	Vgrvl	very gravelly loam SBK structure (weak)

[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: Excavation of test pit was difficult due to amount of gravels, soil seems well drained

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: See "soil" comment/remarks

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

Project/Site: APN: 104-261-006 City/County: Petrolia/Humboldt Sampling Date: 6-25-2020
Applicant/Owner: Rainmaker, LLC State: CA Sampling Point: TP-7
Investigator(s): Greg Davis Section, Township, Range: S30, T1S, R2W
Landform (hillslope, terrace, etc.): Hillslope/ridge Local relief (concave, convex, none): None Slope (%): 5
Subregion (LRR): A Lat: 40.351171 Long: -124.328963 Datum: WGS84
Soil Map Unit Name: 152 - Benbow 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: Relatively disturbed area adjacent to water bladders, was able to excavate to depth, water ponds here due to grading (prior)

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Aira caryophyllea	50	√	FACU
2. Dactylis glomerata	15	√	FACU
3. Avena barbata	15	√	NI
4. Festuca perennis	5		FAC
5. Mentha pulegium	2		OBL
6. Lotus corniculatus	2		FAC
7. Parentucellia viscosa	1		FAC
8. Taraxacum officinale	10		FACU
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	0	x 2 =	0
FAC species	8	x 3 =	24
FACU species	75	x 4 =	300
UPL species	15	x 5 =	75
Column Totals:	100 (A)		401 (B)

Prevalence Index = B/A = 4.01

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: Relatively ruderal/invasive plants here

SOIL

Sampling Point: TP-7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10yr 2/1	100					grL	gravelly
5-13	10yr 2/1	100					VgrCL	weak SBK
13-18	10yr 3/3	100					VgrCL	Very gravelly
18+	Refusal							

[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: gravel / rock

Depth (inches): 18

Hydric Soil Present? Yes ____ No ✓

Remarks: Similar to TP-6, soil fairly true to Benbow consociation. Surface is compacted from grading, holds water in response to rain events. Will likely develop surface w/ pennycress or other hydrophytes over time but is anthropogenically influenced

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: No presence

Appendix C

Plant Species List

Rainmaker Wetland Delineation Report

July 2020

Species	Common Name	Origin	Stratum	Indicator Status
Aira caryophyllea	Silvery hairgrass	Naturalized	Herb	FACU
Anthoxanthum oderatum	Sweet Vernal Grass	Invasive	Herb	FACU
Avena barbata	Slim oat	Invasive	Herb	NI
Baccharis pilularis	Coyote brush	Native	Shrub	FACW
Brassica nigra	Black mustard	Invasive	Herb	NI
Brodiaea terrestris	Dwarf brodiaea	Native	Herb	NI
Carduus pycnocephalus	Italian thistle	Invasive	Herb	NI
Carex subbracteata	Small bract sedge	Native	Herb	FACW
Cynosurus echinatus	Bristly dogstail grass	Invasive	Herb	NI
Dactylis glomerata	Orchardgrass	Invasive	Herb	FACU
Danthonia californica	California oatgrass	Native	Herb	FAC
Elymus glaucus	Blue wild rye	Native	Herb	FACU
Eschscholzia californica	California Poppy	Native	Herb	NI
Festuca californica	California fescue	Native	Herb	FACU
Festuca perennis	Italian rye grass	Invasive	Herb	FAC
Heracleum maximum	Cow parsnip	Native	Herb	FAC
Holcus lanatus	Common velvetgrass	Invasive	Herb	FAC
Juncus patens	Spreading rush	Native	Herb	FACW
Lotus corniculatus	Slender bird's foot trefoil	Naturalized	Herb	FAC
Mentha pulegium	Pennyroyal	Invasive	Herb	OBL
Parentucellia viscosa	Yellow glandweed	Invasive	Herb	FAC
Plantago lanceolata	English plantain	Invasive	Herb	FACU
Rubus ursinus	California blackberry	Native	Herb	FAC
Rumex acetosella	Common sheep sorrel	Invasive	Herb	FACU
Senecio jacobaea	Tansy ragwort	Invasive	Herb	FACU
Taraxacum officinale	Common dandelion	Naturalized	Herb	FACU
Toxicodendron diversilobum	Poison oak	Native	Shrub	FAC
Vicia hirsuta	Hairy vetch	Naturalized	Herb	NI
Rosa canina	Dog rose	Naturalized	Shrub	NI

Appendix D

Photo Documentation

Rainmaker Wetland Delineation Report

July 2020

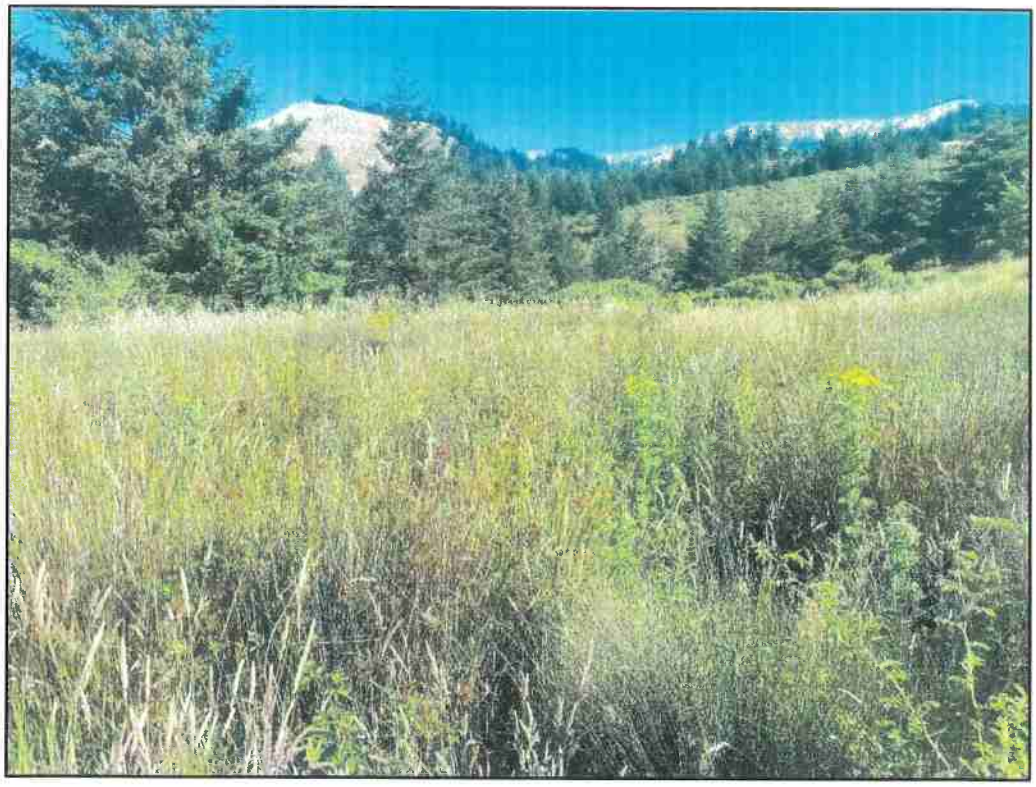


Photo 1. View of Wetland #1 looking northeast towards TP-1 and the decommissioned road.

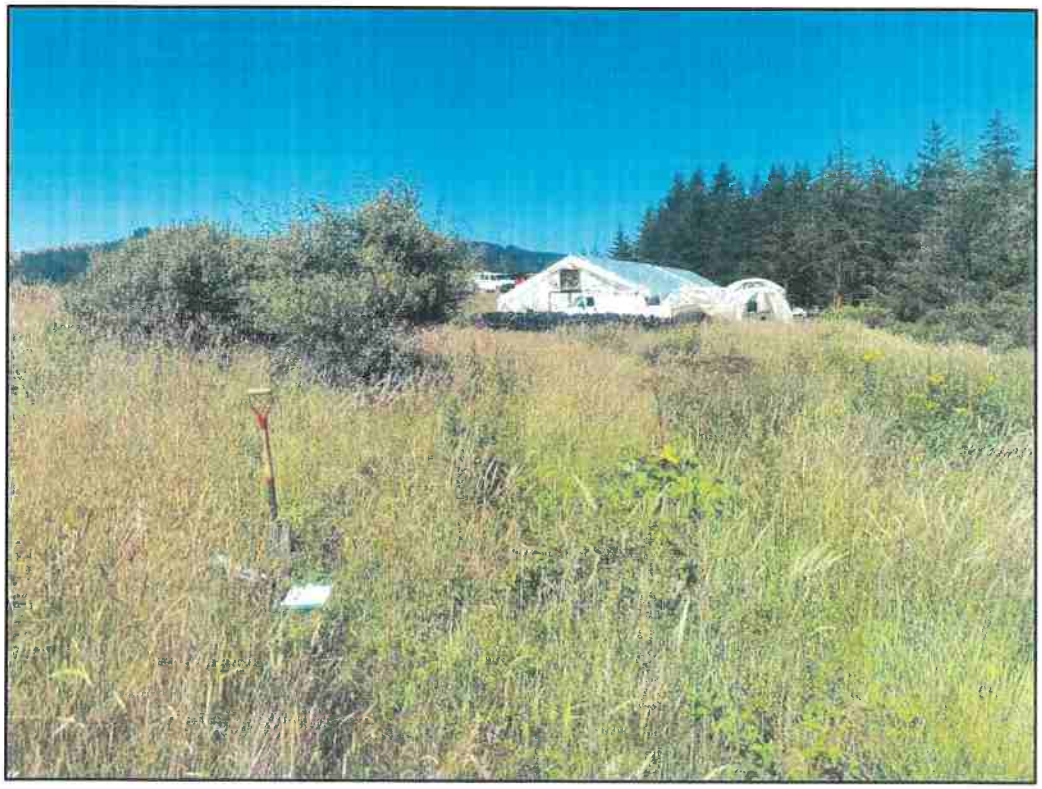


Photo 2. View of TP-2 sampling location with Wetland #1 in the center right frame.

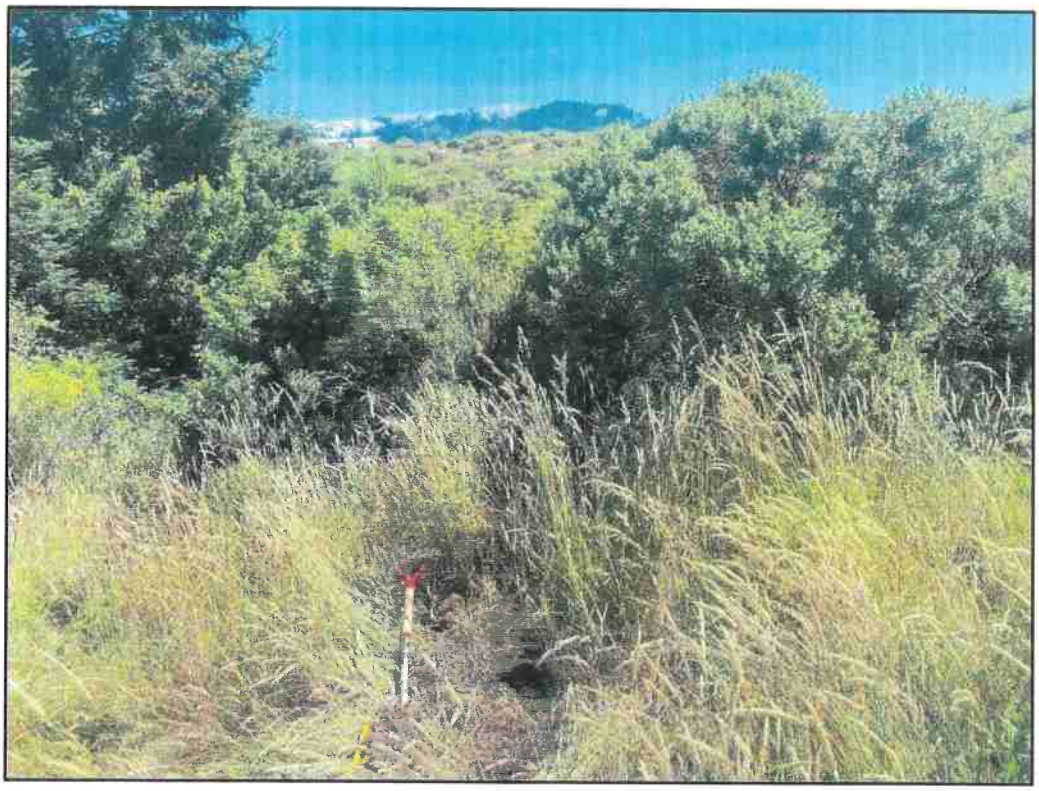


Photo 3. View of TP-3 with the Class III watercourse in the background.

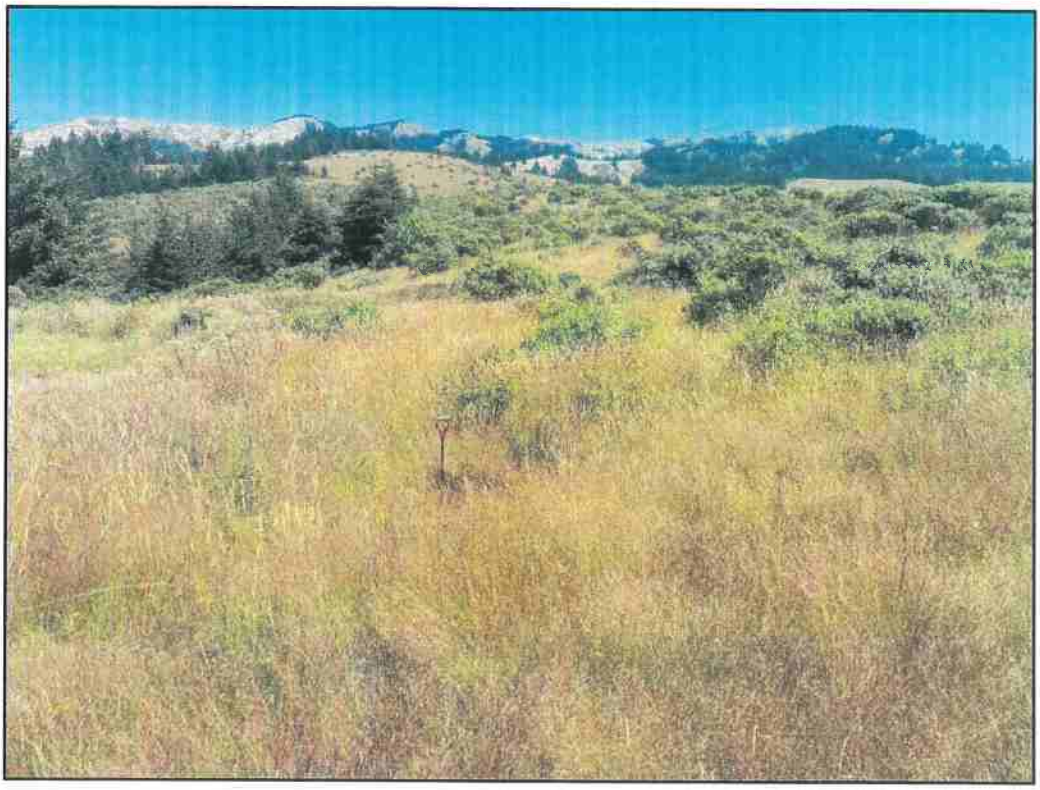


Photo 4. View of TP-4 (center frame), which is located in a small depressional area.

Photo 5. View of TP-5 within the coyote brush scrub habitat upslope of Wetland #1.

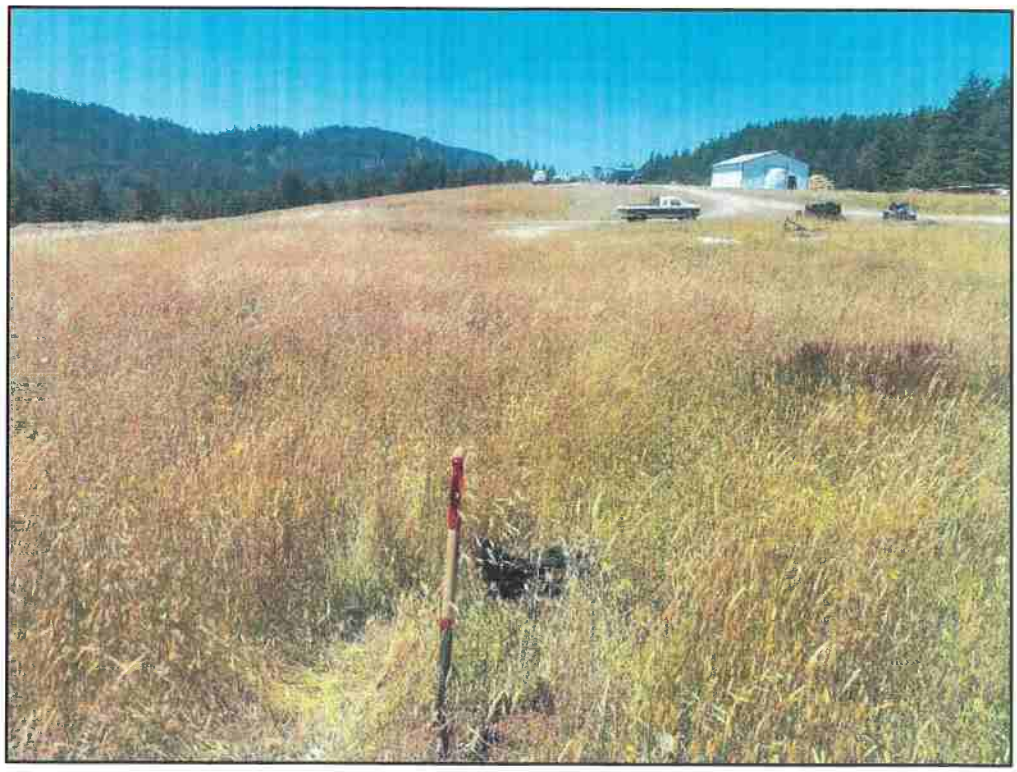


Photo 6. View of TP-6 within a primarily invasive species grassland. Note the intersection of Access Road #1 and Access Road #2 at the truck.

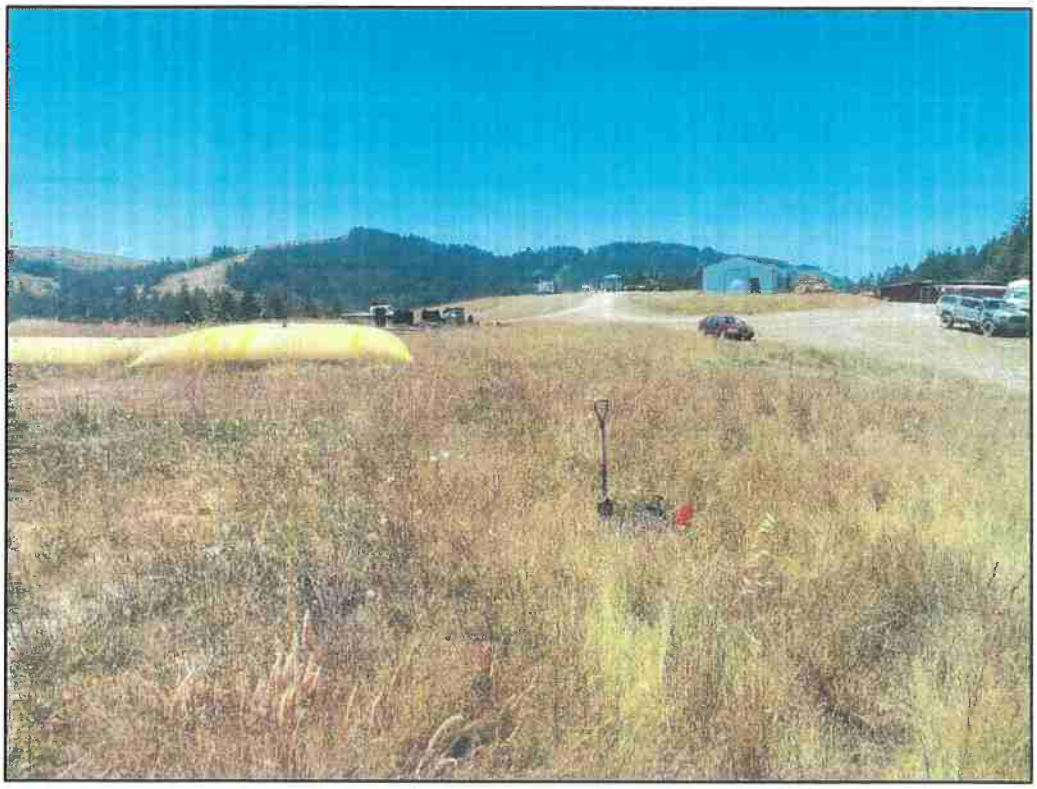


Photo 7. View of TP-7 within the proposed grading area, note the water bladders in the left frame.