

Biological Resource Assessment Report and Jurisdictional Wetland Delineation for APN 210-042-003



June 2019
Prepared For:
George Albert

Prepared By:



TransTerra Consulting

INTEGRATED ENVIRONMENTAL SERVICES

The purpose of this report is to provide an assessment of the type and extent of jurisdictional wetlands and waters affected by cannabis cultivation and grading for the George Albert property. Jurisdictional resources considered for this report include wetlands and non-wetland “waters of the U.S.” regulated by the U.S. Army Corps of Engineers (USACE); “waters of the State” regulated by the North Coast Regional Water Quality Control Board (NCRWQCB); and the bed, bank, and channel of all lakes, rivers, and/or streams (and associated riparian vegetation), as regulated by the California Department of Fish and Wildlife (CDFW).

The jurisdictional delineation work was performed by Tami Camper M.A. of TransTerra Consulting May 31, 2019 using the USACE Regional Supplement to the Corps of the Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). The proposed project is located off Highway 36 in Bridgeville of Humboldt County, CA on the U.S. Geological Survey’s (USGS’) Bridgeville 7.5-minute quadrangle map.

Wetland features were identified based on the USACE’s three-parameter approach in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and presence of wetland hydrology indicators. Generally, the limits of non-wetland “waters of the U.S.” are identified by the presence of an ordinary high-water mark (OHWM). The limits of CDFW jurisdictional waters in this project were identified as the top of bank.

The area of investigation contained 0.14-acres of jurisdiction wetlands. The wetland is hydrologically connected to Little Larabee Creek within the jurisdiction of USACE, NCRWQB, and CDFW and must be considered for the Humboldt County SMA policies. The wetland area includes 0.10-acres of Seasonal Palustrine Emergent Wetland (PEM), 0.038-acres of Perennial Palustrine Emergent Wetland (PEM). In addition, 1.34 acres of potential wetlands were identified on site using 2012 NAIP imagery. These are connected to the delineated wetlands. The delineated area contained 0.03 acres of 1-parameter wetland (facultative vegetation) and a seasonal drainage ditch that is hydrologically connected to the wetlands and streams and may be considered jurisdictional (0.02 acres)

Best management practices, buffers and any required mitigation will be determined in subsequent document for Mitigation and Monitoring.

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Introduction

This Biological Resource Assessment was prepared to provide data concerning the type and extent of biological resources under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and US Fish and Wildlife Service (USFWS) that are currently or potentially present at the project location. The project includes commercial cannabis cultivation and associated activities. If required after agency review of the preliminary habitat assessment, protocol level surveys will be completed per recommendations by the Final Environmental Impact Report (FEIR) amendments to the Humboldt County Code Regulating Commercial Cannabis Activities.¹

This Jurisdictional Wetland Delineation report and was prepared to provide data concerning the type and extent of wetlands under the jurisdiction of the US Army Corps of Engineers (USACE), North Coast Regional Water Quality Control Board (NCRWQCB); and California Department of Fish and Wildlife (CDFW). This report is in response to the Deficiency Letter sent by the County of Humboldt Planning and Building Department Cannabis Services Division on April 29, 2019. This report is based on the fieldwork performed on May 31, 2019. The project includes commercial cannabis cultivation and associated activities.

Environmental Setting

Project Location

The property is located off Highway 36 in Bridgeville of Humboldt County, California (Section 15, T1N, R4E). The project area is located on a south-east and south facing, 163.07-acre parcel within the U.S. Geological Survey's (USGS) Bridgeville 7.5-minute quadrangle map. Elevation is approximately 2300-2700 feet above sea level. Property is located in the Van Duzen Watershed. The regional climate is Mediterranean in nature with warm summers and cool winters.

There are no soil types mapped in the project areas on the Web Soil Survey.² The property area is marked as NOTCOM meaning that no digital data is available for this parcel. Soils in the surrounding parcels contain soil series including Highyork-Elkcamp-Airstrip complex 15 to 30 percent slopes (4421), Highyork-Elkcamp-Airstrip complex 30 to 50 percent slopes (4422), Tannin-Burgsblock-Rockyglen complex 30 to 50 percent slopes (461), Tannin-Burgsblock-Rockyglen complex 50 to 75 percent slopes (469), Pasturerock-Coyoterock-Maneze complex (4426), etc. These soils primarily consist of either one or a mixture of sand, loam, clay, or gravel particles. None of these soils are considered to be hydric.

¹ Final Environmental Impact Report :Amendments to the Humboldt County Code Regulating Commercial Cannabis Activities. January 2018. Prepared by Ascent Environmental. (Accessed via <https://humboldt.gov/DocumentCenter/View/62689/Humboldt-County-Cannabis-Program-Final-EIR-60mb-PDF>)

² Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. (Accessed via <https://websoilsurvey.sc.egov.usda.gov/>.)

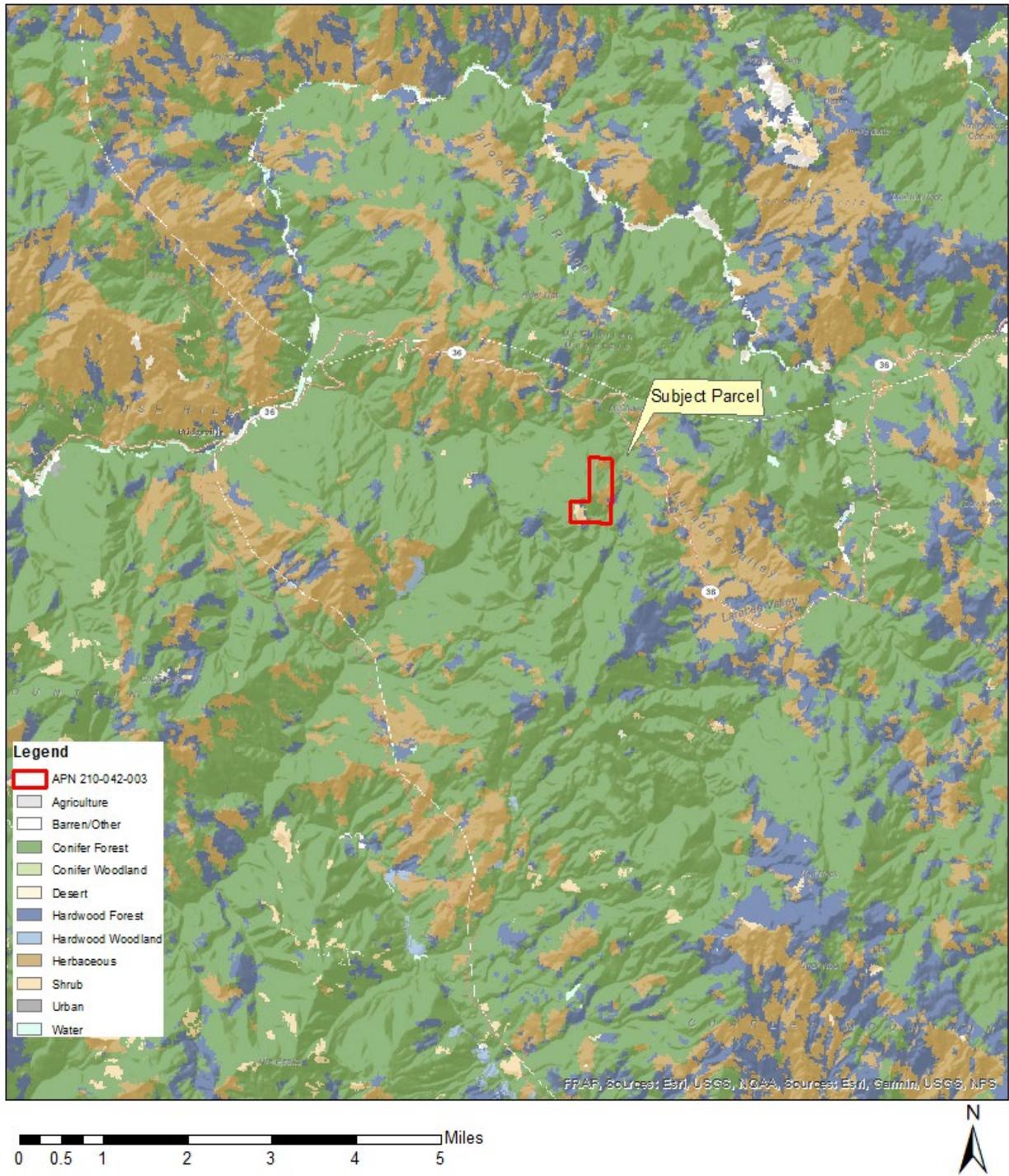


Figure 1. Project Location. Map created using ArcMap 10.6 and Humboldt County GIS layers.

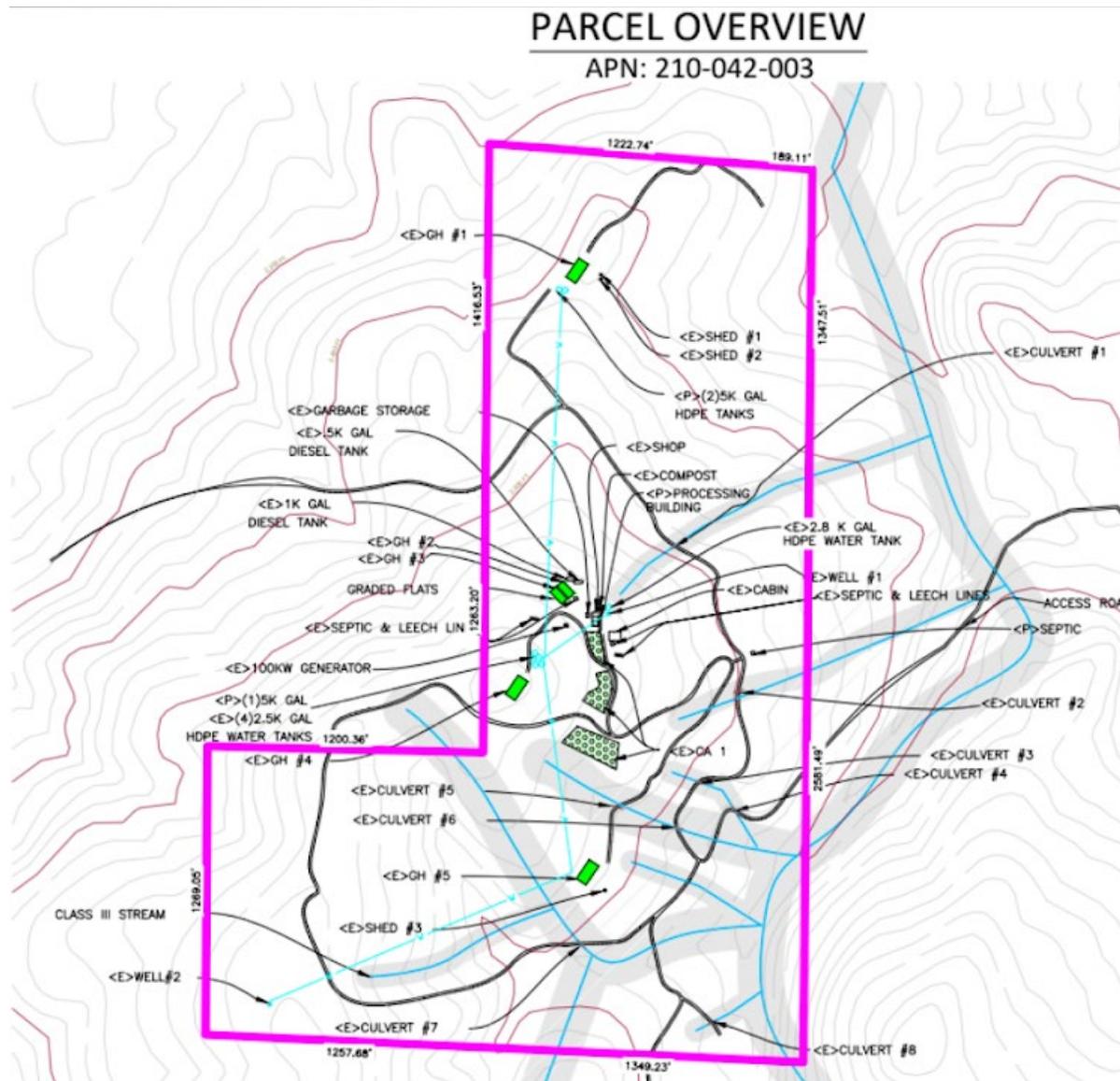


Figure 2. Proposed Project (prepared by Green Roads Consulting Group)

The property is situated in Hoagland Creek-Van Duzen River watershed which is in the Van Duzen watershed. This watershed is part of the Cannabis Impacted HUC-12 Watersheds. Per the Humboldt County GIS layer, the Streamside Management Area of an unnamed tributary off of Little Larabee Creek bisects the property. Project areas are approximately 1200 feet away from Little Larabee Creeks' Streamside Management Area buffer. The NWI and Humboldt GIS layers do not show wetlands on the property. Field investigations show various Class II/III watercourses converging towards the southeast corner of the property flowing towards the tributary of Little Larabee Creek (Figure 2).

The project area is mapped as possessing high levels of instability. Historic landslides, potential liquefaction, fault lines and other hazards are not mapped in or adjacent to the parcel on the Humboldt GIS database.

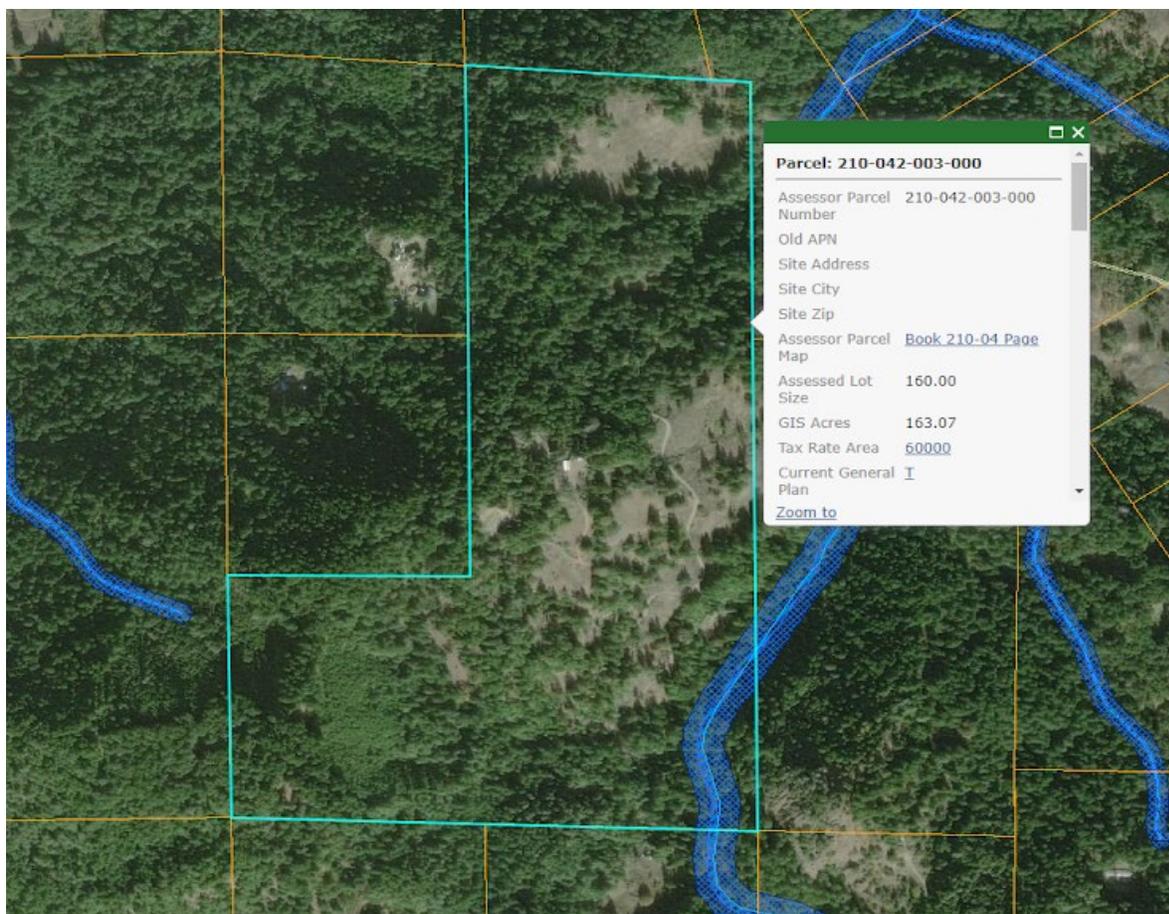


Figure 3. Streamside Management Areas (SMA) and National Wetland Inventory (NWI) wetlands mapped in and adjacent to project site. SMA are not mapped correctly on this layer. Correct mapping is shown on Figures 2 and 4.³

Methods

The California Natural Diversity Database (CNDDDB) RareFind and Spotted Owl Database, and California Native Plant Society (CNPS) databases were used to assess potential rare species. A habitat assessment was conducted by TransTerra Consulting Principal Biologist Tamara Camper on May 31, 2019. The assessment evaluated listed species and species of special concern (SOC). The study area was scanned for wildlife sign including tracks, scat, tree habitat (cavities, nests scrapes or accumulated vegetation) as well as special habitat types and habitats associated with rare plant species. The observations were concentrated around cultivation sites, roads and watercourses. The CNDDDB 9-Quad area was queried to generate occurrences of special-status animal species.

The assessment was conducted due to mandatory requirements for cannabis permitting, however the timing of the field visit did not coincide with ideal survey seasons based on phenology and life history cycles for all potential species. Full floristic surveys and/or protocol-level surveys were not conducted in the project area. Based on the timing of the survey, all plant species growing within the study area may not have been observed due to varying flowering phenologies and life forms, such as bulbs, biennials,

³ Humboldt County GIS layer. (Accessed via: <http://webgis.co.humboldt.ca.us/HCEGIS2.0/>)

and annuals. Other potentially dominant species within vegetation communities on site may be present during other times of the year. Therefore, the present study is not floristic in nature. Some of the plant species identified in this report are tentative due to the absence of morphological characters, resulting from immature reproductive structures or seasonal desiccation, which is required to make species-level determinations. Many wildlife species are also not identifiable between August and March and must be surveyed for during the reproductive season. Species-specific surveys will be conducted as appropriate and are further discussed below.

A jurisdictional wetland delineation was conducted by Tamara Camper of TransTerra Consulting. The investigation was conducted after trace amounts of rain and 2.61 inches in the month of May⁴. Conditions were mostly sunny. Only the areas requested by Green Roads Consulting near the cultivation areas were examined. Wetland delineation was performed using the USACE Regional Supplement to the Corps of the Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)⁵.

Points 1 and 2 were located to the south-eastern extent of the parcel near a disposal site and ponded area. The wetland observation point (Point 1) was chosen based upon obvious hydrology. The pit was excavated as close to the water as possible while still being dry enough to obtain a good core sample. The area was an excavated spring with surface water. The closest, undisturbed upland area was investigated next at Point 2.

Points 3-5 were placed near the cultivation area and a proposed stream crossing upgrade. Vegetation types were mapped and examined in lieu of transects due to topography. Point 3 was located in an area that was wet at the time of the survey and dominated by hydrophytic vegetation along the stream. The stream is classified as a Class III currently but was flowing at the time of the survey and appeared to be intermittent. Points 4 and 5 were located in areas that were not saturated and ponded but contained hydrophytic vegetation. The area associated with Point 4 did have some flowing drainage patterns and saturated soils away from the pit.

The Trimble TDC100 was used for GPS points and tracking, and ArcMap was used to create the wetland map and buffers.

Streams were mapped by Green Roads staff and were not included in the scope of this survey.

Results and Discussion

Vegetation

The project area is generally Mixed Evergreen Forest, Valley and Foothill Grassland, Cis-Montane Woodland and Riparian forest. Marshes, Seeps and Riparian scrub as well as other wetland vegetation is also present. The forested areas are dominated by *Pseudotsuga menziesii* (Douglas fir), *Arbutus menziesii* (madrone), *Umbellularia californica* (California bay), *Notholithocarpus densiflorus* (tanoak), *Gaultheria shallon* (salal) and *Ceanothus* sp. (ceanothus). The forested areas were primarily closed

⁴ [National Weather Service Data for Eureka, CA accessed via \(https://w2.weather.gov/climate/index.php?wfo=eka\)](https://w2.weather.gov/climate/index.php?wfo=eka)

⁵ [USACE Regional Supplement to the Corps of the Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region \(Version 2.0\) \(Accessed via https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046494.pdf\)](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046494.pdf)

canopy with an open understory. Openings are a mixture of native and non-native grasses and forbs including *Avena* sp (wild oats), *Bromus hordeaceus* (soft chess), *Holcus lanatus* (velvet grass), *Claytonia* sp. (claytonia), *Manzanita* sp. (manzanita), *Trifolium* sp. (clover) *Pteridium aquilinum* var. *pubescens* (western bracken fern), and *Rosa* sp. (rose). The ponded area contained emergent vegetation. All species observed are listed in Table 3 below. Wetlands are further described below.

Wetlands and SMA areas

As stated previously, there are numerous watercourses in the area, as well as natural and manmade wetlands. A jurisdictional wetland delineation was requested. The regulatory background for wetlands in Humboldt County is presented below.

U.S. Army Corps of Engineers (USACE)

The USACE Regulatory Branch regulates activities that may discharge dredged or fill materials into “waters of the U.S.” under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all “waters of the U.S.” where the material (1) replaces any portion of a “waters of the U.S.” with dry land or (2) changes the bottom elevation of any portion of any “waters of the U.S.”. These fill materials include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters. The selection of disposal sites for dredged or fill material is done in accordance with guidelines specified in Section 404(b)(1) of the CWA, which were developed by the U.S. Environmental Protection Agency (USEPA).

Regional Water Quality Control Board (RWQCB)

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The RWQCB’s jurisdiction extends to all “waters of the State” and to all “waters of the U.S.,” including wetlands (isolated and non-isolated). Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance an activity with the potential for discharge into navigable waters will not violate water quality standards. Water Quality Certification must be based on findings that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives found in each of the nine RWQCBs’ Basin Plans.

California Department of Fish and Wildlife

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to the California Fish and Game Code (§§1600–1616). Activities of state and local agencies, as well as public utilities that are project proponents, are regulated by the CDFW under Section 1602 of the California Fish and Game Code.

Because the CDFW includes streamside habitats under its jurisdiction that, under the federal definition, may not qualify as wetlands on a project site, its jurisdiction may be broader than that of the USACE.

Riparian forests in California often lie outside the plain of ordinary high water regulated under Section 404 of the CWA, and often do not have all three parameters (wetland hydrology, hydrophytic vegetation, and hydric soils) sufficiently present to be regulated as a wetland. The CDFW jurisdictional limits are not as clearly defined by regulation as those of the USACE. While they closely resemble the limits described by USACE regulations, they include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric and saturated soils conditions. In general, the CDFW extends jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place within or near a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

Humboldt County-Streamside Management Area

“Streamside Management Areas” (SMAs) [Section 3432(5) of the Humboldt County 1984 General Plan] are defined in the Humboldt County General Plan (Page G-8) and include a natural resource area along both sides of streams containing the channel and adjacent land. Updates to the SMA guidance for cannabis activities are defined in the Environmental Impact Assessment Biological Resources Section⁶.

Project applicants proposing development activities within a SMA or wetland areas are required to include a site-specific biological report prepared consistent with these regulations. The written report prepared by a qualified biologist is subsequently referred to CDFW for review and comment. If required, after agency review of the preliminary habitat assessment, protocol level surveys will be completed per recommendations by the Final Environmental Impact Report (FEIR) amendments to the Humboldt County Code Regulating Commercial Cannabis Activities⁷.

Additional Laws and Policies

In addition to the above-mentioned policies, numerous other policies exist to protect wetlands, waters and biological resources including the California Environmental Quality Act (CEQA), California Endangered Species Act (CESA) and the Z’berg-Nejedly Forest Practice Act.

Wetland Results

The area of investigation contained 0.14-acres of jurisdiction wetlands. The wetland is hydrologically connected to Little Larabee Creek within the jurisdiction of USACE, NCRWQB, and CDFW and must be considered for the Humboldt County SMA policies. The wetland area includes 0.10-acres of Seasonal Palustrine Emergent Wetland (PEM), 0.038-acres of Perennial Palustrine Emergent Wetland (PEM). In addition, 1.34 acres of potential wetlands were identified on site using 2012 NAIP imagery. These are connected to the delineated wetlands. The delineated area contained 0.03 acres of 1-parameter

⁶ <https://humboldt.gov/DocumentCenter/View/58840/Section-311-Biological-Resources-Revised-DEIRPDF>

⁷ Final Environmental Impact Report :Amendments to the Humboldt County Code Regulating Commercial Cannabis Activities. January 2018. Prepared by Ascent Environmental. Accessed via <https://humboldt.gov/DocumentCenter/View/62689/Humboldt-County-Cannabis-Program-Final-EIR60mb-PDF>. Accessed [January 2019]

wetland (facultative vegetation) and a seasonal drainage ditch that is hydrologically connected to the wetlands and streams and may be considered jurisdictional (0.02 acres). (Table 1 and Figure 4)

The perennial wetlands near Points 1 and 2 were currently inundated and appeared to be created from historic excavation of a spring or stream and impounding from road construction. Along with hydrology indicators, adult and juvenile beetles in Gyrinidae family and adult Northern red-legged frogs (*Rana aurora*) and Northwestern salamander (*Ambystoma gracile*) egg masses were observed in the water. There was evidence of historic grading in the cultivation areas as well as excavation of the spring, use of old skid roads. Vegetation and soil characteristics are available in forms for Points 1 and 2 (attached). The wetlands appear to be hydrologically connected to Little Larrabee Creek tributaries.

The seasonal wetlands near Points 3 and 4 were saturated in various locations at the time of the survey, however some areas within the same vegetation type were not saturated. Ground water in these areas ranged from 0-7". Aquatic species were not observed. Vegetation and soil characteristics are available in forms for Points 3 and 4 (attached). The wetlands appear to be hydrologically connected to Little Larrabee Creek tributaries. Point 5 was in an area dominated by hydrophytic vegetation (primarily facultative) but did not meet soil and hydrology indicators.

Vegetation in upland areas was variable, but was primarily composed of mixed evergreen forest with a sparse understory and large amount of small woody debris and leaf litter as well as some area of dense brush where there overstory was more open

Wet areas appeared to be created from a combination of exposed ground water and surface flow from excavation, grading and road drainage as well as natural springs and seeps which are characteristic of the watershed. A drainage ditch and spring were examined along the road between the two areas that were requested for delineations. This area was not formally delineated but was mapped based on observed vegetation and hydrology. Additional areas were shown on the map that appear to be seasonal wetlands in aerial imagery from 2010 and 2012. All areas appear to be part of a complex of streams and seeps flowing towards the southeastern portion of the property.

Table 1. Wetland results

Wetland Type	Acres
Drainage Ditch	0.02
1 Parameter Area	0.03
Aerial Imagery Only	1.34
PEM Perennial	0.04
PEM Seasonal	0.10
<i>Total</i>	1.52

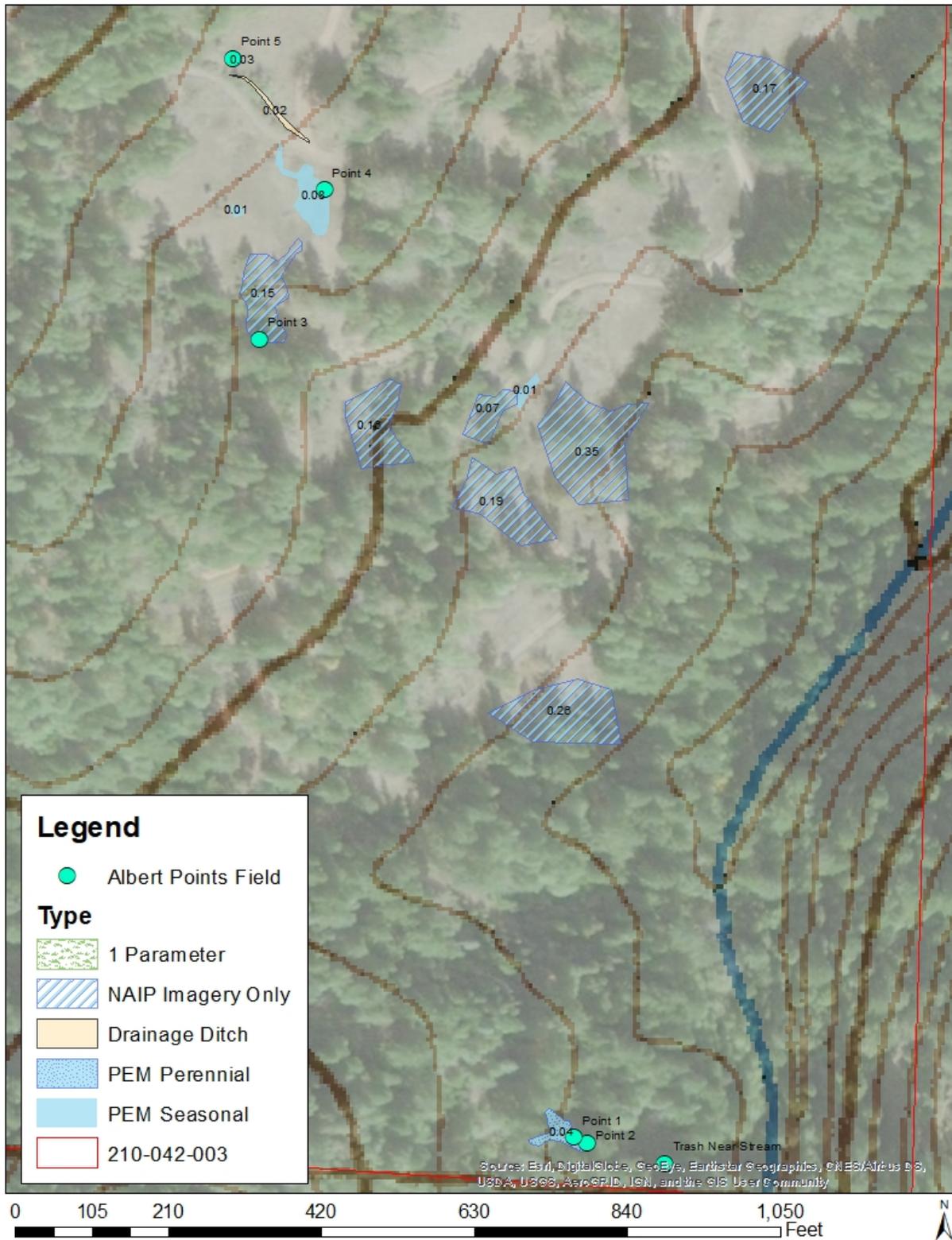


Figure 4. Results of Wetland Delineation

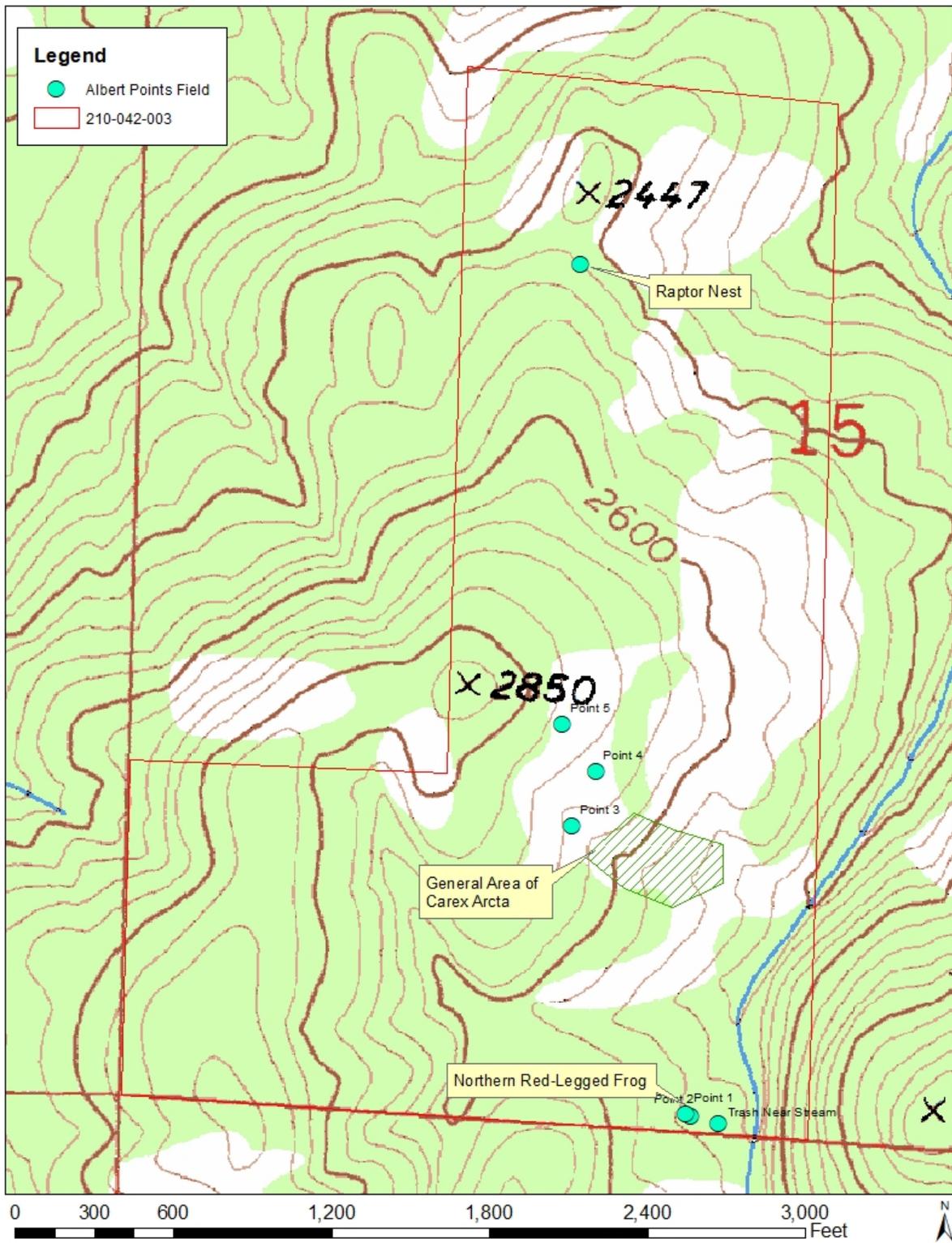


Figure 5. Species observed on-site.

Northern Spotted Owl

In 2016, the California Fish and Game Commission approved the listing of the Northern Spotted Owl (*Strix occidentalis caurina*) as Threatened under the California Endangered Species Act. It has been listed as Threatened under the federal Endangered Species Act since 1990. Owl pairs typically nest in broken-top trees, tree cavities, debris accumulations or nests built by other wildlife (abandoned raptor nests or rodent nests). Females generally lay one to two eggs in spring and chicks fledge and leave nests in early fall. Generally older forests with dense canopy closure are preferred for nesting and roosting, however younger stands with similar structure are also utilized. Structural components of high-quality stands include multiple canopy layers, higher species density, larger overstory trees, live trees with deformities and woody debris in the understory. Prey species include flying squirrels, woodrats, rabbits, voles, shrews, gophers, smaller birds, bats and insects. Owls are threatened by Barred Owls, habitat loss, climate change and pathogens.⁸

Northern Spotted Owl was recorded in the CDFW database within 1 mile. Habitat was present on-site for nesting spotted owls due to stand age and structure. The HUM0755 activity center is located approximately 9,115 feet west of the project and positive observations of a nesting pair were most recently made by Ram in 2007 and others dating back to 1994. Both positive and negative observations were made on or near the subject parcel. The HUM0128 activity center is located approximately 9,122 feet southwest of the project and positive observations of a nesting pair were most recently made by Franklin in 2016 and others dating back to 1978. Both positive and negative observations were made within one mile of the subject parcel. The HUM0125 activity center is located approximately 7,991 feet southwest of the project and positive observations of a pair were most recently made by Franklin and others in 2012 and others dating back to 1984. Both positive and negative observations were made within one mile of the subject parcel. The HUM0925 activity center is located approximately 8,824 feet northeast of the project and positive observations of a pair were most recently made by Obrien in 2006 and others dating back to 1999. Both positive and negative observations were made within one mile of the subject parcel. Critical habitat for NSO is located approximately 1 mile to the southwest.

CNDDDB and other Database Results

The CDFW CNDDDB, BIOS, Rarefind and CNPS databases were scoped before and after field site visit to determine habitat potential and known occurrences of rare or listed species of concern in or around the project area. Known reference populations near the site were visited to confirm phenology. The following species were observed in the database within 1 miles of the project site.

Rana boylei (northern yellow-legged frog) is California state listed as a threatened candidate species. It occupies partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. This species needs at least some cobble-sized substrate for egg-laying. A least 15 weeks is required to attain metamorphosis.

Meesia triquetra (three-ranked hump moss) is categorized as a 4.2 by the CNPS, ranking it a watchlist species. It occupies bogs and fens, meadows and seeps, upper montane coniferous forest, and subalpine

⁸ Northern Spotted Owls in California. California Department of Fish and Wildlife (Accessed via <https://www.wildlife.ca.gov/Conservation/Birds/Northern-Spotted-Owl>)

coniferous forest. This moss grows on mesic soil at around 1300-2955 m in elevation. It can be found in saturated bogs, fens, seeps and meadows in coniferous to subalpine forests.

Falco peregrinus anatum (American peregrine falcon) is Delisted on both a state and federal level, however they are still a fully protected species in California. The species occurs near wetlands, rivers and other waters. It primarily occupies cliffs, banks, dunes and mounds but will occupy human-made structures. Nests consist of a scrape or depression or ledge in an open site. The occurrence of American peregrine falcons is sensitive, and the actual location is suppressed for the safety of the species.

***Rana aurora* (northern red-legged frog) occupies humid forests, woodlands, grasslands, and streamsid es in northwestern California, usually near dense riparian cover. It is generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season. Three adults were observed in the perennial wetland towards the southern portion of the property. CNDDDB forms will be submitted.**

***Carex arcta* (northern clustered sedge) is ranked as 2B.2 by CNPS, meaning low populations are present in California, being more prevalent outside the state. This species occupies bogs, fens, and north coast coniferous forest. It can be found in mesic sites at around 60-1405 m. *Carex arcta* was observed sporadically in a seasonal meadow outside of any areas proposed for impacts.. The meadow mapped as “aerial only” on the wetland maps. CNDDDB forms will be submitted. The species was not positively identified in the field and minimal data was collected. The species was keyed in the office along with multiple sedges collected on-site.**

A raptor nest and pellets was observed towards the northern end of the property. White-wash and other indicators of a pair occupying the nest were not observed. Raptor species were not observed, however habitat was adequate for many raptor species.

The project area contains habitat for various rare or listed species. (See site photos for general habitat types) A complete list of occurrences of rare and species of concern are listed below in Table 2 and Table 3.

Potential Direct and Indirect Impacts

The potential direct, indirect, and cumulative effects of the land clearing, residential development, and cultivation activities include removal of vegetation and canopy cover, disturbance and compaction of soil, alteration of hydrologic regime, sedimentation and erosion, increase in invasive species, and noise, solid and chemical waste pollution, visual impacts, and air quality impacts.

The proposed project will include work on water crossings, which could impact aquatic species. These impacts will be addressed through the Lake and Streambed Alteration Agreement (LSAA) and Water Resource Protection Plan (WRPP). Upgrading STX 10 located near the ponded area could alter the hydrology of the area and impact aquatic species including the Northern red-legged frog. As the seasonal wetlands near the cultivation site appear to be associated with both ground water and surface water, upgrading the culvert in that location is not expected to channel water away from the wetlands. Temporary impacts to water quality are possible.

Tree clearing is not currently proposed, nor is additional grading or expansion of facilities. The extent of noise from generator or fan use is currently not known.

There was a large amount of solid waste located near the perennial pond and the tributary to Larrabee Creek. The waste was located within the SMA of the tributary, all the way to the top of the bank. Abandoned RVs, pots, bags and other material associated with cannabis cultivation as well as household solid waste were observed.

Agency personnel from CDFW and USFWS can further analyze the potential impacts and provide technical assistance for any listed species if additional activities are proposed that may result in take of a listed species including the Northern red-legged frog and Northern Spotted Owl.⁹ If required, pre-construction reconnaissance surveys should follow the guidelines set forth in the Humboldt County Cannabis Program EIR, CDFW Survey and Monitoring Protocols and Guidelines¹⁰, USFWS Endangered Species Program¹¹ and CNPS Botanical Survey Guidelines¹²

Recommendations

Follow all recommendations outlined by existing agency policies for minimizing impacts to natural resources. Impacts from light, noise and chemicals can be addressed in the operations plan and best management practices can be employed to minimize impacts. Additional disturbance, clearing, and road cuts could modify existing groundwater, and surface water patterns and could impact water quality and/or hydrophytic species.

Avoid altering the hydrology or filling the perennial or seasonal wetlands delineated in this investigation. Follow all prescribed practices to minimize temporary or permanent impacts from LSAA work.

Clean up and properly dispose of solid waste near the perennial stream and the tributary to Little Larrabee Creek.

Please contact me with any comments or concerns regarding this memorandum or future work required for your project. I can be reached at tami@trans-terra.com or (707) 845-7483. I have included my project experience as an attachment to this memorandum as it is often requested by agency personnel reviewing work of this nature. (Appendix A)

⁹ Transmittal of Guidance: Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelet in Northwestern California: (Accessed via <https://www.fws.gov/arcata/es/birds/nso/documents/MAMUNSO%20Harassment%20Guidance%20NW%20CA%202006Jul31.pdf>)

¹⁰ California Department of Fish and Wildlife Survey and Monitoring Protocols and Guidelines (Accessed via <https://www.wildlife.ca.gov/conservation/survey-protocols>)

¹¹ USFWS Arcata Fish and Wildlife Office Endangered Species Program (Accessed via <https://www.fws.gov/arcata/es/default.htm>)

¹² California Native Plant Society (CNPS) Botanical Survey Guidelines (Accessed via https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf)

Site Photographs

Solid waste located near streambank and within SMA



Perennial wetland and Point 1



Drainage and seep area along road between delineation area (some serpentine outcrops)



Drainage patterns and Point 4.



Raptor nest and potential raptor nest.



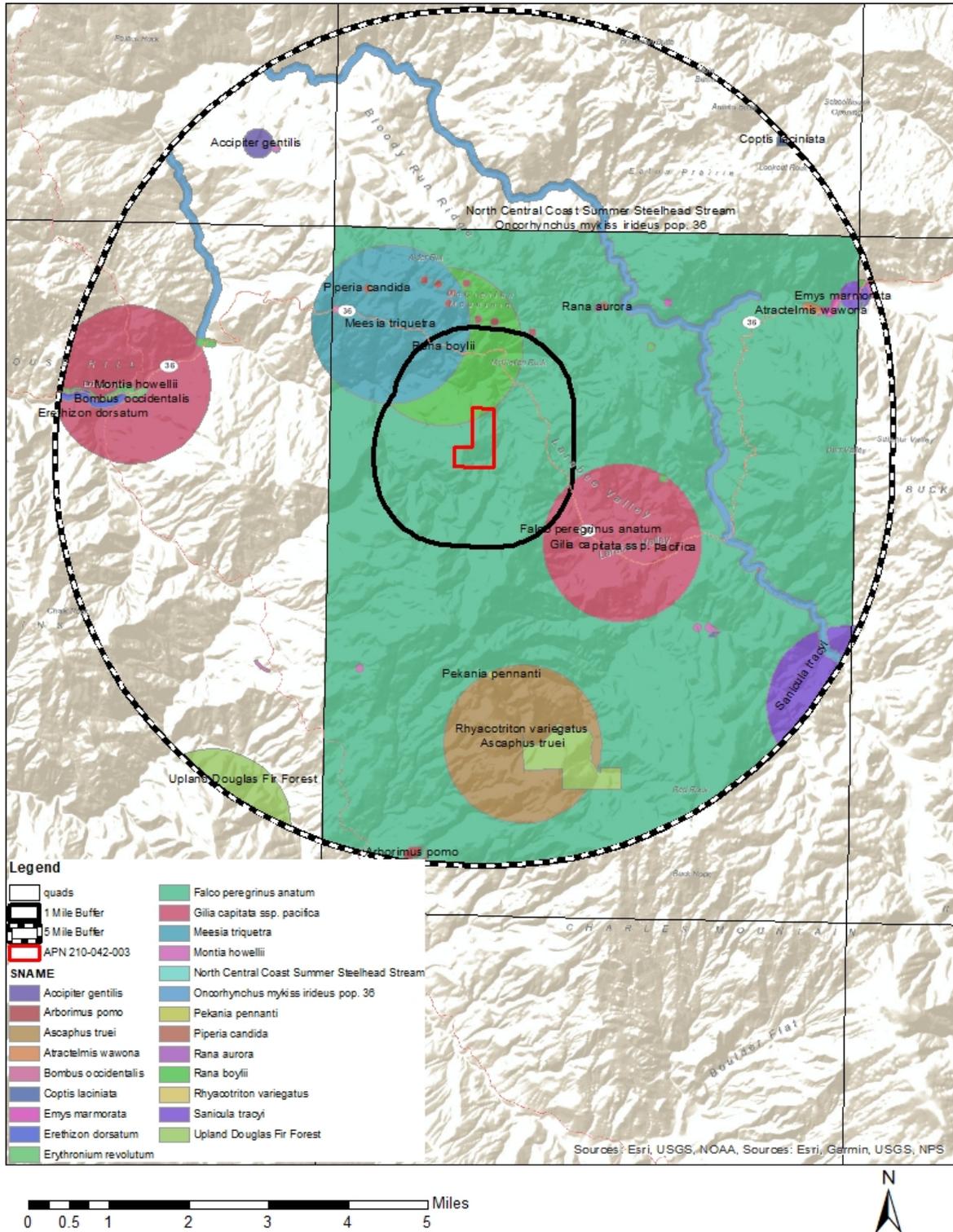


Figure 6. CNDDDB search results of observed rare plant and sensitive animal occurrences within five miles of property.

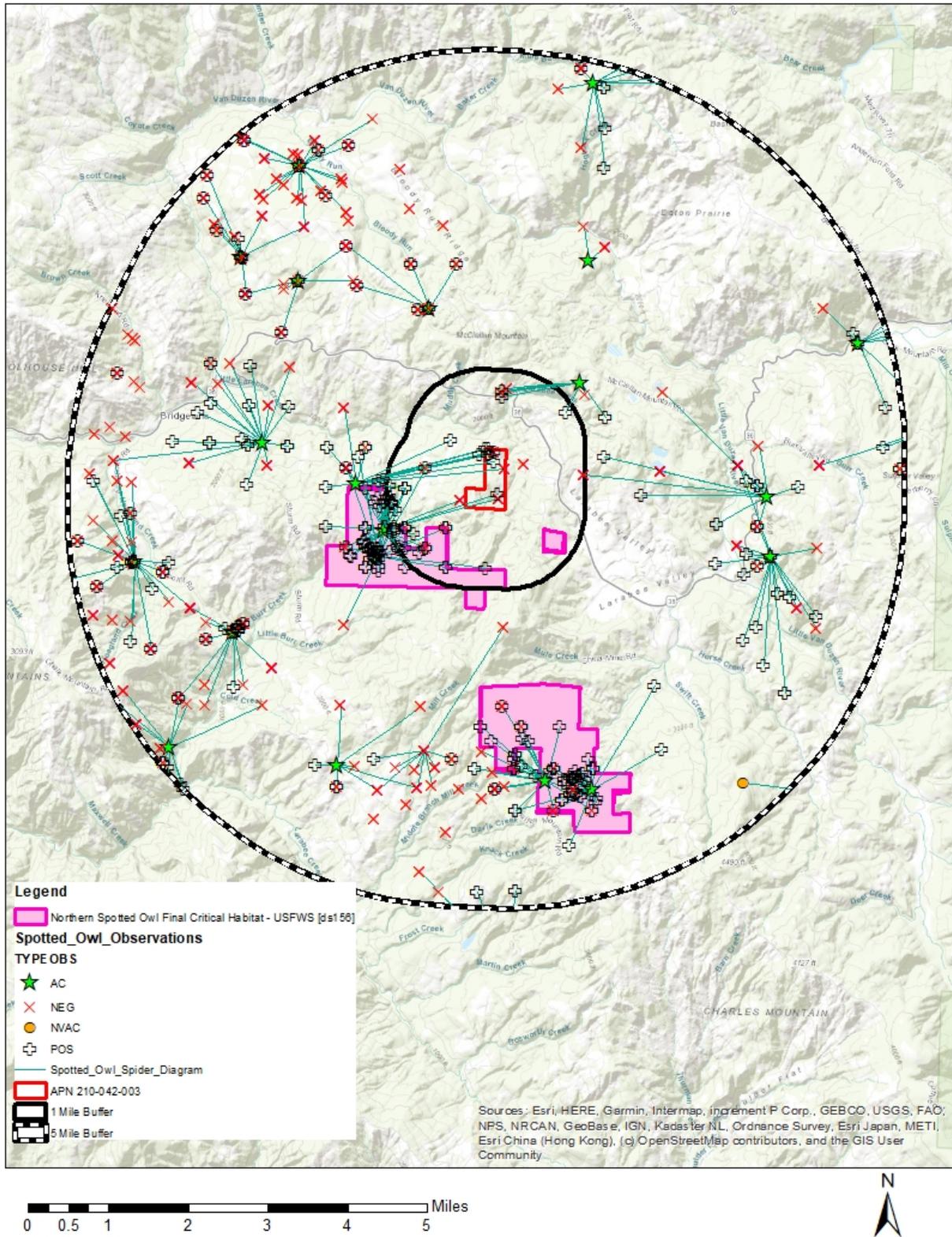


Figure 7 Northern Spotted Owls database entries within 5 miles of property

Table 2-CNDDDB nine-quad database results for the Bridgeville 7.5' quadrangle (plants listed in CNPS results). Federal (FESA) and California State (CESA) rankings listed as "T"=Threatened, "E"=Endangered, "D"= Delisted, and "CE"= Candidate Endangered.

Scientific Name	Common Name	FESA	CESA	General Habitat	Micro Habitat
Accipiter cooperii	Cooper's hawk	None	None	Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.
Accipiter gentilis	northern goshawk	None	None	Within, and in vicinity of, coniferous forest. Uses old nests, and maintains alternate sites.	Usually nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.
Accipiter striatus	sharp-shinned hawk	None	None	Ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. Prefers riparian areas.	North-facing slopes with plucking perches are critical requirements. Nests usually within 275 ft of water.
Aquila chrysaetos	golden eagle	None	None	Rolling foothills, mountain areas, sage-juniper flats, and desert.	Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
Arborimus pomo	Sonoma tree vole	None	None	North coast fog belt from Oregon border to Sonoma County. In Douglas-fir, redwood & montane hardwood-conifer forests.	Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.
Ascaphus truei	Pacific tailed frog	None	None	Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats.	Restricted to perennial montane streams. Tadpoles require water below 15 degrees C.
Atractelmis wawona	Wawona riffle beetle	None	None	Aquatic; found in riffles of rapid, small to medium clear mountain streams; 2000-5000 ft elev.	Strong preference for inhabiting submerged aquatic mosses
Bombus caliginosus	obscure bumble bee	None	None	Coastal areas from Santa Barbara county to north to Washington state.	Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.
Bombus occidentalis	western bumble bee	None	None	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	
Brachyramphus marmoratus	marbled murrelet	T	E	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz.	Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.
Corynorhinus townsendii	Townsend's big-eared bat	None	None	Throughout California in a wide variety of habitats. Most common in mesic sites.	Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.
Emys marmorata	western pond turtle	None	None	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.
Erethizon dorsatum	North American porcupine	None	None	Forested habitats in the Sierra Nevada, Cascade, and Coast ranges, with scattered observations from forested areas in the Transverse Ranges.	Wide variety of coniferous and mixed woodland habitat.
Falco peregrinus anatum	American peregrine falcon	D	D	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.

Scientific Name	Common Name	FESA	CESA	General Habitat	Micro Habitat
<i>Lasiurus blossevillii</i>	western red bat	None	None	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests.	Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.
<i>Martes caurina humboldtensis</i>	Humboldt marten	None	CE	Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County.	Associated with late-successional coniferous forests, prefer forests with low, overhead cover.
<i>Myotis volans</i>	long-legged myotis	None	None	Most common in woodland and forest habitats above 4000 ft. Trees are important day roosts; caves and mines are night roosts.	Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.
<i>Myotis yumanensis</i>	Yuma myotis	None	None	Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.
North Central Coast Summer Steelhead Stream	North Central Coast Summer Steelhead Stream	None	None		
<i>Noyo intersessa</i>	Ten Mile shoulderband	None	None	Found in coastal dunes, coastal scrub, and riparian redwood forest habitats.	
<i>Oncorhynchus clarkii clarkii</i>	coast cutthroat trout	None	None	Small coastal streams from the Eel River to the Oregon border.	Small, low gradient coastal streams and estuaries. Needs shaded streams with water temperatures <18C, and small gravel for spawning.
<i>Oncorhynchus mykiss irideus</i> pop. 36	summer-run steelhead trout	None	None	No. Calif coastal streams south to Middle Fork Eel River. Within range of Klamath Mtns province DPS & No. Calif DPS.	Cool, swift, shallow water & clean loose gravel for spawning, & suitably large pools in which to spend the summer.
<i>Oncorhynchus tshawytscha</i> pop. 17	chinook salmon - California coastal ESU	T	None	Federal listing refers to wild spawned, coastal, spring & fall runs between Redwood Cr, Humboldt Co & Russian River, Sonoma Co	
<i>Pandion haliaetus</i>	osprey	None	None	Ocean shore, bays, freshwater lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.
<i>Pekania pennanti</i>	fisher - West Coast DPS	None	T	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure.	Uses cavities, snags, logs and rocky areas for cover and denning. Needs large areas of mature, dense forest.
<i>Rana aurora</i>	northern red-legged frog	None	None	Humid forests, woodlands, grasslands, and streamsid es in northwestern California, usually near dense riparian cover.	Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season.
<i>Rana boylei</i>	foothill yellow-legged frog	None	CT	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.
<i>Rhyacotriton variegatus</i>	southern torrent salamander	None	None	Coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Old growth forest.	Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rocks within trickling water.
<i>Riparia riparia</i>	bank swallow	None	T	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.

Scientific Name	Common Name	FESA	CESA	General Habitat	Micro Habitat
Upland Douglas Fir Forest	Upland Douglas Fir Forest	None	None		

Table 3-CNPS nine-quad database results for the Bridgeville 7.5' quadrangle

Scientific Name	Common Name	CRPR	Habitat
<i>Astragalus agnicidus</i>	Humboldt County milk-vetch	1B.1	Broadleafed upland forest, North Coast coniferous forest
<i>Astragalus umbraticus</i>	Bald Mountain milk-vetch	2B.3	Cismontane woodland, Lower montane coniferous forest
<i>Carex arcta</i>	northern clustered sedge	2B.2	Bogs and fens, North Coast coniferous forest (mesic)
<i>Castilleja ambigua</i> var. <i>ambigua</i>	johnny-nip	4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools margins
<i>Coptis laciniata</i>	Oregon goldthread	4.2	Meadows and seeps, North Coast coniferous forest (streambanks)
<i>Cypripedium fasciculatum</i>	clustered lady's-slipper	4.2	Lower montane coniferous forest, North Coast coniferous forest
<i>Epilobium septentrionale</i>	Humboldt County fuchsia	4.3	Broadleafed upland forest, North Coast coniferous forest
<i>Erythronium oregonum</i>	giant fawn lily	2B.2	Cismontane woodland, Meadows and seeps
<i>Erythronium revolutum</i>	coast fawn lily	2B.2	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	1B.2	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland
<i>Lathyrus glandulosus</i>	sticky pea	4.3	Cismontane woodland
<i>Lilium kelloggii</i>	Kellogg's lily	4.3	Lower montane coniferous forest, North Coast coniferous forest
<i>Lilium rubescens</i>	redwood lily	4.2	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest
<i>Listera cordata</i>	heart-leaved twayblade	4.2	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest
<i>Lycopodium clavatum</i>	running-pine	4.1	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)
<i>Meesia triquetra</i>	three-ranked hump moss	4.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest (mesic)
<i>Mitellastra caulescens</i>	leafy-stemmed mitrewort	4.2	Broadleafed upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest
<i>Montia howellii</i>	Howell's montia	2B.2	Meadows and seeps, North Coast coniferous forest, Vernal pools
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	2B.2	Coastal scrub, North Coast coniferous forest
<i>Piperia candida</i>	white-flowered rein orchid	1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest
<i>Pityopus californicus</i>	California pinefoot	4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest
<i>Pleuropogon refractus</i>	nodding semaphore grass	4.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest
<i>Sanicula tracyi</i>	Tracy's sanicle	4.2	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland

Scientific Name	Common Name	CRPR	Habitat
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	1B.2	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest
<i>Usnea longissima</i>	Methuselah's beard lichen	4.2	Broadleafed upland forest, North Coast coniferous forest
<i>Wyethia longicaulis</i>	Humboldt County wyethia	4.3	Broadleafed upland forest, Coastal prairie, Lower montane coniferous forest

Table 3- Observed plant species on subject parcel upon site visit

Sci_Name_Jeps93	Sci_Name_Jeps12	Common_Name	WMVC 2014	Habitat
Non-vascular plants				
<i>Isothecium sp</i>				
<i>Campylopus sp</i>	<i>Campylopus sp</i>			
<i>Dicranum sp</i>	<i>Dicranum sp</i>			
<i>Dendroalsia sp</i>	<i>Dendroalsia sp</i>			
<i>Kindbergia sp</i>	<i>Kindbergia sp</i>			
<i>Cladonia sp</i>	<i>Cladonia sp</i>			
<i>Hypogymnia sp</i>	<i>Hypogymnia sp</i>			
<i>Funaria sp</i>	<i>Funaria sp</i>			
<i>Ramalina sp</i>	<i>Ramalina sp</i>			
<i>Peltigera sp</i>	<i>Peltigera sp</i>			
<i>Ochrolechia sp</i>	<i>Ochrolechia sp</i>			
<i>Sphaerophorous sp</i>	<i>Sphaerophorous sp</i>			
<i>Selaginella sp.</i>	<i>Selaginella sp.</i>			
<i>Umbilicaria phaea</i>	<i>Umbilicaria phaea</i>			
<i>Usnea sp</i>	<i>Usnea sp</i>			
<i>Leucolepis sp</i>	<i>Leucolepis sp</i>			
<i>Neckeria sp</i>				
<i>Syntrichia sp</i>				
Herb Layer				
<i>Achillea millefolium</i>	<i>Achillea millefolium</i>	Common yarrow	FACU	meadows, many habitats
<i>Achlys triphylla</i>	<i>Achlys triphylla</i>	Vanilla leaf or sweet after death	UPL	moist, shaded sites, conifer forest
<i>Adenocaulon bicolor</i>	<i>Adenocaulon bicolor</i>	Trail plant	UPL	shaded woodland, forest
<i>Anagallis arvensis</i>	<i>Anagallis arvensis</i>	Scarlet pimpernel	UPL	disturbed
<i>Antennaria sp.</i>	<i>Antennaria sp.</i>		UPL	dry conifer forest
<i>Athyrium filix-femina var. cyclosorum</i>	<i>Athyrium filix-femina var. cyclosorum</i>	Lady fern	FAC	woodland, streambanks, seeps
<i>Avena sp</i>	<i>Avena sp</i>			disturbed
<i>Balsamorhiza deltoidea</i>	<i>Balsamorhiza deltoidea</i>		NL	grassy slopes, open forests, shrubby areas

<i>Bellis perennis</i>	<i>Bellis perennis</i>	English daisy	UPL	damp, grassy areas
<i>Briza maxima</i>	<i>Briza maxima</i>	Rattlesnake grass	NL	disturbed, coastal dunes
<i>Bromus vulgaris</i>	<i>Bromus vulgaris</i>	Columbia brome	FACU	rocky woodland, ravines, meadows
<i>Bromus vulgaris</i>	<i>Bromus vulgaris</i>	Columbia brome	FACU	rocky woodland, ravines, meadows
Carex arcta	Carex arcta	Northern clustered sedge	OBL	wet places, sphagnum bogs
<i>Carex deweyana</i> subsp. <i>leptopoda</i>	<i>Carex leptopoda</i>	Slender-footed sedge	FAC	riparian zones, forest
<i>Carex dudleyi</i>	<i>Carex densa</i>	Dense sedge	OBL	meadows, springs, shores
<i>Carex obnupta</i>	<i>Carex obnupta</i>	Slough sedge	OBL	coastal
<i>Carex serratodens</i>	<i>Carex serratodens</i>	Saw-toothed sedge	FACW	streambanks, meadows
<i>Carex subbracteata</i>	<i>Carex subbracteata</i>	Small-bract sedge	FACW	grassland, open forest
<i>Carex subfusca</i>	<i>Carex subfusca</i>	Rusty slender sedge	FAC	meadows
<i>Carex unilateralis</i>	<i>Carex unilateralis</i>	One-sided sedge	FACW	seasonally wet places
<i>Castilleja affinis</i>	<i>Castilleja affinis</i>	Indian paintbrush	UPL	dry sea bluffs
<i>Castilleja rubicundula</i> subsp. <i>lithospermoides</i>	<i>Castilleja rubicundula</i> subsp. <i>lithospermoides</i>	Cream sacs	UPL	open grassland
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	Soap plant	NL	open grassland, chaparral, woodland
<i>Cicuta douglasii</i>	<i>Cicuta douglasii</i>	Western water-hemlock	OBL	wet places, gen aquatic
<i>Cirsium arvense</i>	<i>Cirsium arvense</i>	Canada thistle	FAC	disturbed, coastal
<i>Clarkia affinis</i>	<i>Clarkia affinis</i>	Chaparral clarkia	NL	openings in woodland, chaparral
<i>Clarkia purpurea</i> subsp. <i>quadrivulnera</i>	<i>Clarkia purpurea</i> subsp. <i>quadrivulnera</i>	Four-spot	NL	open, grassy or shrubby areas
<i>Cynoglossum grande</i>	<i>Cynoglossum grande</i>	Grand hound's tongue	UPL	slopes, chaparral, woodland
<i>Dactylis glomerata</i>	<i>Dactylis glomerata</i>	Orchard grass	FACU	disturbed
<i>Danthonia californica</i>	<i>Danthonia californica</i>	California oat grass	FAC	meadows, open woodland
<i>Daucus carota</i>	<i>Daucus carota</i>	Queen Anne's lace	FACU	disturbed
<i>Dichelostemma capitatum</i>	<i>Dichelostemma capitatum</i>	Blue dicks	FACU	open woodland, scrub, desert, grassland
<i>Elymus glaucus</i>	<i>Elymus glaucus</i>	Blue or Western wild-rye	FACU	forests, chaparral
<i>Epilobium angustifolium</i> subsp. <i>circumvagum</i>	<i>Chamerion angustifolium</i> subsp. <i>circumvagum</i>	Fireweed	UPL	disturbed, esp after fires
<i>Epilobium ciliatum</i>	<i>Epilobium ciliatum</i>	Northern willow herb	FACW	disturbed
<i>Equisetum hyemale</i> subsp. <i>affine</i>	<i>Equisetum hyemale</i> subsp. <i>affine</i>	Common scouring rush	FACW	streambanks

<i>Equisetum telmateia</i> subsp. <i>braunii</i>	<i>Equisetum telmateia</i> subsp. <i>braunii</i>	Giant horsetail	FACW	streambanks
<i>Erodium botrys</i>	<i>Erodium botrys</i>	Long-beaked storksbill	FACU	dry, open or disturbed sites
<i>Erythranthe guttatus</i>	<i>Erythranthe guttatus</i>	Seep monkeyflower	OBL	wet places,
<i>Eschscholzia californica</i>	<i>Eschscholzia californica</i>	California poppy	UPL	grassy, open areas
<i>Festuca arundinacea</i>	<i>Festuca arundinacea</i>	Tall fescue	UPL	disturbed places
<i>Festuca subulata</i>	<i>Festuca subulata</i>	Bearded fescue	FACU	open places, moist banks, forest
<i>Fissidens</i> sp.	<i>Fissidens</i> sp.			
<i>Fragaria vesca</i>	<i>Fragaria vesca</i>	Wood strawberry	FACU	partial shade in forest
<i>Galium aparine</i>	<i>Galium aparine</i>	Goose grass	FACU	grassy, shady places
<i>Gayophytum</i> sp.	<i>Gayophytum</i> sp.	Gayophytum		
<i>Geranium dissectum</i>	<i>Geranium dissectum</i>	Cut-leaved geranium	UPL	disturbed
<i>Geranium molle</i>	<i>Geranium molle</i>	Dovefoot geranium	UPL	disturbed
<i>Heracleum lanatum</i>	<i>Heracleum maximum</i>	Cow parsnip	FAC	moist places
<i>Holcus lanatus</i>	<i>Holcus lanatus</i>	Common velvet grass	FAC	meadows, moist sites
<i>Hypericum</i> sp.	<i>Hypericum</i> sp.	St. John's-wort		
<i>Iris purdyi</i>	<i>Iris purdyi</i>	Purdy's iris	UPL	grassy or rocky slopes, doug-fir or redwood forests
<i>Juncus bufonius</i>	<i>Juncus bufonius</i>	Toad rush	FACW	disturbed, drying pools
<i>Juncus effusus</i>	<i>Juncus effusus</i>	Soft or lamp rush	FACW	coastal, salt-marsh
<i>Juncus patens</i>	<i>Juncus patens</i>	Spreading rush	FACW	marshes, creeks, seeps
<i>Lemna minor</i>	<i>Lemna minor</i>	Common duckweed	OBL	freshwater
<i>Leucanthemum vulgare</i>	<i>Leucanthemum vulgare</i>	Ox-eye daisy	FACU	disturbed, meadows, seeps
<i>Linanthus</i> sp.	<i>Leptosiphon</i> sp.	Leptosiphon		
<i>Linum bienne</i>	<i>Linum bienne</i>	Western blue flax	UPL	coastal, disturbed, grassland, woodland
<i>Marah oreganus</i>	<i>Marah oregana</i>	Coast man-root	UPL	openings
<i>Mentha pulegium</i>	<i>Mentha pulegium</i>	Pennyroyal	OBL	fields
<i>Nemophila</i> sp.	<i>Nemophila</i> sp.		NL	slopes, meadows, forest
<i>Oenanthe sarmentosa</i>	<i>Oenanthe sarmentosa</i>	Pacific water-parsley	OBL	streams, marshes, ponds
<i>Osmorhiza chilensis</i>	<i>Osmorhiza berteroi</i>	Sweet-cicely	FACU	conifer forest, woodland, disturbed
<i>Oxalis oregana</i>	<i>Oxalis oregana</i>	Redwood sorrel	FACU	conifer forest

<i>Pentagramma triangularis subsp. triangularis</i>	<i>Pentagramma triangularis subsp. triangularis</i>	Goldback fern	NL	shaded rocky or wooded areas
<i>Plantago lanceolata</i>	<i>Plantago lanceolata</i>	English plantain	FACU	disturbed
<i>Pogonatum sp</i>	<i>Pogonatum sp</i>			
<i>Polystichum munitum</i>	<i>Polystichum munitum</i>	Western sword fern	FACU	streambanks, slopes, wooded hillsides
<i>Prunella vulgaris</i>	<i>Prunella vulgaris</i>	Common self-heal	FACU	disturbed
<i>Ranunculus sp.</i>	<i>Ranunculus sp.</i>	Buttercup		
<i>Rubus ursinus</i>	<i>Rubus ursinus</i>	California blackberry	FACU	canyons, coastal, streambanks, disturbed
<i>Rumex acetosella</i>	<i>Rumex acetosella</i>	Sheep sorrel	FACU	disturbed
<i>Sanicula bipinnatifida</i>	<i>Sanicula bipinnatifida</i>	Purple sanicle	UPL	open grassland, serpentine, pine/oak woodland
<i>Sanicula crassicaulis</i>	<i>Sanicula crassicaulis</i>	Pacific snakeroot	UPL	open slopes, ravines, woodland
<i>Satureja douglasii</i>	<i>Clinopodium douglasii</i>	Yerba buena	FACU	shady places, chaparral, woodland
<i>Scirpus microcarpus</i>	<i>Scirpus microcarpus</i>	Small fruited bulrush	OBL	marshes, meadows, streambanks, pond margins
<i>Scoliopus bigelovii</i>	<i>Scoliopus bigelovii</i>	Slink-pod	UPL	moist, shady redwood forest
<i>Senecio sp.</i>	<i>Senecio sp.</i>	Groundsel or ragwort		
<i>Sisyrinchium bellum</i>	<i>Sisyrinchium bellum</i>	Western blue-eyed-grass	FACW	open, gen moist, grassland, woodland
<i>Trientalis latifolia</i>	<i>Trientalis latifolia</i>	Western starflower	FACW	shaded places, esp woodland
<i>Trifolium dubium</i>	<i>Trifolium dubium</i>	Little hop clover	FACU	disturbed
<i>Trifolium willdenovii</i>	<i>Trifolium willdenovii</i>	Tomcat clover	FACU	disturbed
<i>Trillium sp.</i>	<i>Trillium sp.</i>		FACU	redwood or mixed-evergreen forest, coastal scrub, chaparral, slopes
<i>Vancouveria planipetala</i>	<i>Vancouveria planipetala</i>	Redwood ivy	UPL	coastal conifer forest
<i>Vicia gigantea</i>	<i>Vicia gigantea</i>	Giant vetch	UPL	coastal scrub, coastal forest, chaparral
<i>Viola ocellata</i>	<i>Viola ocellata</i>	Two-eyed violet or western heart's ease	UPL	vernally moist areas, rocky/grassy banks, thickets, forest, serpentine
<i>Whipplea modesta</i>	<i>Whipplea modesta</i>	Yerba de selva	UPL	coastal, streambanks, openings
<i>Woodwardia fimbriata.</i>	<i>Chain fern</i>		FACW	streams, springs, seeps
Shrub layer				
<i>Berberis aquifolium</i>	<i>Berberis aquifolium</i>	Tall Oregon-grape	UPL	slopes
<i>Ceanothus integerrimus</i>	<i>Ceanothus integerrimus</i>	Deer brush	UPL	mixed conifer forest, chaparral

<i>Corylus cornuta</i> var. <i>californica</i>	<i>Corylus cornuta</i> subsp. <i>californica</i>	California hazelnut	FACU	streambanks, slopes
<i>Lithocarpus densiflorus</i> var. <i>densiflorus</i>	<i>Notholithocarpus densiflorus</i> var. <i>densiflorus</i>	Tanoak	UPL	slopes
<i>Lonicera</i> sp.	<i>Lonicera</i> sp.		UPL	forest, thickets, slopes
<i>Oemleria cerasiformis</i>	<i>Oemleria cerasiformis</i>	Oso berry	FACU	canyons, chaparral, streambanks, open woodland
<i>Rhamnus californica</i>	<i>Frangula californica</i>	California coffee berry	UPL	canyons, coastal, slopes
<i>Ribes lobbii</i>	<i>Ribes lobbii</i>	Gummy gooseberry	FACU	slopes, montane, subalpine forest
<i>Ribes menziesii</i>	<i>Ribes menziesii</i>	Canyon gooseberry	UPL	chaparral
<i>Rosa californica</i>	<i>Rosa californica</i>	California rose	FAC	streambanks
<i>Rosa gymnocarpa</i>	<i>Rosa gymnocarpa</i>	Wood rose	FACU	
<i>Rubus discolor</i>	<i>Rubus armeniacus</i>	Himalayan blackberry	FACU	disturbed
<i>Rubus leucodermis</i>	<i>Rubus leucodermis</i>	Whitebark raspberry	FACU	gen open, rocky, moist areas
<i>Rubus spectabilis</i>	<i>Rubus spectabilis</i>	Salmonberry	FAC	woodland, streambanks
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	Common snowberry	FACU	streambanks, shady woodland, n slopes
<i>Vaccinium ovatum</i>	<i>Vaccinium ovatum</i>	California huckleberry	FACU	edges, conifer forest
Tree layer				
<i>Acer macrophyllum</i>	<i>Acer macrophyllum</i>	Bigleaf maple	FACU	streambanks, canyons
<i>Alnus rubra</i>	<i>Alnus rubra</i>	Red alder	FAC	wet places
<i>Arbutus menziesii</i>	<i>Arbutus menziesii</i>	Pacific madrone	UPL	canyons, slopes
<i>Picea sitchensis</i>	<i>Picea sitchensis</i>	Sitka spruce	FAC	coastal
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir	FACU	mixed-evergreen, mixed-conifer forests
<i>Quercus chrysolepis</i>	<i>Quercus chrysolepis</i>	Maul oak or canyon live oak	UPL	canyons, slopes, chaparral, mixed-evergreen forest, woodland
<i>Quercus kelloggii</i>	<i>Quercus kelloggii</i>	California black oak	UPL	slopes, valleys, woodland, conifer forest
<i>Salix sitchensis</i>	<i>Salix sitchensis</i>	Sitka willow	FACW	tidal swamps, marshes, springs, streambeds
<i>Sequoia sempervirens</i>	<i>Sequoia sempervirens</i>	Coast redwood	UPL	redwood forest
<i>Umbellularia californica</i>	<i>Umbellularia californica</i>	California-bay	FAC	canyons, valleys, chaparral

APPENDIX A-QUALIFICATIONS

Tamara Camper

455 I Street · Arcata, CA 95521 · (707) 845-7483

tami@trans-terra.com · www.linkedin.com/in/tamaracamper/ @itstransterra

In-depth knowledge of biology, ecology, environmental laws, natural resources policy, and land use planning with experience implementing policies related to listed species including CEQA/NEPA, CESA/ESA and other regulations. Refined relationship-building and strategic thinking skills and experience working collaboratively with multiple agencies and stakeholders on a wide range of complex projects

Education

December 2007-M.A. Biology, **HUMBOLDT STATE UNIVERSITY**

December 1999-B.S. Environmental Science, **WESTERN WASHINGTON UNIVERSITY**

Experience

May 2018-Present-Principle-Environmental scientist, TRANSTERRA CONSULTING LLC

Principal Owner at TransTerra Consulting. Providing Environmental Consulting Services including Biological Assessments, Rare Species Surveys, Vegetation and Habitat Typing/Mapping, Stream and Wetland Surveys, Environmental Impact Assessments, Permitting, Land Use/Planning, and CEQA/NEPA Documents

November 2011-May 2018-Associate Environmental Planner, CALTRANS

Promoted through increasingly responsible positions based on performance and experience in Humboldt, Del Norte and Mendocino. Served as Coastal Liaison, Restoration Specialist and CEQA/NEPA Coordinator. Developed programmatic interagency guidelines, workload coordination, permit process training, budgets, contracts, and internal process efficiency. Wrote and reviewed environmental documents including EAs and IS-MNDs, BAs, Section 7 and 10 consultations, oversaw and conducted biological/wetland surveys, mitigation and monitoring work and reporting.

October 2008-November 2011-Biologist/Environmental Planner, STREAMLINE PLANNING CONSULTANTS

Provided natural resource and policy expertise for a wide-range of public and private projects affecting natural resources. Conducted stream/riparian assessments, botanical surveys, wetland delineation, impact assessments and mitigation/monitoring reports in accordance with CEQA, FPR, ESA, NEPA, the Water Quality Act, Coastal Act and other relevant laws for private landowners. Assisted with consultation, coordination and permit applications for listed species. Developed alternatives and mitigation design and negotiated sensitive and complex issues with multiple stakeholders.

March 2003-November 2008-Owner-Biologist, CAMPER CONSULTING

Provided botanical/wildlife surveys, wetland delineation, impact assessments and mitigation reports in accordance with CEQA and other relevant laws for private land owners. . Extensive experience working on commercial and private timberlands for THP/NTMP work.

January 2001-March 2003-Wildlife Technician, **CAMPBELL TIMBERLAND MANAGEMENT**

Developed a botanical program including the coordination and conduction of botanical surveys, impact assessments, mitigation reports, monitoring studies. Maintained public relations and relationships with state and federal agency personnel. Developed and maintained GIS and other databases for survey findings. Assisted with NSO, anadromous fish and amphibian monitoring, surveying and habitat analysis.

March 2000-October 2000-Fisheries Technician, **MENDOCINO REDWOOD COMPANY**

Conducted anadromous fish and amphibian monitoring, surveying and habitat analysis. Utilized dive counts, electrofishing, sediment sampling, fish trapping, insect sampling and water quality monitoring to assess impacts to salmonids and other aquatic species in conjunction with the Department of Fish and Wildlife.

May 1998-January 1999-Botanical Propagation Specialist, **SKAGIT ROSE FARMS**

Identified, propagated and maintained an inventory of native plants of the Northwest Coastal Region. Researched and developed interpretive gardens of native plant ecosystems

Skills

- CEQA/NEPA Document Writing and Review
- Regulation and Policy Review and Guidance including Permitting and Mitigation
- Scientific Writing and Editing Research
- Design and Statistical Analysis
- Vegetation and Wetland Surveys
- ArcMap, Microsoft Office and Statistical Software
- Teamwork, Negotiations and Strategic Thinking
- Project Budget, Scope and Scheduling
- Contract Oversight and Management
- Navigation of Rough Terrain Wildlife,

Activities

Membership in Rotary Arcata Sunrise, California Native Plant Society, and The Wildlife Society. Various workshops and certifications including wetland delineation, vegetation mapping, monocot identification, hydric soils, CRAM training, negotiation techniques and conflict resolution, Lean Six Sigma

Margaux received her Bachelor's Degree in Molecular Biology from the California State University of Monterey Bay in 2018. She grew up in Humboldt and is very familiar with the unique geological and political landscape. Her experience encompasses restoration, environmental education, and lab techniques. She strives to utilize her molecular background to share an in depth understanding of the environmental field to promote policy and preservation.



Margaux Karp
Staff Biologist



Adrian Macedo
Staff Biologist

Adrian obtained a Bachelors of Science degree in Wildlife and a minor in Botany from Humboldt State University in 2017. He is currently finishing up a Masters of Science in Biological Sciences at Humboldt State. He has worked with the California Department of Fish and Wildlife for the past 5 years, specializing in fish, amphibian, and reptile research and restoration in the high mountain lakes of the Trinity Alps and Marble Mountain wilderness. His extensive resume includes his current phylogenetic work on Coastal Trailled Frog (*Ascaphus truei*), Mountain Lion (*Puma concolor*) tracking, bat mist-netting, electrofishing/dive counts, research specimen preparation, PIT tagging of amphibians, invasive species removal, native plant cultivation and landscaping, and much more. In addition, he has worked on six publications in various journals and three conference presentations.

Megan received her Bachelor's degree in Botany from Humboldt State University in 2019. She will be returning to HSU to pursue her Master's degree in Biology with a thesis focusing on fossil plants from the lower Devonian of Québec, Canada. Her previous work experience includes curation and care of an extensive living collection of plants from around the world, state-of-the-art biological lab facility and research equipment maintenance, and education. Currently, she is working on a diversity survey of ancient plants and will be presenting an oral paper at the Botanical Society of America conference this summer.



Megan Nibbelink
Staff Botanist

APPENDIX B-Wetland Field Forms

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

Project/Site: Albert - CA City/County: Bridgeville/HUM Sampling Date: 05/30/2019
 Applicant/Owner: Albert - Greenroads State: CA Sampling Point: 1
 Investigator(s): T. Camper, M. Kang Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0.5
 Subregion (LRR): NW Forest Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>Ø</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
= Total Cover				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals:</td> <td>(A) _____ (B) _____</td> </tr> </table> Prevalence Index = B/A = _____	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) _____
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) _____																	
Sapling/Shrub Stratum (Plot size: <u>10' dia</u>)																		
1. <u>Demeteria sarmentosa</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>OBL</u>															
2. <u>Athyrium filix-femina</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FAC</u>															
3. <u>Polygonum minimum</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>															
4. <u>Rosa californica</u>	<u>2.5</u>		<u>FAC</u>															
5. <u>Salix stichensis</u>	<u>2.5</u>		<u>FACW</u>															
<u>50</u> = Total Cover ²⁵ / ₁₀																		
Herb Stratum (Plot size: <u>10' dia</u>)																		
1. <u>Sparganium ciliatum</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>															
2. <u>Carex deweyana lept</u>	<u>5</u>		<u>FAC</u>															
3. <u>Demeteria sarmentosa</u>	<u>5</u>		<u>OBL</u>															
4. <u>Rubus ursinus</u>	<u>5</u>		<u>FACU</u>															
<u>30</u> = Total Cover ¹⁵ / ₁₀																		
Woody Vine Stratum (Plot size: _____)																		
1. <u>Rubus</u>																		
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>Ø</u>																		
Remarks: <u>Lemna in pond</u>																		

Sampling Point: 21

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	100					SC	some rocks
4-16	10YR 2/1	90		5	D	M	SC	woody debris
	10YR 4/6	5	10YR 4/6	5	C	R		

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: SC
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Thick layer of organic bark etc. but not quite histic epipedon/histosol.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

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: Adjacent to road - created by excavation & impeded flow with road.

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

Project/Site: Albert - CRA City/County: Bridgeville/HUM Sampling Date: 05/30/2019
 Applicant/Owner: Albert - Greenroads State: CA Sampling Point: 2
 Investigator(s): T. Camper, M. Karp Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): furrow Local relief (concave, convex, none): ∅ Slope (%): ∅
 Subregion (LRR): NW Forest Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>15' dia</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A/B)
1. <u>Bendosiga menziesii</u>	<u>75</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. _____	_____	_____	_____	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 = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>10' dia</u>)				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.
1. <u>Ribes menziesii</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>NOI</u>	
2. <u>Rosa californica</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. <u>Polygonum munifolium</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>10' dia</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Elymus glaucus</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. <u>Dactylis glomerata</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. <u>Sanicula crassicaulis</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>NOI</u>	
4. <u>Amarhiza chilensis</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
5. <u>Frasaria vesca</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
6. <u>Aster macrophyllum</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
7. <u>Bellis perennis</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>NOI</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: <u>10' dia</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Rubus ursinus</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum _____				
Remarks:				

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 2/2						see	Arable, good drainage

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

- Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**
- | | | | |
|--|---|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | Indicators for Problematic Hydric Soils³: | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Remarks: _____

Hydric Soil Present? Yes _____ No

HYDROLOGY

- Wetland Hydrology Indicators:**
- Primary Indicators (minimum of one required; check all that apply)**
- | | | |
|--|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

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: Bench roadside above pond - old fill

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

Project/Site: Albert - CA City/County: Bridgman/HUMS Sampling Date: 5/30/2019
 Applicant/Owner: Albert - Greenroads State: CA Sampling Point: 3
 Investigator(s): T. Camper, M. Karp Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10%
 Subregion (LRR): NW Forest Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>Class 3 below road near forest</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				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 = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>10' dia</u>)				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.
1. <u>Mimulus guttatus</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
2. <u>Mentha pulegium</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
3. <u>Vicia gigantea</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>NOL</u>	
4. <u>Daucus carota</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
5. <u>Larix laricina</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
6. <u>Larix subtrata</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
7. <u>Rosa gymnocarpa</u>	<u>5</u>		<u>FACU</u>	
8. <u>Juncus effusus</u>	<u>5</u>		<u>FACW</u>	
9. <u>Festuca arundinacea</u>	<u>5</u>		<u>NOL</u>	
10. <u>Geranium molle</u>	<u>5</u>		<u>NOL</u>	
11. _____				
<u>100</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u> = Total Cover				
Remarks: _____				

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/2	98	10YR 4/6	2	C	PL	LSC	tiny redox

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

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

Indicators for Problematic Hydric Soils³:

- 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)

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators 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 *assumed*

Remarks: *Grassland (mollisol?)*

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- 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)

- 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): 0
 Water Table Present? Yes No Depth (inches): 1
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 1

Wetland Hydrology Present? Yes No

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

Remarks: *stream ~ 1' x 2" flowing class II/III*

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

Project/Site: Albert-CA City/County: Bridgville/HUM Sampling Date: 5/3/2019
 Applicant/Owner: Albert-Greenroads State: CA Sampling Point: 4
 Investigator(s): T. Camper M. Karp Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Ø Slope (%): 10-15+
 Subregion (LRR): NO FOREST Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No _____	Hydric Soil Present? Yes _____ No _____	Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Wet seep near road</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				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 = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>10'dian</u>)				
1. <u>Carex diusa</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
2. <u>Carex serratodens</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
3. <u>Carex subaristata</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
4. <u>Carex unilata</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
5. <u>Holcus lanatus</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
6. <u>Epilobium ciliatum</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
7. <u>Mentha pulegium</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
8. <u>Juncus patens</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover <u>45</u>				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u>				
Remarks: _____				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____				

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

Project/Site: Albert - CoA City/County: Bridgely/HV Sampling Date: 5/31/2019
 Applicant/Owner: Albert - Greenroads State: CA Sampling Point: 5
 Investigator(s): T. Campy, M. Karp Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): B Slope (%): 10-20
 Subregion (LRR): NW forest Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>21</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>50</u> (A/B)
4. _____	_____	_____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species <u>0</u>	x 1 = _____
3. _____	_____	_____	_____	FACW species <u>45</u>	x 2 = <u>90</u>
4. _____	_____	_____	_____	FAC species <u>10</u>	x 3 = <u>30</u>
5. _____	_____	_____	_____	FACU species <u>15</u>	x 4 = <u>60</u>
= Total Cover				UPL species <u>0</u>	x 5 = _____
Herb Stratum (Plot size: <u>10' dia</u>)				Column Totals:	<u>70</u> (A) <u>180</u> (B)
1. <u>Juncus patens</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Prevalence Index = B/A = <u>2.57</u>	
2. <u>Festuca arundinacea</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>NOL</u>	Hydrophytic Vegetation Indicators:	
3. <u>Holcus lanatus</u>	<u>15</u>		<u>FACW</u>	___ 1 - Rapid Test for Hydrophytic Vegetation	
4. <u>Vicia sisantha</u>	<u>10</u>		<u>NOL</u>	___ 2 - Dominance Test is >50%	
5. <u>Galium aparine</u>	<u>10</u>		<u>FACW</u>	<input checked="" type="checkbox"/> 3 - Prevalence Index is $\geq 3.0^1$	
6. <u>Cirsium arvense</u>	<u>5</u>		<u>FAC</u>	___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
7. <u>Carex subfusca</u>	<u>5</u>		<u>FAC</u>	___ 5 - Wetland Non-Vascular Plants ¹	
8. <u>Rumex acetosella</u>	<u>5</u>		<u>FACU</u>	___ Problematic Hydrophytic Vegetation ¹ (Explain)	
9. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
10. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
11. _____	_____	_____	_____	= Total Cover	
Woody Vine Stratum (Plot size: _____)				Remarks: <u>Meets Prevalence test</u>	
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
= Total Cover					
% Bare Ground in Herb Stratum _____					

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/3	90					slc	
	10-12M	→	S	D	M		↓	
	10Y 6/6	→	S	C	PL			

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators 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: *No hydrology. Does not meet criteria*

HYDROLOGY

Wetland Hydrology Indicators:

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

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> 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: *slope near cultivation area, lots of facultative vegetation but, no hydrology. Drainage by road nearby. undulating surface/slope*