

APPENDIX B:

Biological Resources

APPENDIX B.1:
Biological Resources
Assessment

**161-070-034 BIOLOGICAL RESOURCES ASSESSMENT
CHEVRON STATION-REDWOOD MARKET
9120 AND 9200 OLD REDWOOD HIGHWAY
(APNs: 161-070-034 and 161-070-035)
WINDSOR, CA**

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1.0 INTRODUCTION

1.1 SITE LOCATION

The Project Site is located on two parcels located at 9120 Old Redwood Highway (APN: 161-070-034; 0.63 acre) and 9200 Old Redwood Highway (APN: 161-070-035; 0.78 acre) (collectively the Project Site) in the Town of Windsor, Sonoma County, CA (Figure 1). There is a full-service gas station covering most of the parcel at 9120 Old Redwood Highway, and most of the parcel at 9200 Old Redwood Highway is undeveloped. Most of the surrounding lands have been developed for various uses including another full-service gas station to the south, food service and empty lot to the west, retail development to the northwest, and Redwood Highway (Highway 101) to the northwest and east (Figure 2).

1.2 PROJECT DESCRIPTION

The Project will consist of the demolition of the existing convenience store and expansion of the existing gasoline pumps, construction of a new market/restaurant, construction of a new retail building, and demolition of the existing car wash facility and construction of a new car wash facility (Figure 3).

The existing convenience store at the Project Site will be demolished and a new approximately 6,270 sq. ft. market/restaurant and associated parking and seating will be constructed on the adjacent undeveloped area to the north of the existing station and market. Two additional pumps will be added to the east of the existing pumps on part of the area where the convenience store is currently located. The existing canopy covering the pumps will be extended over the new pumps.

An approximately 3,860 sq. ft. retail building and associated parking will be constructed in the undeveloped land to the west of the existing facility.

The existing car wash building will be demolished and a new approximately 2,314 sq. ft. car wash facility constructed to the east of the existing car wash building on property owned by the Town of Windsor (Town), which is being exchanged with the Town for property that the Applicant owns to the west of the existing gas station facility.



Figure 1. Site location map.



Google Earth Pro

feet 900
meters 300



Figure 2. Site vicinity map.

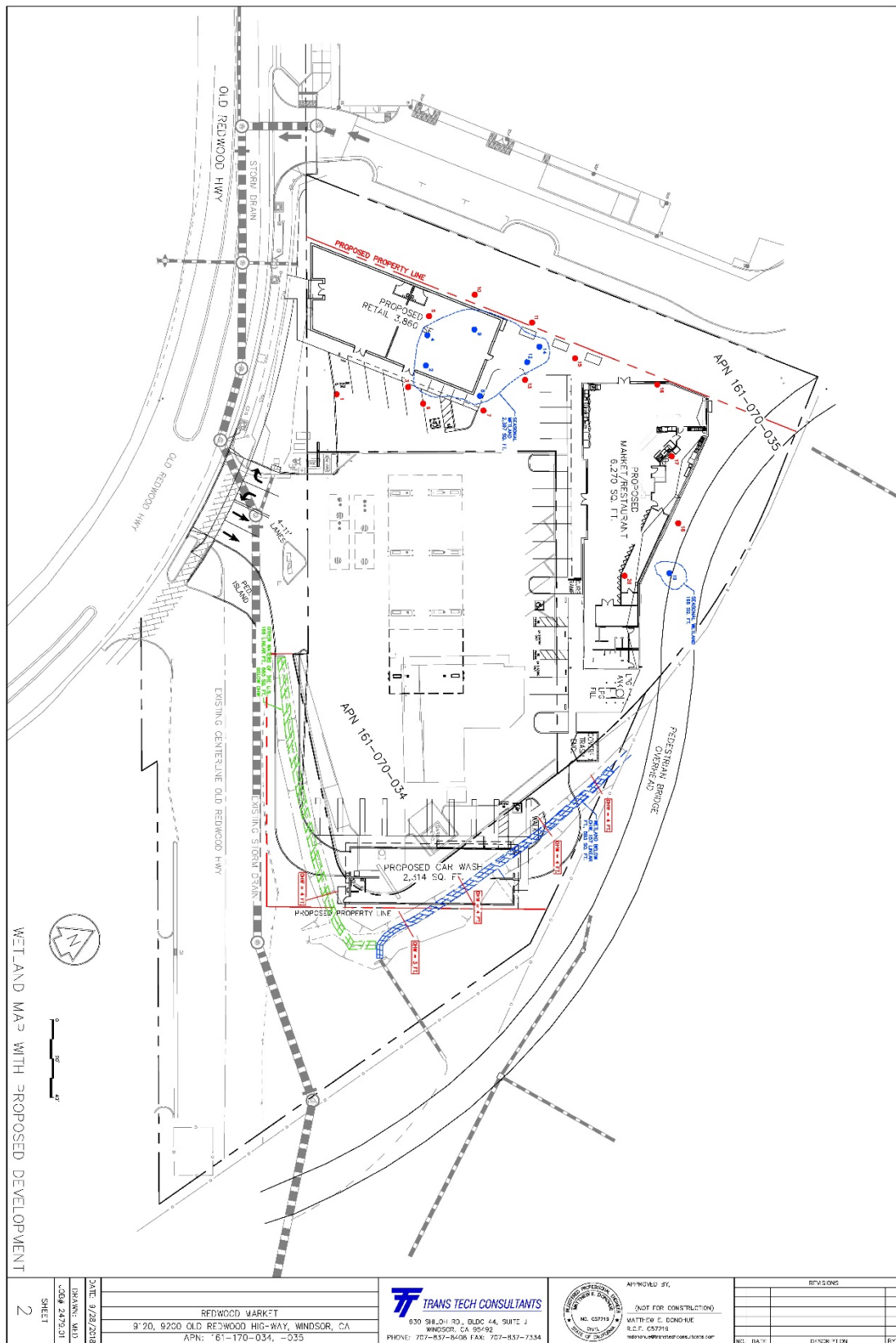


Figure 3. Project development plan.

1.3 PHYSICAL AND HYDROLOGIC CONDITIONS

1.3.1 Topography and Drainage

The undeveloped parts of the subject parcels are relatively flat with a less than one percent grade from north to south. An intermittent drainage ditch occurs along the eastern boundary of the parcel at 9120 Old Redwood Highway.

1.3.2 Soils

The soil on most of the undeveloped areas of the two parcels is mapped as Cole silty clay loam, 0 to 1 percent slopes. The soil type along the eastern part of the parcel at 9120 Old Redwood Highway along the southern part of the site is mapped as Riverwash.

Cole series soils consist of somewhat poorly drained silt loams that have a dominantly clay subsoil (Miller 1972). These soils formed in alluvium from mixed sedimentary and basic rock and are found on alluvial fans. Riverwash soil consist of very recent depositions of gravel, sand, and silt alluvium along major streams and their tributaries (Miller 1972).

2.0 BIOLOGICAL RESOURCES

2.1 Vegetation

Vegetation surveys were conducted on March 13, April 3, April 27 and May 22 in 2015 by Mr. Charlie Patterson. The 2018 vegetation surveys were conducted by Dr. Ted P. Winfield on April 4, April 17 and May 7, 2018. The surveys were conducted following the U.S. Fish and Wildlife Service protocols¹ and the California Department of Fish and Wildlife protocols². The entire Project Site was walked, and plant species observed and identifiable during each survey noted in a field notebook. The seasonal wetlands were thoroughly searched for possible presence of the federally and State-listed endangered Burke's goldfields (*Lasthenia burkei*), Sonoma sunshine (*Blennosperma bakeri*) and Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*).

Reference sites were visited multiple times during the survey periods. Other botanists were also consulted about flowering of the target endangered plants at other sites on the Santa Rosa Plain to confirm that the target endangered plant species were also flowering at other sites throughout the Santa Rosa Plain.

Prior to conducting the field surveys, a list of special-status plant species reported to occur in the region was generated from the California Natural Diversity Database (CNDDB), and California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants for Santa Rosa, Sebastopol, Healdsburg, Two Rocks, and Cotati USGS Quadrangle maps, which defines the low-land areas of the Santa Rosa Plain.

The Project Site supports two primary vegetation types, non-native annual grassland and seasonal wetlands. Figure 4 shows the location of the seasonal wetland at the Project Site. A summary of the more common species observed in each of these vegetation types is presented below. Appendix A is a list of the plants observed during the surveys, and presents the dates that surveys were conducted at the reference sites.

¹ Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Plants on the Santa Rosa Plain. Modified from the September 23, 1996 Service Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants.

² California Department of Fish and Wildlife (CDFW). Protocols for surveying and evaluating impacts to special status native plant populations and sensitive natural communities. March 20, 2018.

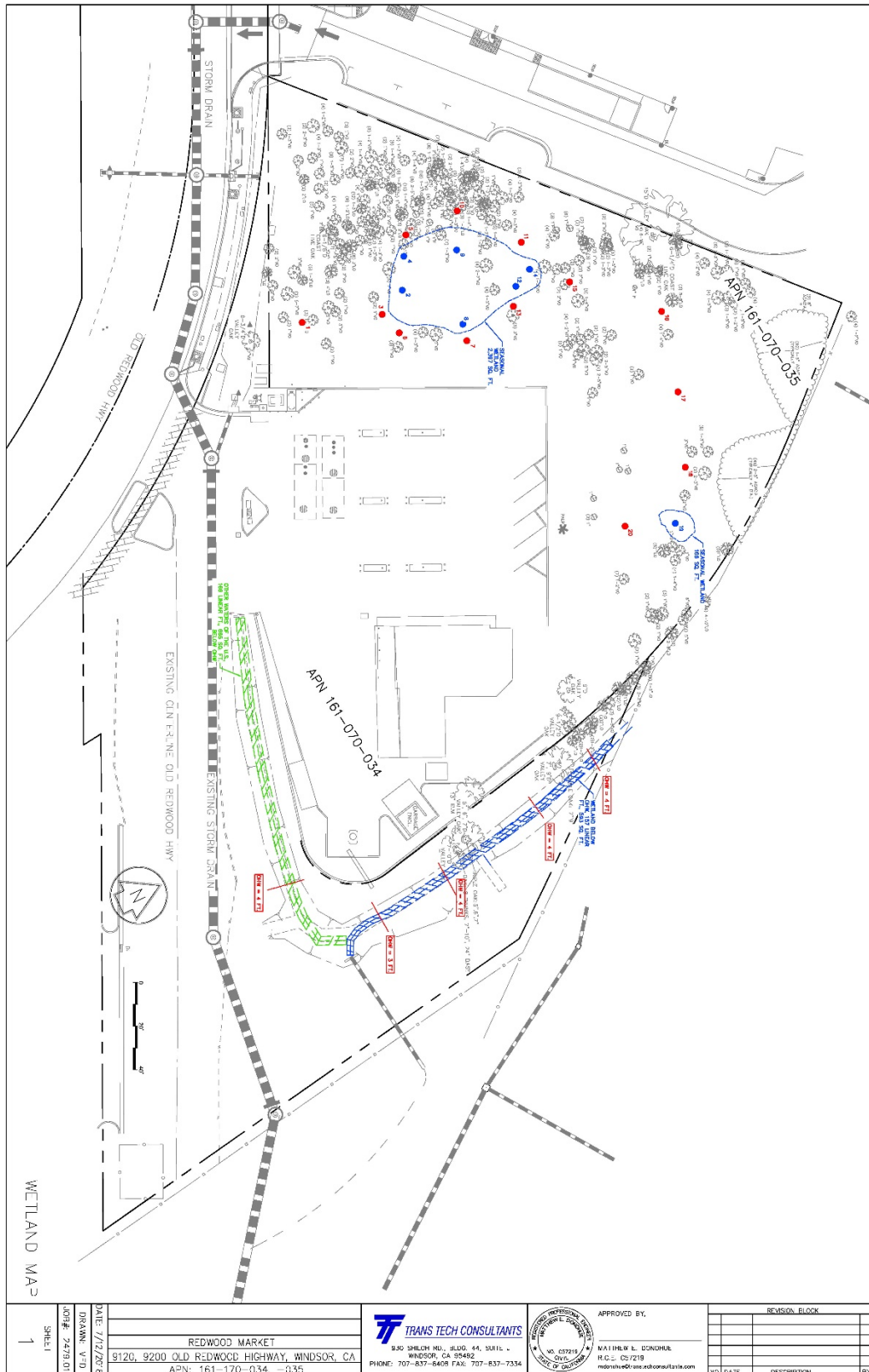


Figure 4. Location of seasonal wetlands at the Project Site.

2.1.1 Upland Habitat

The upland areas of the Project Site consisted primarily of non-native annual grasses and forbs. The common species observed in the survey included slender wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), ryegrass (*Festuca perennis*), brome fescue (*Festuca bromoides*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), annual bluegrass (*Poa annua*), rattlesnake grass (*Briza maxima*), hairy catsear (*Hypochaeris radicata*), subterranean clover (*Trifolium subterraneum*), spring vetch (*Vicia sativa*), field mustard (*Brassica rapa*), English plantain (*Plantago lanceolata*), red stemmed filaree (*Erodium cicutarium*), cut-leaf geranium (*Geranium dissectum*), and Himalayan blackberry (*Rubus armeniacus*).

Several native species also occurred throughout the upland areas, including California oatgrass (*Danthonia californica*), coyote brush (*Baccharis pilularis*), blue-eyed grass (*Sisyrinchium bellum*), and several species of oak trees (*Quercus agrifolia*, *Q. lobata*, *Q. Kelloggii* and *Q. wislizeni*).

2.1.2 Seasonal Wetlands

The seasonal wetlands were dominated primarily by non-native species, such as ryegrass, Mediterranean barley, little quaking grass (*Briza minor*), prickly ox-tongue (*Helminthotheca echioides*) and English plantain. The vegetation in the small isolated wetland on the east side of the survey area included several native species, including semaphore grass (*Pleuropogon californicus*), California oatgrass, slender rush (*Juncus tenuis*), and tall flatsedge (*Cyperus eragrostis*).

The unnamed drainage ditch along the frontage with Redwood Highway supports a sparse cover of plants usually found in wetlands, including pennyroyal (*Mentha pulegium*), tall flatsedge, dense sedge (*Carex densa*) along with facultative species, such as curly dock (*Rumex crispus*), and ryegrass. The other section of the ditch along the southwest side of the parcel where the gas station is located was dominated by a mixture of primarily upland and facultative species.

2.2 WILDLIFE

Wildlife species adapted to human presence and disturbance, such as broad-footed mole (*Scapanus latimanus*), shrews (*Sorex* sp.), and gophers (*Thomomys bottae*), are likely to frequent undeveloped areas of the Project Site. Other mammals, such as striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*) and opossum (*Didelphis virginiana*) may, on occasion, may also visit the Project Site.

A number of migratory song birds adapted to human disturbance may also occur at the project site, including the house finch (*Carpodacus mexicanus*), Brewer's blackbird (*Euphagus cyanocephalus*), and various sparrows.

2.3 SPECIAL-STATUS SPECIES

2.3.1 Special-status Plants

Special-status plant species are defined in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*³ to include all plant species that meet one or more of the following criteria:

- Listed or proposed for listing as threatened or endangered under FESA or candidates for possible future listing as threatened or endangered under FESA (50 CFR §17.12).
- Listed or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*).
- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq.*). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).
- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
 - ♦ Species considered by the California Native Plant Society (CNPS) to be “rare, threatened or endangered in California” (Lists 1A, 1B and 2);
 - ♦ Species that may warrant consideration on the basis of local significance or recent biological information;
 - ♦ Some species included on the California Natural Diversity Database’s (CNDDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008).
- Considered a **locally significant species**, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

The California Natural Diversity Database (CNDDDB) and California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants database search resulted in a total of forty-nine special-status plant species as occurring in the region covered by the five USGS Quadrangle maps. Appendix B presents the list of special-status plant species reported to occur in the region and their regulatory status. Appendix C lists the habitat

³ California Department of Fish and Wildlife (CDFW). *Protocols for surveying and evaluating impacts to special status native plant populations and sensitive natural communities*. March 20, 2018.

preference and potential for the special-status species reported to occur in the region to occur at the Site.

The known occurrence of special-status plants within two miles of the Project Site is illustrated in Figure 5.⁴ Only one species of special-status plant species (narrow-anthered brodiaea, *Brodiaea leptandra*) is reported in the CNDDDB to occur in the immediate vicinity of the Project Site. Other species of special-status plants reported to occur within two miles of the Project Site are shown on Figure 4 and listed along with their regulatory status in Table 1.

None of the other special-status species listed in Appendix C and reported to occur in upland grassland habitat or in marshes, swamps or other wetland habitat types in the region were observed at the Project Site during the 2015 and 2018 surveys.

Table 1. List of special-status plants and their regulatory status occurring within two miles of the Project Site based on CNDDDB records.

| Scientific Name | Common Name | Federal Status* | State Status* | CNPS Rank* |
|--|------------------------------------|------------------------|----------------------|-------------------|
| <i>Blennosperma bakeri</i> | Sonoma sunshine | E | E | 1B.1 |
| <i>Brodiaea leptandra</i> | narrow-anthered brodiaea | | | 1B.2 |
| <i>Downingia pusilla</i> | dwarf downingia | | | 2B.2 |
| <i>Hemizonia congesta</i> ssp. <i>congesta</i> | congested-headed hayfield tarplant | | | 1B.2 |
| <i>Lasthenia burkei</i> | Burke's goldfields | E | E | 1B.1 |
| <i>Microseris paludosa</i> | marsh microseris | | | 1B.2 |
| <i>Navarretia leucocephala</i> ssp. <i>bakeri</i> | Baker's navarretia | | | 1B.1 |
| <i>Navarretia leucocephala</i> ssp. <i>plieantha</i> | many-flowered navarretia | E | E | 1B.2 |

• Federal Status: E = Endangered; State Status: E = Endangered, R = Rare, T = Threatened CNPS Designations: List 1A = Species presumed extinct in California. List 1B = Species rare and endangered in California and elsewhere. List 2 = Species rare and endangered in California but more common elsewhere. List 3 = Species for which additional data are needed.

Three FESA- and CESA-listed endangered plants that were reported to occur within two miles of the Project Site:

- Burke's goldfields (*Lasthenia burkei*) – federally and state endangered; occurs in vernal pools, meadows and seeps;
- Sonoma sunshine (*Blennosperma bakeri*) – federally and state endangered; occurs in vernal pools and swales in valley and foothill grassland; and
- Many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*) -- federally and state endangered; occurs in vernal pools, meadows and seeps.

⁴ CNDDDB, October 2018.

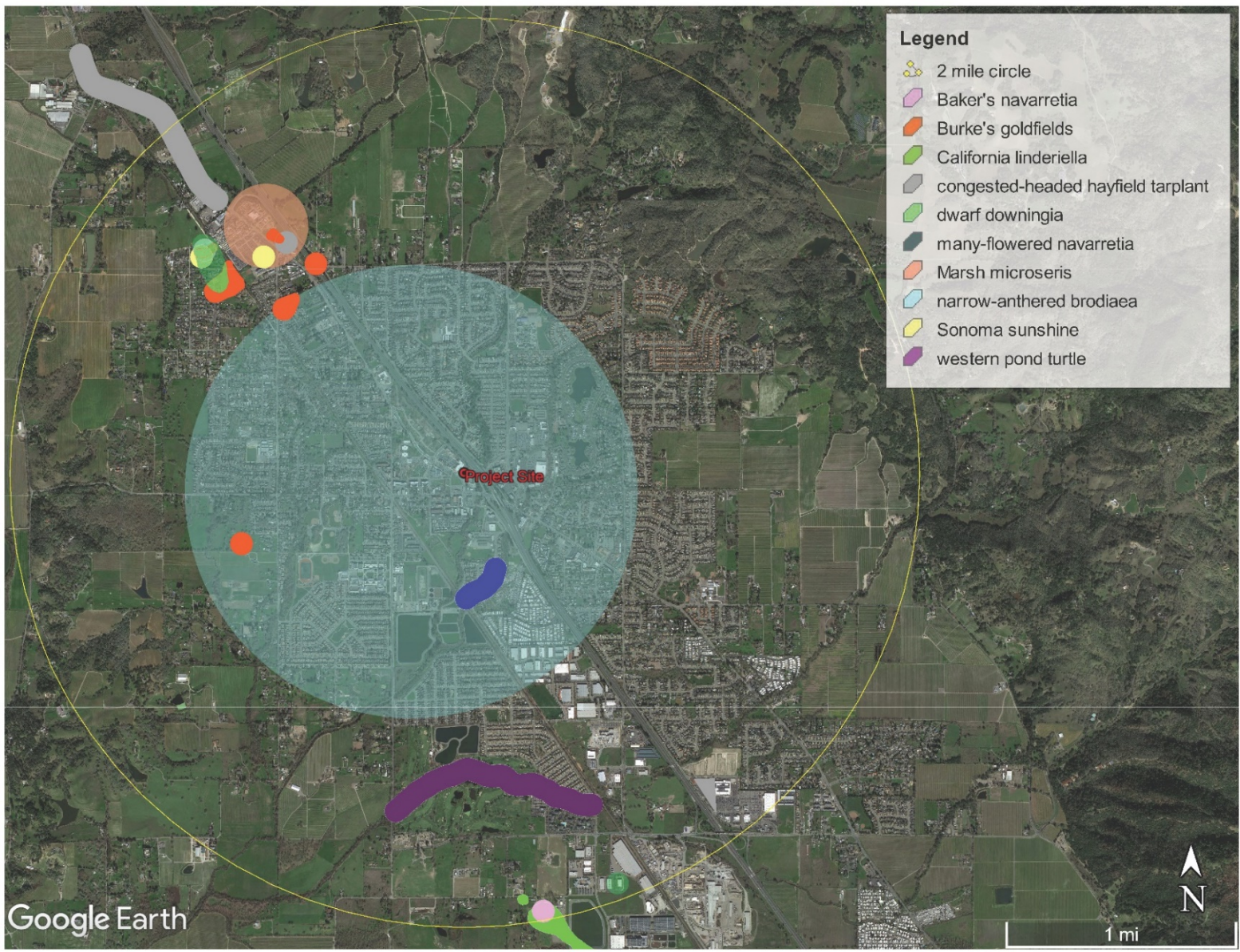


Figure 5. Occurrence of special-status species of plants and wildlife within two miles of the Project Site based on CNDDB records.

Burke's goldfields and Sonoma sunshine were observed to be flowering at reference sites during each of the survey periods in 2015 and 2018 but neither of these species were observed at the Project Site during the special-status plant surveys conducted at the site.

The known distribution of many-flowered navarretia is limited to a single site located in the vicinity of the Sonoma County Airport. Although reference sites for this species are essentially non-existent, this species is easily recognizable form and occurs in similar habitat at Burke's goldfields and Sonoma sunshine, and blooming period is the same as Burke's goldfields. No navarretia plants of any species have been observed at the Project Site during the multiple plant surveys conducted at the site.

The seasonal wetlands at the Project Site consist of shallow, slightly depressional areas north of the existing Chevron gas station, and do not provide suitable habitat for endangered plants found in seasonal wetland/vernal pool habitat on the Santa Rosa Plain. These wetland features likely pond from a few hours to a few days following rainfall events and do not provide the necessary longer-term wetland hydrology to support the endangered plants. The seasonal wetlands have been completely invaded by non-native annual grasses commonly found in disturbed and marginal seasonal wetlands in the region.

2.3.2 Special-status Wildlife

The potential occurrence of habitat for endangered or threatened animals, or fully protected animals was evaluated using data records from the most recent CNDDDB. The Project Site is completely surrounded by development and, as a result, is unlikely to provide habitat for wildlife except for those species adapted to human presence and activity.

The Project Site is located north of designated Critical Habitat for the Sonoma County Distinct Population Segment of the California tiger salamander (CTS), and is designated in the Programmatic Biological Opinion as "*May adversely affect listed plants, but would not adversely affect CTS.*"⁵ The Project Site is surrounded by development and the nearest known CTS breeding site, located at the Alton Lane Conservation Site, is approximately 5.47 miles south of the Project Site, and well outside the reported distance of 1.37 miles that CTS have been reported to migrate (Orloff 2011)⁶.

⁵ US Fish and Wildlife Service. 2007. Programmatic Biological Opinion (Programmatic) for U.S. Army Corps of Engineers (Corps) Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain, California (Corps File Number 223420N).

⁶ Orloff, S.G. 2011. Movement patterns and migration distances in an upland population of California tiger salamander (*Ambystoma californiense*). Herpetological Conservation and Biology, 6 (2): 266-276.

The special-status wildlife species reported to occur within two miles of the Project Site are shown in Figure 5. Records for two species were found in the CNDDDB records, the western pond turtle (*Emys marmorata*) and California linderiella (*Linderiella occidentalis*). The western pond turtle, a California species of special concern, is reported to occur along Pool Creek where it courses through the Windsor Golf Club, approximately 1.26 miles south of the Project Site. Habitat for the western pond turtle does not occur at the Project Site. The drainages at the southern end of the Project Site are ephemeral and appear to only flow for a short time period following rainfall events, and do not provide habitat for the western pond turtle.

The California linderiella, which occurs in seasonal aquatic habitats (e.g., vernal pools, swales, intermittent/ephemeral streams), does not have any formal federal or California regulatory status or designation. The nearest known occurrence is along and adjacent to a tributary to Windsor Creek, approximately 0.5 miles south of the Project Site. The drainages and seasonal wetlands at the Project Site are unlikely to provide habitat for the California linderiella due to limited periods of ponding.

3.0 PROJECT IMPACTS AND MITIGATION MEASURES

Project impacts to biological resources and measures to mitigate these impacts are described below. The significance of the anticipated impacts of the Project was evaluated following the criteria established in Appendix G of the CEQA Guidelines (California Natural Resources Agency 2010). According to these criteria, the Project would have a significant effect on a biological resource if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The determination of impact significance is based on whether the particular impact is “substantial,” which consists of three components: the magnitude and duration of the affect; the uniqueness of the affected resource; and the susceptibility of the affected resource to disturbance.

The following analysis of impacts addresses both direct and indirect effects to the affected biological resources resulting from the construction and operation of the proposed Project. This analysis is based on the Project plans, the current condition of the Project Site, and regulations and guidelines that cover the affected biological resources.

3.1 IMPACTS ON WETLANDS

Construction of the proposed Project could have a substantial direct and/or indirect effect on wetlands and other features subject to the regulatory authority of the U.S. Army Corps of Engineers and Regional Water Quality Control Board. This impact would be less than significant with mitigation.

Impact. The Project will directly affect approximately 0.059 acre (2,563 sq. ft.) of seasonal wetlands subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps), and subject to the jurisdiction of the Regional Water Quality Control Board (Regional Board) as waters of the State. The Project will also directly or indirectly affect approximately 157 linear ft. of an ephemeral drainage located on Town of Windsor property with an area below ordinary high water (OHW) of approximately 593 sq. ft. (0.014 ac), resulting in a total of approximately 0.073 acre (3,156 sq. ft.) of wetland habitat. There is another approximately 166 ft. of drainage ditch (waters of the U.S., non-wetland) located on Town of Windsor property and the area below OHW is approximately 665 sq. ft. (0.015 ac).

Mitigation. The mitigation for impacts to wetlands and drainage ditch would be satisfied through the purchase of the requisite amount of mitigation acreage as determined by the Corps and Regional Board. The mitigation ratio for impacts to jurisdictional wetlands would be determined in consultation with the Corps and Regional Board but would be a minimum of 1:1. Wetland mitigation credits are sold in 0.05-acre increments so assuming a 1:1 mitigation ratio the applicant would purchase 0.10 acre of mitigation credits from an agency approved mitigation bank.

Mitigation for impacts to the linear ditches will also include enhancement of an existing waterway in the Town of Windsor subject to approval by the Regional Board. Enhancement could include removal of existing exotic vegetation and planting native trees and shrubs.

3.3 IMPACTS ON SPECIAL-STATUS BIRDS AND MAMMALS

Construction of the proposed Project could have a substantial direct and/or indirect effect on special-status or otherwise protected birds. This impact would be less than significant with mitigation.

Impact. In addition to regulations protecting special-status bird species (federal and state Endangered Species Acts), most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, it is unlawful to destroy active nests, eggs, and young. Furthermore, California Fish and Game Code Section 3503.5 makes it unlawful to take, possess or destroy birds in the Falconiformes (birds of prey, vultures, eagles, falcons) and Strigiformes (owls) families, which can include nest disturbance from construction and other activities.

The Project Site provides marginal habitat for ground-nesting bird species and the trees in the undeveloped parts of the Project Site could also provide nesting habitat for birds. If birds were to nest at the Project Site during construction activities, construction-related activities, including noise, could either result in the destruction of nests or cause the birds to abandon nests with eggs or fledglings present in the nests. Such impacts to nesting birds would be considered significant, and mitigation would be required to reduce the impact to less than significant.

Mitigation. A qualified avian biologist will conduct passerine nest surveys prior to tree pruning, tree removal, ground disturbing activities, or construction activities at the Project Site within 30 days in initiation of such activities to locate any active nests on or adjacent to the Project Site. If land-clearing activities can be performed outside of the nesting season, that is, between August 16 and January 31, no preconstruction surveys for nesting birds are warranted.

Pre-construction surveys will be conducted no more than 30 days prior to the start of construction or ground disturbing activities if the activities occur during the nesting season (February 1 to August 15). Preconstruction surveys will be repeated at 15-day intervals until construction has started. Active nests will be identified, located, and described and protective measures will be implemented. Protective measures will include establishment of clearly delineated (i.e., Visi-barrier, orange construction fencing) 50-foot exclusion zones around each nest site. The active nest sites within exclusion zones will be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance or nest abandonment. The barriers marking exclusion zones will remain in place until the young have left the nest and are foraging independently or if the nest is no longer active.

Construction of the proposed Project could have a substantial direct and/or indirect effect on special-status bats. This impact would be less than significant with mitigation.

Impact. The Project will result in the loss of potential roosting habitat for several special-status bat species. The special-status bat species that could occur in the area and possibly the Project Site include the pallid bat and hoary bat.

Mitigation. Prior to cutting of trees at the Project Site the Applicant will consult with a qualified bat biologist, who is defined as a bat biologist, who holds a CDFW collection permit and a Memorandum of Understanding with CDFW allowing the biologist to handle and collect bats. Depending on the proposed timing of demolition of the existing structures and removal of the trees, and the bat biologist initial survey of the site, the necessary survey protocols will be identified and implemented by the bat biologist.

APPENDIX A. LIST OF SPECIES OBSERVED DURING 2018 PLANT SURVEYS.

The following list is a combined list of species observed during surveys conducted by Mr. Charlie Patterson, Ms. Jane Valerius, and Dr. Ted P. Winfield. The following are references for the reports prepared by Mr. Patterson and Ms. Valerius.

Charles A. Patterson. 2015. Rare plant surveys for the vacant parcel at 9120 Old Redwood Highway, Windsor, Sonoma County A.P.N. 161-070-035. Letter report prepared for Mr. Matthew E. Donohue, Trans Tech Consultants, 930 Shiloh Road, Building 44, Suite J, Windsor, CA 95492, dated July 11, 2015.

Jane Valerius. 2016. Town of Windsor Study for a Downtown Pedestrian and Bicycle Crossing of U.S. 101: Phase I – Feasibility Study.

| FAMILY | SCIENTIFIC NAME ¹ | COMMON NAME |
|--|--------------------------------------|-----------------------|
| GYMNOSPERMS | | |
| CUPRESSACEAE – Cypress Family | | |
| | <i>Sequoia sempervirens</i> | redwood |
| DICOTYLEDONS | | |
| ANACARDIACEAE – Sumac Family | | |
| | <i>Toxicodendron diversilobum</i> | poison oak |
| APIACEAE - Carrot Family | | |
| | <i>Conium maculatum</i> * | poison hemlock |
| | <i>Daucus carota</i> * | Queen Anne's lace |
| | <i>Daucus pusillus</i> | wild carrot |
| | <i>Foeniculum vulgare</i> * | sweet fennel |
| | <i>Torilis arvensis</i> * | field hedge parsley |
| ASTERACEAE - Sunflower Family | | |
| | <i>Anthemis cotula</i> * | dog fennel |
| | <i>Baccharis pilularis</i> | coyote brush |
| | <i>Carduus pycnocephalus</i> * | Italian thistle |
| | <i>Cichorium intybus</i> * | chicory |
| | <i>Cirsium arvense</i> * | Canada thistle |
| | <i>Cirsium vulgare</i> * | bull thistle |
| | <i>Delairea odorata</i> * | Cape ivy |
| | <i>Dittrichia graveolens</i> | stinkwort |
| | <i>Erigeron bonariensis</i> * | flax-leaved horseweed |
| | <i>Erigeron canadensis</i> | horseweed |
| | <i>Filago gallica</i> * | filago |
| | <i>Helminthotheca echinoides</i> * | bristly ox-tongue |
| | <i>Hypochaeris glabra</i> | smooth cats-ear |
| | <i>Hypochaeris radicata</i> * | hairy cat's-ear |
| | <i>Lactuca serriola</i> * | prickly lettuce |
| | <i>Matricaria discoidea</i> | pineapple weed |
| | <i>Pseudognaphalium luteoalbum</i> * | Jersey cudweed |
| | <i>Senecio vulgaris</i> * | common groundsel |
| | <i>Sonchus asper</i> * | spiny sowthistle |
| | <i>Sonchus oleraceus</i> * | sow thistle |
| | <i>Silybum marianum</i> * | milk thistle |
| | <i>Taraxacum officinale</i> * | dandelion |
| | <i>Tragopogon porrifolius</i> * | purple salsify |
| | <i>Xanthium spinosum</i> | spiny cocklebur |
| BERBERIDACEAE – Barberry Family | | |
| | <i>Berberis aquifolium</i> | Oregon grape |
| BRASSICACEAE - Mustard Family | | |
| | <i>Brassica nigra</i> * | black mustard |
| | <i>Brassica rapa</i> * | common mustard |
| | <i>Lepidium nitidum</i> | shining peppergrass |
| | <i>Raphanus sativus</i> * | wild radish |
| CARYOPHYLLACEAE – Pink Family | | |
| | <i>Stellaria media</i> * | chickweed |
| CONVOLVULACEAE - Morning Glory Family | | |
| | <i>Convolvulus arvensis</i> * | bindweed |
| EUPHORBIACEAE – Spurge Family | | |

¹ Plant nomenclature follows The Jepson Manual: Higher Plants of California. Second Edition. B.G. Baldwin (convening editor). University of California Press, Berkeley, CA.

Note: * indicates non-native species

Reference Sites, Observation Dates and Species in Flower at time of Reference Site Survey.

| DATE | REFERENCE SITE | SPECIES |
|----------------|---|--|
| April 3, 2015 | "Windmill" site | BLBA, LABU |
| April 12, 2015 | Alton Lane Mitigation Site Hale Mitigation Bank | LIVI, BLBA LIVI |
| April 16 2015 | Hale Mitigation Bank | LIVI, LABU |
| April 27, 2015 | Alton Lane Mitigation Site Hale Mitigation Bank "Windmill" site | LIVI, BLBA, LABU LIVI, LABU BLBA, LABU |
| April 4, 2018 | Carinalli-Todd Road Mitigation Bank Alton Lane Mitigation Site Alton North Conservation Site | LIVI, BLBA BLBA BLBA |
| April 12, 2018 | Alton North Conservation Bank Alton Lane Mitigation Site Hazel Mitigation Bank Woodbridge Preserve | BLBA, LABU BLBA, LABU BLBA, LIVI BLBA |
| April 24, 2018 | Alton North Conservation Bank Alton Lane Mitigation Site | LABU LABU, BLBA |
| April 25, 2018 | Carinalli-Todd Road Mitigation Bank | LIVI, BLBA |
| May 8, 2018 | Carinalli-Todd Road Mitigation Bank | LIVI, BLBA |

Species: LIVI – *Limnanthes vinculins* (Sebastopol meadowfoam)
 BLBA – *Blennosperma bakeri* (Sonoma sunshine)
 LABU – *Lasthenia burkei* (Burke's goldfields)

APPENDIX B. SPECIAL-STATUS PLANT SPECIES REPORTED TO OCCUR IN THE REGION AND THEIR REGULATORY STATUS

| Scientific Name | Common Name | FESA | CESA | CNPS |
|---|------------------------------------|------|------|------|
| DICOTS | | | | |
| <i>Amorpha californica</i> var. <i>napensis</i> | Napa false indigo | | | 1B.2 |
| <i>Amsinckia lunaris</i> | bent-flowered fiddleneck | | | 1B.2 |
| <i>Arctostaphylos densiflora</i> | Vine Hill manzanita | | E | 1B.1 |
| <i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i> | Rincon Ridge manzanita | | | 1B.1 |
| <i>Astragalus claranus</i> | Clara Hunt's milk-vetch | E | T | 1B.1 |
| <i>Balsamorhiza macrolepis</i> | big-scale balsamroot | | | 1B.2 |
| <i>Blennosperma bakeri</i> | Sonoma sunshine | E | E | 1B.1 |
| <i>Campanula californica</i> | swamp harebell | | | 1B.2 |
| <i>Castilleja uliginosa</i> | Pitkin Marsh paintbrush | | E | 1A |
| <i>Ceanothus confusus</i> | Rincon Ridge ceanothus | | | 1B.1 |
| <i>Ceanothus divergens</i> | Calistoga ceanothus | | | 1B.2 |
| <i>Ceanothus foliosus</i> var. <i>vineatus</i> | Vine Hill ceanothus | | | 1B.1 |
| <i>Ceanothus purpureus</i> | holly-leaved ceanothus | | | 1B.2 |
| <i>Ceanothus sonomensis</i> | Sonoma ceanothus | | | 1B.2 |
| <i>Centromadia parryi</i> ssp. <i>parryi</i> | pappose tarplant | | | 1B.2 |
| <i>Chorizanthe valida</i> | Sonoma spineflower | E | E | 1B.1 |
| <i>Cordylanthus tenuis</i> ssp. <i>capillaris</i> | Pennell's birds-beak | E | F | 1B.2 |
| <i>Clarkia imbricata</i> | Vine Hill clarkia | E | E | 1B.1 |
| <i>Cuscuta obtusiflora</i> var. <i>glandulosa</i> | Peruvian dodder | | | 2B.2 |
| <i>Delphinium luteum</i> | golden larkspur | E | R | 1B.1 |
| <i>Downingia pusilla</i> | dwarf downingia | | | 2B.2 |
| <i>Erigeron serpentinus</i> | serpentine daisy | | | 1B.3 |
| <i>Gilia capitata</i> ssp. <i>tomentosa</i> | woolly-headed gilia | | | 1B.1 |
| <i>Hemizonia congesta</i> ssp. <i>congesta</i> | congested-headed hayfield tarplant | | | 1B.2 |
| <i>Horkelia tenuiloba</i> | thin-lobed horkelia | | | 1B.2 |
| <i>Lasthenia burkei</i> | Burke's goldfields | E | E | 1B.1 |
| <i>Lasthenia californica</i> ssp. <i>bakeri</i> | Baker's goldfields | | | 1B.2 |
| <i>Layia septentrionalis</i> | Colusa layia | | | 1B.2 |
| <i>Legenere limosa</i> | legenere | | | 1B.1 |
| <i>Leptosiphon jepsonii</i> | Jepson's leptosiphon | | | 1B.2 |
| <i>Limnanthes vinculans</i> | Sebastopol meadowfoam | E | E | 1B.1 |
| <i>Microseris paludosa</i> | marsh microseris | | | 1B.2 |
| <i>Navarretia leucocephala</i> ssp. <i>bakeri</i> | Baker's navarretia | | | 1B.1 |
| <i>Navarretia leucocephala</i> ssp. <i>plieantha</i> | many-flowered navarretia | E | E | 1B.2 |
| <i>Potentilla uliginosa</i> | Cunningham Marsh cinquefoil | | | 1A |
| <i>Trifolium amoenum</i> | two-fork clover | E | | 1B.1 |
| <i>Trifolium buckwestiorum</i> | Santa Cruz clover | | | 1B.1 |
| <i>Trifolium hydrophilum</i> | saline clover | | | 1B.2 |
| <i>Viburnum ellipticum</i> | oval-leaved viburnum | | | 2B.3 |
| MONOCOTS | | | | |
| <i>Alopecurus aequalis</i> var. <i>sonomensis</i> | Sonoma alopecurus | E | | 1B.1 |
| <i>Brodiaea leptandra</i> | narrow-anthered brodiaea | | | 1B.2 |
| <i>Calamagrostis crassiglumis</i> | Thurber's reed grass | | | 2B.1 |
| <i>Fritillaria liliacea</i> | fragrant fritillary | | | 1B.2 |
| <i>Lilium pardalinum</i> ssp. <i>pitkinense</i> | Pitkin Marsh lily | E | E | 1B.1 |
| <i>Pleuropogon hooverianus</i> | North Coast semaphore grass | | T | 1B.1 |
| <i>Rhynchospora alba</i> | white beaked-rush | | | 2B.2 |
| <i>Rhynchospora californica</i> | California beaked-rush | | | 1B.1 |
| <i>Rhynchospora capitellata</i> | brownish beaked-rush | | | 2B.2 |
| <i>Rhynchospora globularis</i> | round-headed beaked-rush | | | 2B.1 |
| FESA - Federal Endangered Species Act; CESA - California Endangered Species Act | | | | |
| T - Threatened; E - Endangered; R - Rare (California only); CNPS Designations: List 1A - Species presumed extinct in California. List 1B - Species rare and endangered in California and elsew here. List 2 - Species rare and endangered in California but more common elsew here. List 3 - Species for w hich additional data are needed. | | | | |

APPENDIX C. HABITAT PREFERENCE, AND POTENTIAL FOR THE SPECIAL-STATUS SPECIES TO OCCUR AT THE SITE.

| Scientific Name | Common Name | Habitat | Occurrence at Project Site |
|--|--------------------------|--|--|
| DICOTS | | | |
| <i>Amorpha californica</i> var. <i>napensis</i> | Napa false indigo | Broadleaved upland forest, chaparral, cismontane woodland. Openings in forest or woodland or in chaparral | Unlikely. Habitat not present at project site. |
| <i>Amsinckia lunaris</i> | bent-flowered fiddleneck | Coastal bluff scrub; cismontane woodland; valley and foothill grassland | Unlikely. Habitat not present at project site. |
| <i>Arctostaphylos densiflora</i> | Vine Hill manzanita | Dwarf chaparral "barren" on sandy acidic soil | Unlikely. Habitat not present at project site. |
| <i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i> | Rincon Ridge manzanita | Chaparral, cismontane woodland. Highly restricted endemic to red rhyolites in Sonoma County | Unlikely. Habitat not present at project site. |
| <i>Astragalus claranus</i> | Clara Hunt's milk-vetch | Chaparral (openings); cismontane woodland; valley and foothill grassland/serpentine or volcanic, rocky, clay | Unlikely. Habitat not present at project site. |
| <i>Balsamorhiza macrolepis</i> | big-scale balsamroot | Chaparral; cismontane woodland; valley and foothill grassland/ sometimes serpentine | Unlikely. Habitat not present at project site. |
| <i>Blennosperma bakeri</i> | Sonoma sunshine | Vernal pools, valley and foothill grassland. Vernal pools and swales | Unlikely. Not observed during plant surveys. |
| <i>Campanula californica</i> | swamp harebell | Bogs and fens; closed-cone coniferous forest; coastal prairie; meadows and seeps; marshes and swamps (freshwater); north coast coniferous forest | Unlikely. Habitat not present at project site. |
| <i>Castilleja uliginosa</i> | Pitkin Marsh paintbrush | Marshes and swamps (freshwater) | Unlikely. Habitat not present at project site. |
| <i>Ceanothus confusus</i> | Rincon Ridge ceanothus | Closed-cone coniferous forest, chaparral, cismontane woodland. Known from volcanic or serpentine soils, dry shrubby slopes | Unlikely. Habitat not present at project site. |
| <i>Ceanothus divergens</i> | Calistoga ceanothus | Chaparral. Rocky, serpentine or volcanic sites | Unlikely. Habitat not present at project site. |
| <i>Ceanothus foliosus</i> var. <i>vineatus</i> | Vine Hill ceanothus | Sandy acidic soil | Unlikely. Habitat not present at project site. |
| <i>Ceanothus purpureus</i> | holly-leaved ceanothus | Chaparral; volcanic substrates, slopes | Unlikely. Habitat not present at project site. |
| <i>Ceanothus sonomensis</i> | Sonoma ceanothus | Chaparral; south slopes | Unlikely. Habitat not present at project site. |
| <i>Centromadia parryi</i> ssp. <i>parryi</i> | pappose tarplant | Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland. Vernal mesic, often alkaline sites | Unlikely. Not observed during plant surveys. |
| <i>Chorizanthe valida</i> | Sonoma spineflower | Coastal prairie (sandy) | Unlikely. Habitat not present at project site. |
| <i>Clarkia imbricata</i> | Vine Hill clarkia | Chaparral; valley and foothill grassland/acidic sandy loam) | Unlikely. Habitat not present at project site. |

| | | | |
|--|------------------------------------|---|--|
| <i>Cordylanthus tenuis ssp. capillaris</i> | Pennell's birds-beak | Closed-cone coniferous forest, Chaparral | Unlikely. Habitat not present at project site. |
| <i>Cuscuta obtusiflora var. glandulosa</i> | Peruvian dodder | Marshes and swamps (freshwater) | Unlikely. Habitat not present at project site. |
| <i>Delphinium luteum</i> | golden larkspur | Chaparral; coastal prairie; coastal scrub/rocky | Unlikely. Habitat not present at project site. |
| <i>Downingia pusilla</i> | dwarf downingia | Valley and foothill grassland (mesic sites), vernal pools. Vernal lake and pool margins with a variety of associates. In several types of vernal pools | Unlikely. Not observed during plant surveys. |
| <i>Erigeron serpentinus</i> | serpentine daisy | Chaparral (serpentinite, seeps) | Unlikely. Habitat not present at project site. |
| <i>Gilia capitata ssp. tomentosa</i> | woolly-headed gilia | Coastal bluff scrub, valley and foothill grasslands/serpentinite; rocky outcrops | Unlikely. Habitat not present at project site. |
| <i>Hemizonia congesta ssp. congesta</i> | congested-headed hayfield tarplant | Valley and foothill grassland. Grassy valleys and hills, often in fallow fields; sometimes along roadsides | Low. Not observed during plant surveys. |
| <i>Horkelia tenuiloba</i> | thin-lobed horkelia | Broadleaved upland forest, chaparral, valley and foothill grassland. Sandy soils; mesic openings | Unlikely. Habitat not present at project site. |
| <i>Lasthenia burkei</i> | Burke's goldfields | meadows and seeps; vernal pools | Unlikely. Not observed during plant surveys. |
| <i>Lasthenia californica ssp. bakeri</i> | Baker's goldfields | Vernal pools, meadows and seeps. Most often in vernal pools and swales | Unlikely. Habitat not present at project site. |
| <i>Layia septentrionalis</i> | Colusa layia | Chaparral, cismontane woodland, valley and foothill grassland. Scattered colonies in fields and grassy slopes in sandy or serpentine soil | Unlikely. Habitat not present at project site. |
| <i>Legenere limosa</i> | legenere | Vernal pools | Unlikely. Habitat not present at project site. |
| <i>Leptosiphon jepsonii</i> | Jepson's leptosiphon | Chaparral, cismontane woodland. Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates | Unlikely. Habitat not present at project site. |
| <i>Limnanthes vinculans</i> | Sebastopol meadowfoam | Meadows and seeps, vernal pools, valley and foothill grassland. Swales, wet meadows and marshy areas in valley oak savanna; on poorly drained soils of clays and sandy loam | Unlikely. Not observed during plant surveys. |
| <i>Microseris paludosa</i> | marsh microseris | Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland | Unlikely. Habitat not present at project site. |
| <i>Navarretia leucocephala ssp. bakeri</i> | Baker's navarretia | Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales; adobe or alkaline soils | Unlikely. Not observed during plant surveys. |

| | | | |
|--|-----------------------------|--|--|
| <i>Navarretia leucocephala</i> ssp. <i>plieantha</i> | many-flowered navarretia | Vernal pools. Volcanic ash flow vernal pools | Unlikely. Not observed during plant surveys. |
| <i>Potentilla uliginosa</i> | Cunningham Marsh cinquefoil | Marshes and swamps/freshwater, permanent oligotrophic wetlands | Unlikely. Habitat not present at project site. |
| <i>Trifolium amoenum</i> | two-fork clover | Coastal bluff scrub; valley and foothill grassland (sometimes serpentinite) | Unlikely. Not observed during plant surveys. |
| <i>Trifolium buckwestiorum</i> | Santa Cruz clover | Coastal prairie, mixed evergreen forest; grassy or disturbed areas | Unlikely. Habitat not present at project site. |
| <i>Trifolium hydrophilum</i> | saline clover | Marshes and swamps; valley and foothill grasslands (mesic, alkaline) | Unlikely. Habitat not present at project site. |
| <i>Viburnum ellipticum</i> | oval-leaved viburnum | Chaparral; cismontane woodland; lower montane coniferous forest | Unlikely. Habitat not present at project site. |
| MONOCOTS | | | |
| <i>Alopecurus aequalis</i> var. <i>sonomensis</i> | Sonoma alopecurus | Marshes and swamps (freshwater); riparian scrub | Unlikely. Not observed during plant surveys. |
| <i>Brodiaea leptandra</i> | narrow-anthered brodiaea | Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Volcanic substrates | Unlikely. Habitat not present at project site. |
| <i>Calamagrostis crassiglumis</i> | Thurber's reed grass | Coastal scrub (mesic); marshes and swamps (freshwater) | Unlikely. Habitat not present at project site. |
| <i>Fritillaria liliacea</i> | fragrant fritillary | Cismontane woodland; coastal prairie; coastal scrub; valley and foothill grassland/often serpentinite | Unlikely. Not observed during plant surveys. |
| <i>Lilium pardalinum</i> ssp. <i>pitkinense</i> | Pitkin Marsh lily | Cismontane woodland; meadows and seeps, marshes and swamps (freshwater); mesic, sandy | Unlikely. Not observed during plant surveys. |
| <i>Pleuropogon hooverianus</i> | North Coast semaphore grass | Broadleafed upland forest; meadows and seeps; north coastal coniferous forest/open areas, mesic | Unlikely. Habitat not present at project site. |
| <i>Rhynchospora alba</i> | white beaked-rush | Bogs and fens; meadows and seeps; marshes and swamps (freshwater) | Unlikely. Habitat not present at project site. |
| <i>Rhynchospora californica</i> | California beaked-rush | Bogs and fens; lower mountain coniferous forest; meadows and seeps; marshes and swamps | Unlikely. Habitat not present at project site. |
| <i>Rhynchospora capitellata</i> | brownish beaked-rush | Wet meadows, fens, seeps, marshes | Unlikely. Not observed during plant surveys. |
| <i>Rhynchospora globularis</i> | round-headed beaked-rush | Marshes and swamps (freshwater) | Unlikely. Not observed during plant surveys. |

APPENDIX B.2:

Arborist Report



Redwood Market Arborist Report

Windsor, California

June 15, 2018

PREFACE

This report is an evaluation of trees growing on and adjacent to the Redwood Market (Chevron Station) project site at 9120 and 9200 Old Redwood Highway in Windsor, CA. The proposed project is in design phase with the Preliminary Grading and Drainage Plan reviewed for potential construction tree impact. Preliminary tree protection requirements and recommendations are provided within this report.

James MacNair, principal of MacNair and Associates, ISA Certified Arborist WE-0603A, and ISA Qualified Tree Risk assessor prepared this evaluation and report.

Unless expressed otherwise, the information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in questions may not arise in the future.

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Assignment

This report is an evaluation of trees growing on and adjacent to the Redwood Market (Chevron Station) project site at 9120 and 9200 Old Redwood Highway in Windsor, CA. The proposed project is in design phase with the Preliminary Grading and Drainage Plan reviewed for potential construction tree impact. Preliminary tree protection requirements and recommendations are provided within this report.

The project site was evaluated on March 28 and 30, 2018.

The purpose of this evaluation is to:

- Identify the total number of trees greater than 6 inches in trunk diameter (at 4.5 feet above grade) present or near the proposed project limits;
- Assess the health and structural condition of the trees;
- Provide preliminary recommendations for construction protection procedures including recommended Tree Protection Zones (TPZ);
- Calculate the required mitigation trees based upon estimated tree removals for the Redwood Market portion of the project.
- Calculate the monetary value of the trees recommended for preservation using the Guide for Plant Appraisal, ISA Western Chapter Species Classification and Group Assignment booklet, and the Tree Appraisal Form for Northern California.

Forty-nine (49) trees are evaluated as part of this report with locations of the tree shown on the attached Tree Location and Numbering Plan (notated Landscape Plan). The evaluative data for the trees is provided in Tree Data Matrix Appendix A.

Site Description:

The project site is a triangularly shaped property with the topography flat and adjacent to the Hwy 101 Caltrans right-of-way on the east side and a commercial warehouse to the north. The evaluated trees are located in the areas surrounding the Chevron gas station and in the parking lot and car wash areas. The current plans indicate that areas on the northwest, west, and east sides of the property will be Town of Windsor property for future public development.

The native trees growing on the site are valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*). These oaks range from young seedling trees to semi-mature in age and vary in health and structural condition. The numerous, young oak seedlings form dense clusters on the northwest and north portions of the site. There is one mature valley oak located on the north property line adjacent to the commercial warehouse. The evaluated trees are the larger diameter trees with trunks close to, or exceeding the six inch trunk diameter threshold required for protected tree status.

The trees have not been maintained with many having multiple trunk structures originating from sprouts from previously cut or mowed trees. Pest scale is attacking the valley oaks and

affecting the overall health and vigor of the trees. The coast live oaks are generally in good health and vigor.

Construction Impact and Mitigation Calculations:

The proposed project is a retail site including a restaurant/market, retail building, gas station, and a car wash. The preliminary grading and drainage plan indicate that most of the trees are located within the project construction and grading limits and require removal.

A total of 40 trees are designated for removal with 14 trees having protected tree status. The tree mitigation calculations are provided in Appendix B. The mitigation requirements are 28 24-inch box and 14 48-inch box trees. The in lieu fee equivalent is \$33,600.00. The landscape plan prepared by Donald MacNair (MacNair Landscape Architecture) shows five (5) 48" box coast live oaks planted as mitigation trees. These mitigation trees reduce the in lieu equivalent fee to \$25,600.00.

There are seven protected trees identified as preserved with their respective tree protection zones as defined in Appendix A. These trees are #1 (7.5-inch valley oak), #2 (8-inch valley oak), #17 (25-inch valley oak), #20 (7-inch valley oak), #21 (16-inch coast live oak), #26 (7-inch coast live oak), and #43 (12-inch valley oak). With the exception of tree #2, these trees appear to be located a sufficient distance where tree protection fencing will be the primary requirement during construction of the Redwood Market portion of the project.

Appraisal Calculations (Monetary Value)

Estimates of the monetary value of the trees designated for preservation have been prepared and are provided in Appendix D. These estimates use generalized assumptions for location and condition factors. The values established are intended as guide for value as defined in the Town of Windsor Tree Ordinance.

Individual Tree Evaluations

Following is a description of the various datum used in the evaluations.

Tree #:

The trees have been assigned a number as indicated on the attached site plan excerpts.

Botanical and Common Names:

The botanical name and common name are provided for each tree.

Trunk Diameter (DBH) and # of Trunks:

DBH refers to the measurement of the trunk diameter at breast height (54 inches above grade). This measurement is useful to arborists providing quotations for tree maintenance work and evaluating tree growth over time.

The # of trunks notes single or multiple trunk trees. Trunks must occur at or below 54 inches above grade for tree to be considered as having multiple trunks for purposes of measurement.

Height and Crown Diameters:

These fields are approximate visual estimates of the tree's height and crown spread. Accuracy is within plus or minus 10% of the indicated measurement.

Health and Structural Ratings and Descriptions:

The following chart describes the health and structural rating system used in the evaluation. It is a rating of relative conditions such as vigor, extent of decay, structure, and insect or disease problems. Good, fair, and moderate ratings indicate limited structural problems, acceptable vigor, and an absence of significant pest or disease problems. Poor and marginal ratings indicate serious health or structural problems especially if the tree is situated near structures or public areas. Trees rated as poor or marginal are often hazardous. This rating system is required as part of the Town of Windsor Tree Evaluation Requirements.

Rating Chart:

| Health Ratings | | Structural Ratings | |
|----------------|------------------|--------------------|--------------------|
| 5 | Excellent health | | |
| 4 | Good health | 4 | Good structure |
| 3 | Fair health | 3 | Moderate structure |
| 2 | Marginal health | 2 | Marginal structure |
| 1 | Poor health | 1 | Poor structure |

Trees may be rated between two conditions, such as 2.5 or 3.5. This indicates the tree does not precisely meet the criteria for either of the two categories and allows the rating system to be used as a continuum.

The Health Description and Defect Description fields describe the basis for the health and structural rating. The specific pests, disease, and structural defects observed are described and identified if possible.

This evaluation is of above ground structure only and additional defects may exist at the root collar. Often, larger mature and over-mature trees require a root collar examination to evaluate the primary structural roots and root collar for decay and disease.

Comments/Observations:

This is summary discussion of the health and structural ratings as well as identification of any significant pest or disease issues and structural defects or issues.

Construction Impact:

An assessment of the construction impact to the individual tree.

Suitability for Preservation:

Ratings Factors:

Tree Health: Vigorous and healthy trees are better able to tolerate construction impacts including root loss or injury,

Structural Condition: Preserved trees should be structurally sound or have defects that can be effectively abated in areas near structures or high use areas.

Tree Age and Species: Older trees may have reduced ability to tolerate construction impacts and adapt to changed site conditions. Additionally, individual tree species have varying tolerances to environmental impacts and changes.

Tree Protection Zone (TPZ Radius) and Critical Root Zone (CRZ Radius):

Tree protection distance established by trunk diameter as opposed to distances established by canopy edge. Generally, one inch of trunk diameter will equal one foot of protected distance from the tree. A 30-inch trunk diameter will establish a 30-foot radius TPZ. Modifications to the TPZ may occur. Over-mature trees or trees in poor or marginal health may require larger protected distances.¹

The Critical Root Zone is the radial area around the trunk where all root impacts should be avoided or mitigated with specialized procedures. Typically, the critical root zone will be a radial distance equal to three times (3X) the trunk diameter.

Tree Management and Construction Protection Issues:

Tree management goals for retained trees include the following:

- 1.) Pruning trees to improve structural form and prevent future defects.
- 2.) Establishing tree protection zones for clearance from construction zones. The recommended distances are based upon trunk diameters and conform to accepted industry standards for tree protection.
- 3.) All pruning work should be performed under the supervision of an ISA Certified Arborist (International Society of Arboriculture) and according to ANSI A300 Pruning Standards.
- 4.) Providing pest control and other cultural procedures to improve and maintain the health of the trees during and post-construction.

¹ Matheny, Nelda and Clark, James. 1998. Trees and Development, A Technical Guide to Preservation of Trees During land Development. ISA, Champaign, IL.

Construction and Design Guidelines for Protection of Trees

Development of the project infrastructure, including roads, utilities, drainage facilities, etc. will alter the natural terrain and affect existing trees growing close to the construction areas. Impacts will primarily occur as a result of the site grading requirements. The following guidelines are intended to minimize grading impacts and maximize tree survivability.

1.0 Tree Protection Zone

- 1.1 All construction activity (grading, filling, paving, landscaping) will respect a Tree Protection Zone (TPZ) around trees to be protected. The TPZ will be a distance of one-foot radial distance from the trunk for each one-inch of trunk diameter. Exceptions to this standard may occur depending upon the age and condition of individual trees.

2.0 Construction Inspections and Supervision

- 2.1. All arboricultural and related soil work shall be performed under the supervision of an International Society of Arboriculture (ISA) Certified Arborist, qualified landscape architect or biologist or a City designated representative.
- 2.2. All specified arboricultural work shall be completed prior to site grading (root pruning, canopy pruning, fencing, etc.)
- 2.3. The contractor is required to meet with the Supervising Arborist or City designated representative to review all the tree protection requirements.

3.0 Tree Protection Fencing

- 3.1 Fencing at a minimum of four feet in height and clearly marked to prevent inadvertent encroachment by heavy machinery shall be installed either at the edge of the Tree Protection Zone (TPZ), or at the edge of the construction zone if the construction zone protrudes into the TPZ. The Supervising Arborist or City designated representative shall approve location of fencing. All fencing shall be in place prior to any site grading.
- 3.2. Contractor shall maintain the protection fencing and prohibit all access to fenced areas by construction personnel or equipment until all site work is completed.
- 3.3. All structures including construction trailers, equipment storage areas and any other construction traffic are prohibited within fenced areas. Burning or debris piles are prohibited within fenced areas. No materials, equipment, spoils, waste, or washout water shall be deposited or stored within fenced areas. Fences may not be moved without written permission of the Supervising Arborist or City designated representative.
- 3.4 If temporary access within a fenced area is determined to be necessary, then a six-inch layer of redwood bark fiber shall be placed in all areas requiring access. This requirement for mulching shall apply to all areas within the fenced area. If equipment

access is required, then the mulch shall be overlaid with interlocking metal plates of sufficient thickness to adequately distribute bearing load.

4.0 Demolition/Site Clearing

- 4.1 Any tree removal work within 50 feet of a TPZ shall be reviewed by a qualified arborist. Trees requiring removal shall be felled away from protected trees. Roots of trees to be removed may require pruning with approved root cutting equipment prior to felling if intermingled with roots of retained trees.
- 4.2 Excavation equipment shall operate from outside the TPZ. Brush and wood chips generated from tree and brush removal shall be placed in the TPZ To a uniform depth of six inches.
- 4.3 All required pruning shall conform to the pruning section of these guidelines.
- 4.4 All brush removal shall be performed with hand equipment when within the TPZ.

5.0 Site Grading, Trenching, and Root Pruning

- 5.1 Keep site grading within designated construction zones. Grading cuts or trenching within the TPZ of a retained tree trunk requires special trenching procedures. Trenches shall be dug manually or with the use of a root cutting machine, rock cutter, or other approved root-pruning equipment. This root-pruning trench shall be placed one foot inside the edge of the grading cut. The depth of the trench shall equal the depth of the grading cut to a maximum depth of 40 inches.
- 5.2 A trench may be mechanically dug toward a tree until the edge of the TPZ is reached. From the edge of the TPZ, the special trenching procedures shall apply.
- 5.3 Underground utilities, drain, and irrigation lines shall be routed outside the TPZ. When lines must cross the TPZ, the lines shall be bored or tunneled through the area at a depth approved by the supervising arborist. In these instances, a single shared utility conduit shall be used to reduce impacts to trees.
- 5.4. Any roots one inch in diameter or larger requiring removal shall be cut cleanly in sound tissue. The roots and surrounding soil shall be moistened and covered with a thick mulch (4") to prevent desiccation. No pruning seals or paints shall be used on wounds. Cut and exposed roots shall be protected from drying. A water absorbent material (i.e. burlap) shall be secured at the top of the trench and shall be draped over the exposed roots. This material shall be kept moistened and soil shall be replaced as soon as practicable.
- 5.5 Use of retaining walls will be encouraged to protect retained trees.
- 5.5. Fill placement areas covering 30% or more of the TPZ of trees larger than 24 inches dbh and over one foot in depth shall be mitigated with a retaining wall or well. Installation of

aeration systems may also be required depending upon the extent, depth, and type of the fill. Structural soils may be appropriate for use as a fill material.

6.0 Foundation Construction

- 6.1. Foundation construction within the TPZ of retained trees is recommended to be either a pier and grade beam construction which bridges root areas, cantilevered structures, or raised foundations using pier footings.

7.0 Site Drainage

- 7.1 All grading shall be designed to provide positive drainage away from the base of the tree trunk, and not create ponding within the TPZ.

8.0 Pruning and Cabling

- 8.1 Any tree pruning, cabling, or other similar activity which may be proposed as part of site construction will be included on site plans and be reviewed by a qualified arborist or City representative.
- 8.2 Pruning methods shall conform to the ANSI A300 Pruning Standards.

Post-Construction Recommendations:

Retained trees impacted by construction are recommended to receive the following cultural procedures:

1.0 Drip Irrigation System:

An in-line emitter drip system is recommended for placement at edge of the canopy drip line for trees subject to construction impact. The emitters shall have a 2-gallon per hour flow rate and be spaced at 24 inches on center. This system shall be installed for all trees deemed important to preserve.

Irrigate one time per month from May through September for ten hours. If excessive run-off occurs reduce run time by 50% and repeat application in two days.

2.0 Fertilization:

Post-construction a slow release nitrogen formulation shall be applied in non-graded areas in a 10-foot wide band at the canopy edge. Rate of application shall be .5-pound actual nitrogen per 1000 square feet. Timing of application is in November after winter rains have begun. The supervising arborist shall determine additional fertilization requirements.

3.0 Mulch Application:

Apply a four to six inch depth of bark mulch below and 10 feet beyond canopy where appropriate.

Landscaping

The following guidelines apply to landscaping around native oak trees.

Planting Issues:

- a.) Do not plant within 10' of the trunk. Use deep mulches (4") in this area.
- b.) Do not allow irrigation to spray on trunk or within a 15' radius of the trunk.
- c.) Do not plant lawn or high water requiring groundcovers. Use drought tolerant plants that require minimal irrigation.
- d.) Irrigation frequencies should be no more than once every three weeks May through November. Choose irrigation systems that best fit the needs of the plants. This can be drip (with multiple emitters), bubblers, or low volume spray heads.
- e.) Do not over plant. Use wide plant spacing to increase the drought tolerance of the plants and to limit competition with the oak.
- f.) Fertilize only in late winter and only as needed. Plants naturally adaptive to oak woodlands will require minimal fertilization.

Appendix A

Tree Assessment Data Matrix

Redwood Market Tree Assessment Matrix
Appendix A

Redwood Market Tree Data Matrix
Tree Evaluation and Preliminary Construction Impact Assessment

Health Rating Key:
4.0 = good health
3.0 = fair health
2.5 = marginal to fair health
2.0 = marginal health
1.5 = poor to marginal health
1.0 = poor health

Structural Rating Key:
4.0 = good condition
3.0 = moderate condition
2.5 = marginal to moderate condition
2.0 = marginal condition
1.5 = poor to marginal condition
1.0 = poor condition

Construction Impact Code:
RC= Removal Due to Construction
SI= Significant Potential Impact
MI= Moderate Impact
LI= Limited Impact

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|---|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|--|---|-----------------------|---|--|-------------------------------------|-------------|
| 1 | valley oak (<i>Quercus lobata</i>) | 1 | 7.5 | | | | | | 44.2 | 7.5 | 20'± | 15'± | 3.0 | 2.5 | Young tree with closely spaced, multiple limb attachments forming at 7'. Twiggy growth with pit scale present. | Fair | Yes | Located off-site area. Located approximately 8' from project limits | 10' | 3' | MI |
| 2 | valley oak | 2 | 4.5 | 7.0 | | | | | 54.4 | 8.3 | 18'± | 15'± | 3.0 | 2.0 | Low, two trunk structure with included trunk attachment and seam. Pit scale observed. | Marginal | Yes | Located close to future utility area. | 10' | 3' | MI |
| 3 | coast live oak (<i>Quercus agrifolia</i>) | 4 | 1.0 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 20.4 | 5.1 | 10'± | 12'± | 4.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 4 | coast live oak | 3 | 2.0 | 3.0 | 4.0 | | | | 22.8 | 5.4 | 12'± | 12'± | 4.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 5 | coast live oak | 3 | 3 | 3.5 | 3.5 | | | | 26.3 | 5.8 | 15'± | 12'± | 4.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 6 | coast live oak | 3 | 4.5 | 5 | 6 | | | | 63.8 | 9.0 | 20'± | 12'± | 4.0 | 2.0 | Co-dominant trunks forming at grade. Upright form. Vigor and foliage density are good. | Marginal | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 7 | valley oak | 1 | 5 | | | | | | 19.6 | 5.0 | 20'± | 10'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 8 | valley oak | 3 | 4 | 5 | 5 | | | | 51.8 | 8.1 | 20'± | 12'± | 3.0 | 2.0 | Three trunk structure forming from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|----------------|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|---|--|-------------------------------------|-------------|
| 9 | coast live oak | 6 | 1 | 2 | 3 | 3 | 4 | | 30.6 | 6.2 | 15'± | 12'± | 4.0 | 2.0 | Dense, multiple trunk structure forming from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 10 | valley oak | 1 | 4.5 | | | | | | 15.9 | 4.5 | 20'± | 8'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Growing in area of dense small diameter trees. Vigor is moderately low with probable pit scale. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 11 | valley oak | 2 | 4.5 | 4.5 | | | | | 31.8 | 6.4 | 22'± | 10'± | 3.0 | 2.5 | Low, co-dominant trunk structure forming at grade with wide attachment. Growing in area of dense small diameter trees. Vigor is moderately low with probable pit scale. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 12 | valley oak | 2 | 4 | 5.5 | | | | | 36.3 | 6.8 | 20'± | 12'± | 3.0 | 2.5 | Low two-trunk structure with seam at trunk attachment. Vertical, upright crown form. Vigor is moderately low with probable pit scale. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 13 | valley oak | 4 | 1.5 | 2 | 3.5 | 6 | | | 42.8 | 7.4 | 25'± | 20'± | 3.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Fair | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 14 | valley oak | 2 | 4 | 4 | | | | | 25.1 | 5.7 | 20'± | 10'± | 3.0 | 2.5 | Co-dominant trunks forming at grade. Upright form. Vigor and foliage density are good. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 15 | valley oak | 1 | 5.5 | | | | | | 23.7 | 5.5 | 20'± | 10'± | 3.0 | 2.5 | Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. Growing adjacent to trees #14 and #16. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 16 | valley oak | 4 | 2 | 2.5 | 3.5 | 4 | | | 30.2 | 6.2 | 20'± | 15'± | 3.0 | 2.0 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 17 | valley oak | 6 | 5 | 8 | 8 | 10 | 10 | 16 | 478.1 | 24.7 | 40'± | 50'± | 3.0 | 2.5 | Mature tree with multiple trunks forming at grade. 16" trunk has upright form, while others have corrected leans. Dense bamboo growing around trees with lower trunk obscured. Vigor is moderately low with probable pit scale. | Fair | Yes | Located 28' from proposed project limits and 10' from estimated location of future storm drain. | 25' | 8' | LI |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|--|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|---|--|-------------------------------------|-------------|
| 18 | coast live oak | 3 | 6.5 | 6.5 | 7.5 | | | | 110.5 | 11.9 | 18'± | 20'± | 4.0 | 2.0 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 19 | valley oak | 3 | 2.5 | 3.5 | 4 | | | | 27.1 | 5.9 | 20'± | 12'± | 3.0 | 2.5 | Low, three-trunk structure forming from basal sprouts at grade. Upright crown form. Vigor is moderately low with probable pit scale. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 20 | valley oak | 3 | 2 | 4 | 5 | | | | 35.3 | 6.7 | 12'± | 12'± | 3.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Marginal | Yes | Located 11' from project grading limits. Limited impact expected. | 8' | 2' | LI |
| 21 | coast live oak | 5 | 6 | 7 | 7 | 8 | 8.5 | | 212.1 | 16.4 | 22'± | 30'± | 4.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Located at fence line. Vigor and foliage density are good. | Fair | Yes | Located 15' from storm water infiltration area. Limited impact expected. | 18' | 4' | LI |
| 22 | valley oak | 3 | 1.25 | 4 | 4 | | | | 26.3 | 5.8 | 18'± | 12'± | 3.0 | 2.5 | Multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 23 | Canary Island date palm (<i>Phoenix canariensis</i>) | 1 | 24 | | | | | | 452.2 | 24.0 | 18'± | 20'± | 4.0 | 3.0 | Young palm in good vigor and no structural issues. | Good | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 24 | valley oak | 1 | 5.5 | | | | | | 23.7 | 5.5 | 20'± | 8'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Vigor is moderately low with probable pit scale. Located adjacent to fence. | Fair | No | Located 15' from storm water infiltration area. No impact expected. | 6' | 1.5 | NI |
| 25 | valley oak | 2 | 4 | 4 | | | | | 25.1 | 5.7 | 20'± | 10'± | 3.0 | 2.0 | Co-dominant trunks forming at grade. Vigor is moderately low with probable pit scale. Located adjacent to fence. | Marginal | No | Located 15' from storm water infiltration area. No impact expected. | 6' | 1.5 | Ni |
| 26 | coast live oak | 2 | 3 | 6 | | | | | 35.3 | 6.7 | 12'± | 10'± | 4.0 | 2.5 | Low, two-trunks structure with leaning, asymmetrical crown to west. Vigor and foliage density are good. Located adjacent to fence. | Fair | Yes | Located 15' from storm water infiltration area. No impact expected. | 8' | 2' | NI |
| 27 | valley oak | 3 | 4 | 4 | 5 | | | | 44.7 | 7.5 | 18'± | 8'± | 3.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Upright crown form. Vigor is moderately low with probable pit scale. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|----------------|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|---|--|-------------------------------------|-------------|
| 28 | valley oak | 1 | 12 | | | | | | 113.0 | 12.0 | 30'± | 15'± | 3.0 | 3.0 | Semi-mature tree with single trunk structure. Closely spaced, multiple limb attachments form at 10'. Vigor is moderately low with probable pit scale. Ivy growing on trunk. | Fair | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 29 | valley oak | 1 | 12 | | | | | | 113.0 | 12.0 | 30'± | 25'± | 3.0 | 3.0 | Semi-mature tree with single trunk structure. Closely spaced, multiple limb attachments form at 15'. Symmetrical crown form. Vigor is moderately low with probable pit scale. Ivy growing on trunk. | Fair | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 30 | coast live oak | 1 | 7.5 | | | | | | 44.2 | 7.5 | 22'± | 20'± | 4.0 | 2.5 | Single trunk structure, originally a basal sprout. Growing through chain link fence. Vigor and foliage density are good. | Fair to Moderate | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 31 | coast live oak | 3 | 3 | 3 | 3 | | | | 21.2 | 5.2 | 12'± | 10'± | 4.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Fair to Moderate | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 32 | valley oak | 1 | 5.5 | | | | | | 23.7 | 5.5 | 20'± | 12'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 33 | coast live oak | 3 | 10.5 | 12 | 12 | | | | 312.6 | 20.0 | 22'± | 30'± | 4.0 | 2.5 | Low, multiple trunk structure with the two 12" trunks having a partially included trunk attachment. Symmetrical crown form. Ivy growing on tree. | Fair to Moderate | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 34 | coast live oak | 1 | 7.5 | | | | | | 44.2 | 7.5 | 18'± | 20'± | 4.0 | 3.0 | Shaded tree with moderate lean. No significant structural defects. Growing at edge of drainage. Vigor and foliage density are moderate. | Moderate to good. | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 35 | coast live oak | 1 | 6 | | | | | | 28.3 | 6.0 | 15'± | 12'± | 4.0 | 3.0 | Single trunk structure with closely spaced, multiple limb attachments forming at 5'. No significant structural defects observed. Vigor and foliage density are moderate. Ivy | Moderate to good. | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 36 | coast live oak | 2 | 4 | 4 | | | | | 25.1 | 5.7 | 15'± | 10'± | 4.0 | 3.0 | Young tree with two trunk structure. Vigor and foliage density are good. | Moderate to good. | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|--|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|---|--|-------------------------------------|-------------|
| 37 | coast live oak | 1 | 5 | | | | | | 19.6 | 5.0 | 15'± | 10'± | 4.0 | 3.0 | Young tree with two trunk structure. Vigor and foliage density are good. | Moderate to good. | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 38 | coast live oak | 3 | 3 | 3 | 4 | | | | 26.7 | 5.8 | 10'± | 10'± | 3.0 | 3.0 | Young tree with two trunk structure. Vigor and foliage density are good. Poison oak growing on tree. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 39 | coast live oak | 3 | 7 | 7.5 | 8 | | | | 132.9 | 13.0 | 30'± | 35'± | 1.0 | 2.0 | Low, multiple trunk structure originating from basal sprouts at grade. Extensive ivy and poison oak. Vigor is low with extensive crown dieback occurring. | Poor | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 40 | coast live oak | 6 | 7 | 8 | 10 | 10 | 13 | 14 | 532.2 | 26.0 | 30'± | 35'-40'± | 3.0 | 2.0 | Multiple trunks forming at 2' with included attachments with deep seam. Wide crown form. Vigor and foliage density are moderately low. | Marginal | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 41 | valley oak | 1 | 8 | | | | | | 50.2 | 8.0 | 20'± | 30'± | 3.0 | 2.0 | Horizontal trunk form due to shading from tree #40. Extends to southeast. Vigor is moderately low with probable pit scale. | Marginal | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 42 | valley oak | 2 | 7 | 8.5 | | | | | 95.2 | 11.0 | 30'± | 20'± | 3.0 | 2.5 | Low two-trunk structure with seam at trunk attachment. Upright crown form. Vigor is moderately low with probable pit scale. | Fair | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 43 | valley oak | 3 | 6 | 7 | 7 | | | | 105.2 | 11.6 | 25'± | 25'± | 3.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Unions are not yet included. Vigor is moderately low with probable pit scale. | Fair | Yes | Appears to be outside project limits in future Town property. | 12' | 4' | LI |
| 44 | Raywood ash (<i>Fraxinus angustifolia</i> 'Raywood') | 1 | 12 | | | | | | 113.0 | 12.0 | 25'± | 25'± | 3.0 | 2.5 | Single trunk structure with closely spaced, multiple limb attachments forming at 10'. No significant structural defects observed. Vigor and foliage density are moderately low. Located in small planter. | Fair | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 45 | coast live oak | 1 | 7 | | | | | | 38.5 | 7.0 | 15'± | 10'± | 4.0 | 2.0 | Leaning, asymmetrical form due to heavy pruning. Previously topped. Volunteer seedling. Good vigor and foliage density. | Marginal | Yes | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 46 | Chinese elm (<i>Ulmus parvifolia</i>) | 1 | 7 | | | | | | 38.5 | 7.0 | 18'± | 12 | 4.0 | 2.0 | Single trunk structure previously topped. Vigor and foliage density are moderate. 4" elm nearby. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|-------------|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|--|---|-----------------------|---|--|-------------------------------------|-------------|
| 47 | Raywood ash | 1 | 9 | | | | | | 63.6 | 9.0 | 20'± | 18'± | 3.0 | 2.0 | Single trunk structure with closely spaced, multiple limb attachments forming at 6'. Vigor and foliage density are moderately low. Located in small planter. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 48 | Raywood ash | 1 | 7.5 | | | | | | 44.2 | 7.5 | 18'± | 15'± | 3.0 | 2.0 | Single trunk structure with closely spaced, multiple limb attachments forming at 5'. Vigor and foliage density are moderately low. Located in small planter. | Marginal | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |
| 49 | Raywood ash | 4 | 4 | 4 | 5 | 6 | | | 73.0 | 9.6 | 15'± | 12'± | 3.0 | 1.0 | Multiple trunk structure originating from basal sprouts at grade. Very poor structure. | Poor | No | Located within, or adjacent to, proposed project grading and construction limits. Removal required. | | | RC |

Appendix B

Tree Mitigation Chart

Redwood Market Tree Mitigation Chart
Appendix B

Redwood Market Tree Mitigation Chart

Health Rating Key:

- 5.0 = excellent health
- 4.0 = good health
- 3.0 = fair health
- 2.5 = marginal to fair health
- 2.0 = marginal health
- 1.5 = poor to marginal health
- 1.0 = poor health

Structural Rating Key:

- 4.0 = good condition
- 3.0 = moderate condition
- 2.5 = marginal to moderate
- 2.0 = marginal condition
- 1.5 = poor to marginal condition
- 1.0 = poor condition

| Tree # | Species | # of Trunks | Equivalent Trunk Diameter | Health Rating | Structural Rating | Replacement Ratio* | Required Replacement Inches |
|--------|----------------|-------------|---------------------------|---------------|-------------------|--------------------|-----------------------------|
| 6 | coast live oak | 3 | 9.0 | 4.0 | 2.0 | 0.5 | 4.5 |
| 13 | valley oak | 4 | 7.4 | 3.0 | 2.5 | 0.5 | 3.7 |
| 18 | coast live oak | 3 | 11.9 | 4.0 | 2.0 | 0.5 | 5.9 |
| 28 | valley oak | 1 | 12.0 | 3.0 | 3.0 | 1.0 | 12.0 |
| 29 | valley oak | 1 | 12.0 | 3.0 | 3.0 | 1.0 | 12.0 |
| 30 | coast live oak | 1 | 7.5 | 4.0 | 2.5 | 1.0 | 7.5 |
| 33 | coast live oak | 3 | 20.0 | 4.0 | 2.5 | 1.0 | 20.0 |
| 34 | coast live oak | 1 | 7.5 | 4.0 | 3.0 | 1.0 | 7.5 |
| 35 | coast live oak | 1 | 6.0 | 4.0 | 3.0 | 1.0 | 6.0 |
| 39 | coast live oak | 3 | 13.0 | 1.0 | 2.0 | 0.5 | 6.5 |
| 40 | coast live oak | 6 | 26.0 | 3.0 | 2.0 | 0.5 | 13.0 |
| 41 | valley oak | 1 | 8.0 | 3.0 | 2.0 | 0.5 | 4.0 |
| 42 | valley oak | 2 | 11.0 | 3.0 | 2.5 | 0.5 | 5.5 |
| 45 | coast live oak | 1 | 7.0 | 4.0 | 2.0 | 0.5 | 3.5 |

| | | | | |
|--|---------------------------|-----|--------------------|------------------------|
| | Total Replacement Inches: | 112 | In Lieu Equivalent | |
| 24" Box Replacement Tree Requirements (or alternate 36" boxes can be used)** | | 28 | \$11,200.00 | \$400.00 per 24" box |
| Minimum 48" Box Requirements*** | | 14 | \$22,400.00 | \$1,600.00 per 48" box |

Total: \$33,600.00

of 48" Box Mitigation Trees Shown on Landscape Plan: 5 \$8,000.00

Net Mitigation In Lieu Amount: \$25,600.00

Appendix C

Site and Tree Images



View of northwest section of property. Tree #1 (valley oak) is in foreground.



Tree #2 (valley oak) is on left with area of dense small diameter coast live oaks.



Tree #7 (valley oak in foreground) with view to west.



Area of very dense small diameter valley oak and coast live oaks on northwest side of property (within future Town section).



Common multiple trunk structure forming at grade from sprouts from previously mowed seedling.



View to north corner with mature valley oak (#17) in distance.



Tree #17 on left and area in north portion of site.



Dense grove of acacia (*A. decurrens*) in north portion of site.



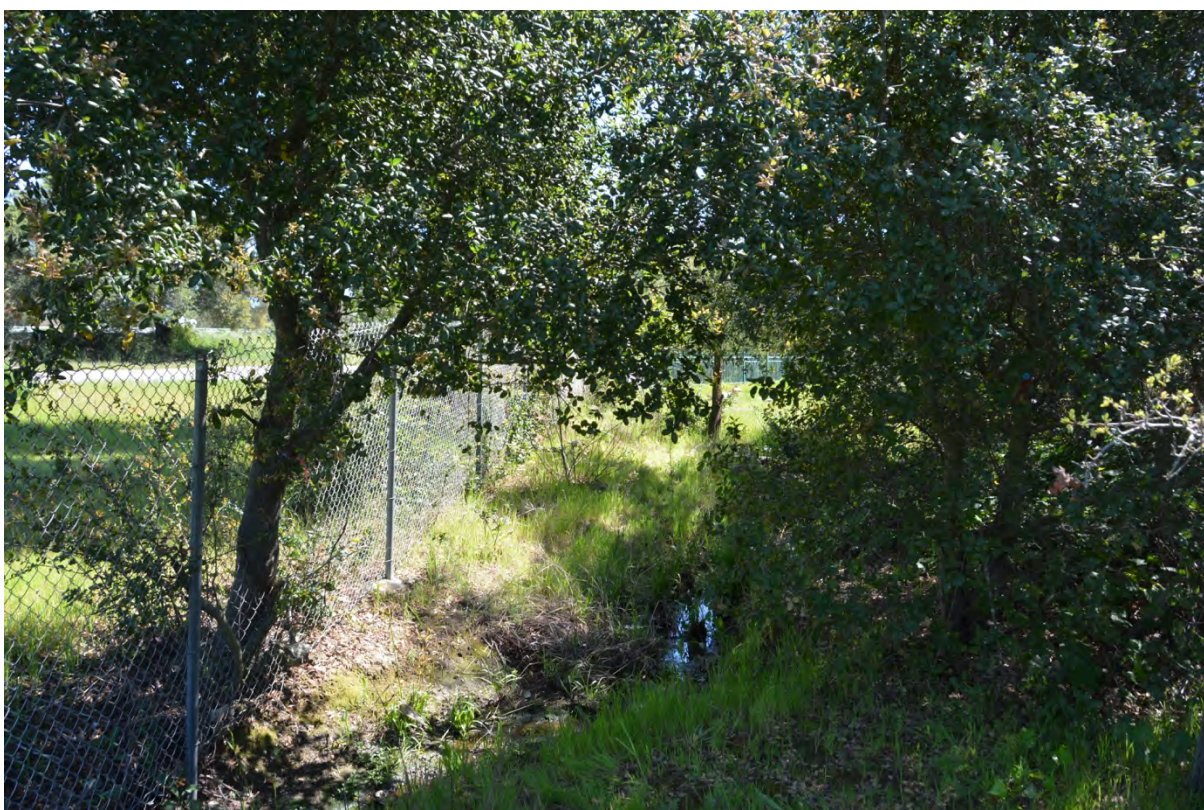
Trees growing along fence line with Caltrans ROW.



Young Canary Island date palm near parking area.



Two semi-mature valley oaks (#28 and #29).



Small coast live oaks near fence and drainage swale on east side of project.



Coast live oaks on east side in area of dense ivy and poison oak.



Coast live oaks on east side. Tree #39 on left is rated in poor condition due to extensive crown dieback.



Base of coast live oak #40 with defective multiple trunk structure.



Tree #43 (valley oak) appears to be away from grading limits, although not shown on survey plan.



Small elm and volunteer coast live oak on right in parking lot planter.



Mature Raywood ash in small landscape planter.



Smaller, drought stressed Raywood ash in planters on north side of parking area.

Appendix D

Appraisal Calculation Worksheet

Redwood Market - Tree Appraisal Table (Appendix D)

Redwood Market Appraisal Calculations

Trees Requiring Tree Protection

| Tree # | Species | Condition | Trunk Diameter (Equivalent) | Location | Site | Contribution | Placement | Species Rating | Replacement Tree Size (in.) (Average) | Replacement Tree Trunk Area | Replacement Tree Cost | Installation Cost | Installed Tree Cost | Unit Tree Cost | Appraised Trunk Area (TA) (or adjusted TA) | Basic Tree Cost | Appraised Value | Appraised Value (rounded) |
|--------|----------------|-----------|-----------------------------|----------|------|--------------|-----------|----------------|---------------------------------------|-----------------------------|-----------------------|-------------------|---------------------|----------------|---|-----------------|-----------------|---------------------------|
| 1 | valley oak | 70% | 7.5 | 27% | 70% | 5% | 5% | 90% | 1.69 | 2.24 | \$172.73 | \$250.00 | \$422.73 | \$188.72 | 44.16 | \$8,333.11 | \$1,399.96 | \$1,400 |
| 2 | valley oak | 60% | 8.3 | 27% | 70% | 5% | 5% | 90% | 1.69 | 2.24 | \$172.73 | \$250.00 | \$422.73 | \$188.72 | 54.08 | \$10,205.66 | \$1,469.61 | \$1,500 |
| 17 | valley oak | 70% | 24.7 | 40% | 70% | 30% | 20% | 90% | 1.69 | 2.24 | \$172.73 | \$250.00 | \$422.73 | \$188.72 | 478.92 | \$90,381.31 | \$22,776.09 | \$22,800 |
| 20 | valley oak | 60% | 6.7 | 27% | 70% | 5% | 5% | 90% | 1.69 | 2.24 | \$172.73 | \$250.00 | \$422.73 | \$188.72 | 35.24 | \$6,650.19 | \$957.63 | \$1,000 |
| 21 | coast live oak | 70% | 16 | 30% | 70% | 10% | 10% | 90% | 2.2 | 3.8 | \$172.73 | \$250.00 | \$422.73 | \$111.24 | 200.96 | \$22,355.74 | \$4,225.24 | \$4,200 |
| 26 | coast live oak | 70% | 6.7 | 27% | 70% | 5% | 5% | 90% | 2.2 | 3.8 | \$172.73 | \$250.00 | \$422.73 | \$111.24 | 35.24 | \$3,920.11 | \$658.58 | \$700 |
| 43 | valley oak | 70% | 11.6 | 30% | 70% | 10% | 10% | 90% | 1.69 | 2.24 | \$172.73 | \$250.00 | \$422.73 | \$188.72 | 105.63 | \$19,934.29 | \$3,767.58 | \$3,800 |

Total: \$35,400

Appraised Value = Basic Tree Cost x Species Rating x Condition x Location

Basic Value = Unit Tree Cost x Appraised Trunk Area (TA or ATA)

Condition = Structural integrity and health rating (rating assigned based upon the following factors: roots, trunk, scaffold branches, smaller branches and twigs, and foliage.)

Location = Mean of site, contribution, and placement ratings.

Installed Tree Cost = The cost to buy and install the largest normally available transplantable tree in the Western Region.

Unit Tree Cost = The cost per unit trunk area of an installed replacement tree as established by the Regional Supplement.

Appraised Trunk Area (TA) = Cross-sectional trunk area measured at 4.5 feet above grade (dbh) in square inches.

Adjusted TA = Adjusted trunk area for trees greater than a 30 inch diameter.

Species Factor = regional rating of the appraised tree species.

**APPENDIX B.2:
Updated
Arborist Report**



Redwood Market Arborist Report

Windsor, California

April 14, 2021

PREFACE

This arborist report is an update to a previous report submitted in April 2018 and provided an evaluation of trees growing on and adjacent to the Redwood Market (Chevron Station) project site at 9120 and 9200 Old Redwood Highway in Windsor, CA. This updated report assesses potential construction tree impact and required mitigation calculations for removed protected status trees. Tree protection requirements and recommendations are provided within this report, and tree appraisal calculations for protected trees designated for preservation.

James MacNair, principal of MacNair and Associates, ISA Certified Arborist WE-0603A, ISA Tree Risk Assessment Qualified, and ASCA Tree and Plant Appraisal Qualified, prepared this evaluation and report.

Unless expressed otherwise, the information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that the trees' problems or deficiencies in question may not arise in the future.

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Assignment

This arborist report is an update to a previous report submitted in April 2018 and provided an evaluation of trees growing on and adjacent to the Redwood Market (Chevron Station) project site at 9120 and 9200 Old Redwood Highway in Windsor, CA. This updated report assesses potential construction tree impact and required mitigation calculations for removed protected status trees. Tree protection requirements and recommendations are provided within this report and tree appraisal calculations for protected trees designated for preservation.

The project site was evaluated on March 28 and 30, 2018. The purpose of this evaluation is to:

- Identify the total number of trees greater than 6 inches in trunk diameter (at 4.5 feet above grade) present or near the proposed project limits;
- Assess the health and structural condition of the trees;
- Provide preliminary recommendations for construction protection procedures, including recommended Tree Protection Zones (TPZ);
- Calculate the required mitigation trees based upon estimated tree removals for the Redwood Market portion of the project.
- Calculate the trees' monetary value recommended for preservation using the Guide for Plant Appraisal 10th Edition (Current Edition).

Forty-nine (49) trees are evaluated as part of this report, with the tree's locations shown on the attached Tree Protection Zone Plan. The evaluative data for the trees is provided in Tree Data Matrix Appendix A.

Site Description:

The project site is a triangularly shaped property with the topography flat and adjacent to the Hwy 101 Caltrans right-of-way on the east side and a commercial warehouse to the north. The evaluated trees are located in the areas surrounding the Chevron gas station and in the parking lot and car wash areas. The current plans indicate that areas on the northwest, west, and east sides of the property will be Town of Windsor property for future public development.

The native trees growing on the site are valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*). These oaks range from young seedling trees to semi-mature in age and vary in health and structural condition. The numerous young oak seedlings form dense clusters on the northwest and north portions of the site. There is one mature valley oak located on the north property line adjacent to the commercial warehouse. The evaluated trees are the larger diameter trees with trunks close to or exceeding the six-inch trunk diameter threshold required for protected tree status.

The trees have not been maintained, with many having multiple trunk structures originating from sprouts from previously cut or mowed trees. Pit scale is attacking the valley oaks and affecting the overall health and vigor of the trees. The coast live oaks are generally in good health and vigor.

Construction Impact and Mitigation Calculations:

The proposed project is a retail site including a restaurant/market, retail building, gas station, and car wash. The preliminary grading and drainage plan indicate that most of the trees are located within the project construction and grading limits and require removal.

A total of 45 trees are designated for removal, with 17 trees having protected tree status. The tree mitigation calculations are provided in Appendix B. The mitigation requirements are ten 24-inch box and five 48-inch box trees. The landscape plan provides sufficient trees in 36 and 48-inch boxes so that there are no in-lieu fees required.

There are four protected trees identified as preserved with their respective tree protection zones as defined in Appendix A. All these trees appear to be located a sufficient distance where tree protection fencing will be the primary requirement during the construction of the Redwood Market portion of the project. Certain trees near the future car wash will require pruning for clearance from the car wash.

Appraisal Calculations (Monetary Value)

Estimates of the monetary value of the trees designated for preservation have been prepared and are provided in Appendix D. The values established are intended as guide for value as defined in the Town of Windsor Tree Ordinance. The Guide for Plant Appraisal 10th Edition is used for the reproductive cost calculations.

Individual Tree Evaluations

Following is a description of the various datum used in the evaluations.

Tree #:

The trees have been assigned a number as indicated on the attached site plan excerpts.

Botanical and Common Names:

The botanical name and common name are provided for each tree.

DBH and # of Trunks:

DBH refers to the measurement of the trunk diameter at breast height (54 inches above grade). This measurement is useful to arborists providing quotations for tree maintenance work and evaluating tree growth over time.

The # of trunks notes single or multiple trunk trees. Trunks must occur at or below 54 inches above grade for the tree to be considered having multiple trunks for measurement purposes.

Height and Crown Diameters:

These fields are approximate visual estimates of the tree's height and crown spread. Accuracy is within plus or minus 10% of the indicated measurement.

Health and Structural Ratings and Descriptions:

The following chart describes the health and structural rating system used in the evaluation. It is a rating of relative conditions such as vigor, the extent of decay, structure, and insect or disease problems. Good, fair, and moderate ratings indicate limited structural problems, sufficient vigor, and an absence of significant pest or disease problems. Poor and marginal ratings indicate serious health or structural problems, especially if the tree is situated near structures or public areas. Trees rated as poor or marginal are often hazardous. This rating system is required as part of the Town of Windsor Tree Evaluation Requirements.

Rating Chart:

| Health Ratings | | Structural Ratings | |
|----------------|------------------|--------------------|--------------------|
| 5 | Excellent health | | |
| 4 | Good health | 4 | Good structure |
| 3 | Fair health | 3 | Moderate structure |
| 2 | Marginal health | 2 | Marginal structure |
| 1 | Poor health | 1 | Poor structure |

Trees may be rated between two conditions, such as 2.5 or 3.5. This indicates the tree does not precisely meet the criteria for either of the two categories and allows the rating system to be used as a continuum.

The Health Description and Defect Description fields describe the basis for the health and structural rating. The specific pests, diseases, and structural defects observed are described and identified if possible.

This evaluation is of the above-ground structure only, and additional defects may exist at the root collar. Often, larger mature and over-mature trees require a root collar examination to evaluate the primary structural roots and root collar for decay and disease.

Observations:

This is a summary discussion of the health and structural ratings as well as identification of any significant pest or disease issues and structural defects or issues.

Construction Impact:

An assessment of the construction impact to the individual tree.

Suitability for Preservation:

Ratings Factors:

Tree Health: Vigorous and healthy trees are better able to tolerate construction impacts including root loss or injury,

Structural Condition: Preserved trees should be structurally sound or have defects that can be effectively abated in areas near structures or high-use areas.

Tree Age and Species: Older trees may have reduced ability to tolerate construction impacts and adapt to changed site conditions. Additionally, individual tree species have varying tolerances to environmental impacts and changes.

Tree Protection Zone (TPZ Radius) and Critical Root Zone (CRZ Radius):

Tree protection distance established by trunk diameter as opposed to distances established by canopy edge. Generally, one inch of trunk diameter will equal one foot of protected distance from the tree. A 30-inch trunk diameter will establish a 30-foot radius TPZ. Modifications to the TPZ may occur. Over-mature trees or trees in poor or marginal health may require larger protected distances.

The Critical Root Zone is the radial area around the trunk where all root impacts should be avoided or mitigated with specialized procedures. Typically, the critical root zone will be a radial distance equal to three times (3X) the trunk diameter.

Tree Management and Construction Protection Issues:

Tree management goals for retained trees include the following:

- 1.) Pruning trees to improve structural form and prevent future defects.
- 2.) Establishing tree protection zones for clearance from construction zones. The recommended distances are based upon trunk diameters and conform to accepted industry standards for tree protection.
- 3.) All pruning work should be performed under the supervision of an ISA Certified Arborist (International Society of Arboriculture) and according to ANSI A300 Pruning Standards.
- 4.) Providing pest control and other cultural procedures to improve and maintain the health of the trees during and post-construction.

Construction and Design Guidelines for Protection of Trees

Development of the project infrastructure, including roads, utilities, drainage facilities, etc. will alter the natural terrain and affect existing trees growing close to the construction areas.

Impacts will primarily occur as a result of the site grading requirements and underground utility installations. The following procedures are recommended to maximize tree survivability.

1. Tree Protection Zone and Critical Root Zone

- 1.1. All construction activity (grading, filling, paving, landscaping) will respect a Tree Protection Zone (TPZ) around trees to be protected. The TPZ will typically be a distance of a one-foot radial distance from the trunk for each one-inch of trunk diameter. Exceptions to this standard may occur depending upon the age, condition, and species tolerance of individual trees. The Critical Root Zone is the radial area around the trunk where all root impacts should be avoided or mitigated with specialized procedures. Typically, the critical root zone will be a radial distance equal to three times (3X) the trunk diameter.

2. Construction Observations and Supervision

- 2.1. All arboricultural and related soil work should be performed under the observation of an International Society of Arboriculture (ISA) Certified Arborist (Supervising Arborist), or Client designated representative.
- 2.2. All specified arboricultural work should be completed prior to site grading (root pruning, crown pruning, fencing, etc.)
- 2.3. The contractor is required to meet with the Supervising Arborist or Client designated representative to review the tree protection requirements, including work procedures, access routes, and storage areas.

3. Tree Protection Fencing

- 3.1. Fencing at a minimum of four feet in height and clearly marked to prevent inadvertent encroachment by heavy machinery should be installed either at the edge of the Tree Protection Zone (TPZ), the crown drip line (whichever is further from the trunk), or at the edge of the construction zone, if the construction zone protrudes into the TPZ. The Supervising Arborist, or Client designated representative, should approve the location of the fencing. All fencing should be in place prior to any site grading. Fences may not be relocated or removed without the written permission of the Supervising Arborist or Client designated representative.
- 3.2. Bilingual (English/Spanish) signage with a contact phone number shall be attached to the fencing in multiple locations with the following language:

Tree Preservation Area

Entry Prohibited without Authorization

by...

- 3.3. Install trunk protection measures for trees within 10 feet of construction activities, which as a minimum shall include the installation of ½ in. closed cell foam padding around the trunk of each tree from soil grade to a height of 6 ft. above grade. 2" x 4" x 6' wood planks shall be installed on top of the padding and secured with metal straps in at least two locations. No fasteners or other invasive hardware shall be driven into the protected trees. (This may not be applicable)

- 3.4. Contractor should maintain the protection fencing and prohibit all access to fenced areas by construction personnel or equipment until all site work is completed.
- 3.5. All structures including construction trailers, equipment storage areas and any other construction traffic are prohibited within fenced areas. Burning or debris piles are prohibited within fenced areas. No materials, equipment, spoil, waste, or washout water should be deposited or stored within fenced areas. Fences may not be moved without written permission of the Supervising Arborist or Client designated representative.
- 3.6. If temporary access within a fenced area is determined to be necessary, then a six-inch layer of bark mulch or gravel should be placed in all areas requiring access. This requirement for mulching should apply to all areas within the fenced area and subject to access. If equipment access is required, then the mulch should be overlaid with metal plates of sufficient thickness to adequately distribute bearing load.

4. Demolition/Site Clearing

- 4.1. The following work must be accomplished before any demolition or site clearing activity occurs within 50 feet of protected trees.
- 4.2. The demolition contractor is required to meet with the project arborist or designated client representative at the site prior to beginning work to review all work procedures, access and haul routes, and tree protection measures.
- 4.3. The limits of all tree protection zones shall be staked in the field.
- 4.4. Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain must be removed by a qualified arborist and not by demolition or construction contractors. The qualified arborist shall remove the tree in a manner that causes no damage to the tree(s) and understory to remain.
- 4.5. Any brush clearing required within the tree protection zone shall be accomplished with hand-operated equipment.
- 4.6. Trees to be removed shall be felled so as to fall away from tree protection zones and to avoid pulling and breaking of roots of trees to remain. If roots are entwined, the consultant may require first severing the major woody root mass before extracting the trees. This may be accomplished by cutting through the roots by hand, with a vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root-pruning equipment. [Note: If possible, show areas where root cutting is required on the demolition plan.]
- 4.7. Trees to be removed from within the tree protection zone shall be removed by a qualified arborist. The trees shall be cut near ground level and the stump ground out.
- 4.8. All downed brush and trees shall be removed from the tree protection zone either by hand or with equipment sitting outside the tree protection zone. Extraction shall occur by lifting the material out, not by skidding it across the ground.
- 4.9. Brush shall be chipped and placed in the tree protection zone to a depth of 6 inches.
- 4.10. Structures and underground features to be removed within the tree protection zone shall use the smallest equipment possible and operate from outside the tree

protection zone. The consultant shall be on site during all operations within the tree protection zone to monitor demolition activity.

- 4.11. All trees shall be pruned in accordance with the provided Pruning Specifications.
- 4.12. A 6-foot chainlink fence with posts sunk into the ground shall be erected to enclose the tree protection zone
- 4.13. Any damage to trees due to demolition activities shall be reported to the consulting arborist within 6 hours so that remedial action can be taken. Timeliness is critical to tree health.
- 4.14. If temporary haul or access roads must pass over the root area of trees to be retained, a road bed of 6 inches of mulch or gravel shall be created to protect the soil. The road bed material shall be replenished as necessary to maintain a 6-inch depth.

5. Site Grading, Trenching, and Root Pruning

- 5.1. Keep site grading within designated construction zones. Grading cuts or trenching within the TPZ of a retained tree trunk requires special trenching procedures. Trenches should be dug manually with an air spade or with the use of a root cutting machine, rock cutter, or other approved root-pruning equipment. This root-pruning trench should be placed one foot inside the edge of the grading cut or trench edge. The depth of the trench should equal the depth of the grading cut to a maximum depth of 40 inches. All work that is expected to encounter roots must be monitored by the Supervising Arborist or Client designated representative.
- 5.2. A trench may be mechanically dug toward a tree until the edge of the TPZ is reached. From the edge of the TPZ, the special trenching procedures should apply.
- 5.3. Underground utilities, drain, and irrigation lines should be routed outside the TPZs. When lines must cross the TPZ, the lines should be bored or tunneled through the area at a depth approved by the supervising arborist. In these instances, a single shared utility conduit should be used to reduce impacts to trees.
- 5.4. Any roots one inch in diameter or larger requiring removal should be cut cleanly in sound tissue. The roots and surrounding soil should be moistened and covered with a thick mulch (4") to prevent desiccation. No pruning seals or paints should be used on wounds. Cut and exposed roots should be protected from drying. A water absorbent material (i.e. burlap) should be secured at the top of the trench and draped over the exposed roots. This material should be kept moistened and the soil replaced as soon as practicable.
- 5.5. Porous pavements are recommended for use within the TPZ. Construction of the pavement sub-base should avoid grading cuts where possible.

6. Site Drainage

- 6.1. All grading shall be designed to provide positive drainage away from the base of the tree trunk, and not create ponding within the TPZ.

7. Pruning and Cabling

- 7.1. Any tree pruning, cabling, or other similar activity which may be proposed as part of site construction will be included on site plans and be reviewed by a qualified arborist or Client designated representative.
- 7.2. Pruning methods shall conform to the ANSI A 300-2001 Pruning Standard Practices and performed by an ISA Certified Arborist or Certified Tree Worker. Cabling or other support systems shall conform to the ANSI A 300 (part 3)-2000 Standard Practices

8. Tree Damage Mitigation

- 8.1. Trees damaged or significantly impacted during construction shall be evaluated by the Supervising Arborist or Client designated representative. Proper mitigation measures shall be specified and may include:
- 8.2. Pruning of damaged and dead wood.
- 8.3. Installation of a drip irrigation system to provide supplemental irrigation for three to five seasons following damage.
- 8.4. Proper low nitrogen fertilization timed to growth response and phenological development of the tree.
- 8.5. Periodic risk assessment of tree.
- 8.6. Replacement of tree per client requirements.
- 8.7. Alleviation of severe compaction by vertical mulching with augers or hydraulic soil probes.
- 8.8. Alleviation of surface compaction by light cultivation or raking and the application of mulch.

Appendix A

Tree Assessment Data Matrix

Redwood Market Tree Assessment Matrix
Appendix A

Redwood Market Tree Data Matrix
Tree Evaluation and Preliminary Construction Impact Assessment

Health Rating Key: 4.0 = good health
3.0 = fair health
2.5 = marginal to fair health
2.0 = marginal health
1.5 = poor to marginal health
1.0 = poor health

Structural Rating Key: 4.0 = good condition
3.0 = moderate condition
2.5 = marginal to moderate condition
2.0 = marginal condition
1.5 = poor to marginal condition
1.0 = poor condition

Construction Impact Code: RC= Removal Due to Construction
SI= Significant Potential Impact
MI= Moderate Impact
LI= Limited Impact
NI= No Impact Expected

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|---|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|--|---|-----------------------|---|--|-------------------------------------|-------------|
| 1 | valley oak (<i>Quercus lobata</i>) | 1 | 7.5 | | | | | | 44.2 | 7.5 | 20'± | 15'± | 3.0 | 2.5 | Young tree with closely spaced, multiple limb attachments forming at 7'. Twiggy growth with pit scale present. | Fair | Yes | Located off-site area. Located approximately 8' from project limits | 10' | 3' | MI |
| 2 | valley oak | 2 | 4.5 | 7.0 | | | | | 54.4 | 8.3 | 18'± | 15'± | 3.0 | 2.0 | Low, two trunk structure with included trunk attachment and seam. Pit scale observed. | Marginal | Yes | Located within project grading and construction limits. Removal required. | | | RC |
| 3 | coast live oak (<i>Quercus agrifolia</i>) | 4 | 1.0 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 20.4 | 5.1 | 10'± | 12'± | 4.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 4 | coast live oak | 3 | 2.0 | 3.0 | 4.0 | | | | 22.8 | 5.4 | 12'± | 12'± | 4.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 5 | coast live oak | 3 | 3 | 3.5 | 3.5 | | | | 26.3 | 5.8 | 15'± | 12'± | 4.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 6 | coast live oak | 3 | 4.5 | 5 | 6 | | | | 63.8 | 9.0 | 20'± | 12'± | 4.0 | 2.0 | Co-dominant trunks forming at grade. Upright form. Vigor and foliage density are good. | Marginal | Yes | Located within project grading and construction limits. Removal required. | | | RC |
| 7 | valley oak | 1 | 5 | | | | | | 19.6 | 5.0 | 20'± | 10'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 8 | valley oak | 3 | 4 | 5 | 5 | | | | 51.8 | 8.1 | 20'± | 12'± | 3.0 | 2.0 | Three trunk structure forming from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 9 | coast live oak | 6 | 1 | 2 | 3 | 3 | 4 | | 30.6 | 6.2 | 15'± | 12'± | 4.0 | 2.0 | Dense, multiple trunk structure forming from basal sprouts at grade. Vigor and foliage density are good. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|----------------|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|---|--|-------------------------------------|-------------|
| 10 | valley oak | 1 | 4.5 | | | | | | 15.9 | 4.5 | 20'± | 8'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Growing in area of dense small diameter trees. Vigor is moderately low with probable pit scale. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 11 | valley oak | 2 | 4.5 | 4.5 | | | | | 31.8 | 6.4 | 22'± | 10'± | 3.0 | 2.5 | Low, co-dominant trunk structure forming at grade with wide attachment. Growing in area of dense small diameter trees. Vigor is moderately low with probable pit scale. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 12 | valley oak | 2 | 4 | 5.5 | | | | | 36.3 | 6.8 | 20'± | 12'± | 3.0 | 2.5 | Low two-trunk structure with seam at trunk attachment. Vertical, upright crown form. Vigor is moderately low with probable pit scale. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 13 | valley oak | 4 | 1.5 | 2 | 3.5 | 6 | | | 42.8 | 7.4 | 25'± | 20'± | 3.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Fair | Yes | Located within project grading and construction limits. Removal required. | | | RC |
| 14 | valley oak | 2 | 4 | 4 | | | | | 25.1 | 5.7 | 20'± | 10'± | 3.0 | 2.5 | Co-dominant trunks forming at grade. Upright form. Vigor and foliage density are good. | Fair | No | Located adjacent to LPG tank. Removal required. | | | RC |
| 15 | valley oak | 1 | 5.5 | | | | | | 23.7 | 5.5 | 20'± | 10'± | 3.0 | 2.5 | Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. Growing adjacent to trees #14 and #16. | Fair | No | Located 10' from propane fill zone. | 8' | 2' | MI |
| 16 | valley oak | 4 | 2 | 2.5 | 3.5 | 4 | | | 30.2 | 6.2 | 20'± | 15'± | 3.0 | 2.0 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Marginal | No | Located adjacent to LPG tank. Removal required. | | | RC |
| 17 | valley oak | 6 | 5 | 8 | 8 | 10 | 10 | 16 | 478.1 | 24.7 | 40'± | 50'± | 3.0 | 2.5 | Mature tree with multiple trunks forming at grade. 16" trunk has upright form, while others have corrected leans. Dense bamboo growing around trees with lower trunk obscured. Vigor is moderately low with probable pit scale. | Fair | Yes | Located 20' from location of future storm drain. | 25' | 8' | LI |
| 18 | coast live oak | 3 | 6.5 | 6.5 | 7.5 | | | | 110.5 | 11.9 | 18'± | 20'± | 4.0 | 2.0 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Marginal | Yes | Located at least 25' from grading limits. | 12' | 3' | NI |
| 19 | valley oak | 3 | 2.5 | 3.5 | 4 | | | | 27.1 | 5.9 | 20'± | 12'± | 3.0 | 2.5 | Low, three-trunk structure forming from basal sprouts at grade. Upright crown form. Vigor is moderately low with probable pit scale. | Fair | No | Located at least 25' from grading limits. | 8' | 2' | NI |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|--|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|---|--|-------------------------------------|-------------|
| 20 | valley oak | 3 | 2 | 4 | 5 | | | | 35.3 | 6.7 | 12'± | 12'± | 3.0 | 2.0 | Multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Marginal | Yes | Located at least 25' from grading limits. | 8' | 2' | NI |
| 21 | coast live oak | 5 | 6 | 7 | 7 | 8 | 8.5 | | 212.1 | 16.4 | 22'± | 30'± | 4.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Located at fence line. Vigor and foliage density are good. | Fair | Yes | Located 20' from car wash driveway and fill zone. | 18' | 4' | LI |
| 22 | valley oak | 3 | 1.25 | 4 | 4 | | | | 26.3 | 5.8 | 18'± | 12'± | 3.0 | 2.5 | Multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 23 | Canary Island date palm (<i>Phoenix canariensis</i>) | 1 | 24 | | | | | | 452.2 | 24.0 | 18'± | 20'± | 4.0 | 3.0 | Young palm in good vigor and no structural issues. | Good | No | Located within project grading and construction limits. Removal required. | | | RC |
| 24 | valley oak | 1 | 5.5 | | | | | | 23.7 | 5.5 | 20'± | 8'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Vigor is moderately low with probable pit scale. Located adjacent to fence. | Fair | No | Located 10' from car wash driveway and fill zone. | 6' | 2' | LI |
| 25 | valley oak | 2 | 4 | 4 | | | | | 25.1 | 5.7 | 20'± | 10'± | 3.0 | 2.0 | Co-dominant trunks forming at grade. Vigor is moderately low with probable pit scale. Located adjacent to fence. | Marginal | No | Located 5' from car wash driveway and fill zone. | 6' | 2' | LI |
| 26 | coast live oak | 2 | 3 | 6 | | | | | 35.3 | 6.7 | 12'± | 10'± | 4.0 | 2.5 | Low, two-trunks structure with leaning, asymmetrical crown to west. Vigor and foliage density are good. Located adjacent to fence. | Fair | Yes | Located adjancet to car wash driveway. Removal likely required. | 6' | 2' | NI |
| 27 | valley oak | 3 | 4 | 4 | 5 | | | | 44.7 | 7.5 | 18'± | 8'± | 3.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Upright crown form. Vigor is moderately low with probable pit scale. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 28 | valley oak | 1 | 12 | | | | | | 113.0 | 12.0 | 30'± | 15'± | 3.0 | 3.0 | Semi-mature tree with single trunk structure. Closely spaced, multiple limb attachments form at 10'. Vigor is moderately low with probable pit scale. Ivy growing on trunk. | Fair | Yes | Located within project grading and construction limits. Removal required. | | | RC |
| 29 | valley oak | 1 | 12 | | | | | | 113.0 | 12.0 | 30'± | 25'± | 3.0 | 3.0 | Semi-mature tree with single trunk structure. Closely spaced, multiple limb attachments form at 15'. Symmetrical crown form. Vigor is moderately low with probable pit scale. Ivy growing on trunk. | Fair | Yes | Located within project grading and construction limits. Removal required. | | | RC |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|----------------|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|--|--|-------------------------------------|-------------|
| 30 | coast live oak | 1 | 7.5 | | | | | | 44.2 | 7.5 | 22'± | 20'± | 4.0 | 2.5 | Single trunk structure, originally a basal sprout. Growing through chain link fence. Vigor and foliage density are good. | Fair to Moderate | Yes | Located 20' from construction limits. Ni impact expected. | 8' | 2' | NI |
| 31 | coast live oak | 3 | 3 | 3 | 3 | | | | 21.2 | 5.2 | 12'± | 10'± | 4.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good. | Fair to Moderate | No | Located within project grading and construction limits. Removal required. | | | RC |
| 32 | valley oak | 1 | 5.5 | | | | | | 23.7 | 5.5 | 20'± | 12'± | 3.0 | 3.0 | Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. | Fair | No | Located 20' from construction limits. Ni impact expected. | 8' | 2' | NI |
| 33 | coast live oak | 3 | 10.5 | 12 | 12 | | | | 312.6 | 20.0 | 22'± | 30'± | 4.0 | 2.5 | Low, multiple trunk structure with the two 12" trunks having a partially included trunk attachment. Symmetrical crown form. Ivy growing on tree. | Fair to Moderate | Yes | Located approximately 8' to 10' from construction limits. Clearance pruning likely required. | 20' | 6' | MI |
| 34 | coast live oak | 1 | 7.5 | | | | | | 44.2 | 7.5 | 18'± | 20'± | 4.0 | 3.0 | Shaded tree with moderate lean. No significant structural defects. Growing at edge of drainage. Vigor and foliage density are moderate. | Moderate to good. | Yes | Located approximately 8' to 10' fro construction limits. Clearance pruning likely required. | 8' | 2' | MI |
| 35 | coast live oak | 1 | 6 | | | | | | 28.3 | 6.0 | 15'± | 12'± | 4.0 | 3.0 | Single trunk structure with closely spaced, multiple limb attachments forming at 5'. No significant structural defects observed. Vigor and foliage density are moderate. Ivy growing on tree. | Moderate to good. | Yes | Located 15' from construction area. | 6' | 2' | NI |
| 36 | coast live oak | 2 | 4 | 4 | | | | | 25.1 | 5.7 | 15'± | 10'± | 4.0 | 3.0 | Young tree with two trunk structure. Vigor and foliage density are good. | Moderate to good. | No | Located approximately 8' to 10' fro construction limits. Clearance pruning likely required. | 6' | 2' | MI |
| 37 | coast live oak | 1 | 5 | | | | | | 19.6 | 5.0 | 15'± | 10'± | 4.0 | 3.0 | Young tree with two trunk structure. Vigor and foliage density are good. | Moderate to good. | No | Located approximately 8' to 10' fro construction limits. Clearance pruning likely required. | 6' | 2' | MI |
| 38 | coast live oak | 3 | 3 | 3 | 4 | | | | 26.7 | 5.8 | 10'± | 10'± | 3.0 | 3.0 | Young tree with three trunk structure. Vigor and foliage density are good. Poison oak growing on tree. | Fair | No | Located approximately 8' to 10' fro construction limits. Clearance pruning likely required. | 6' | 2' | MI |
| 39 | coast live oak | 3 | 7 | 7.5 | 8 | | | | 132.9 | 13.0 | 30'± | 35'± | 1.0 | 2.0 | Low, multiple trunk structure originating from basal sprouts at grade. Extensive ivy and poison oak. Vigor is low with extensive crown dieback occurring. | Poor | Yes | Located approximately 8' to 10' fro construction limits. Clearance pruning likely required. | 12' | 3' | MI |

Redwood Market Tree Assessment Matrix
Appendix A

| Tree # | Species | # of Trunks | Trunk #1 Diameter @ 4.5' (inches) | Trunk #2 | Trunk #3 | Trunk #4 | Trunk #5 | Trunk #6 | Total Stem Area | Equivalent Trunk Diameter | Crown Height | Crown Diameter | Health Rating | Structural Rating | Comments/Observations | Suitability for Preservation (Based Upon Condition) | Protected Tree Status | Construction Impact Assessment | Tree Protection Zone) (Radius in Feet) | Critical Root Zone (Radius in feet) | Impact Code |
|--------|---|-------------|-----------------------------------|----------|----------|----------|----------|----------|-----------------|---------------------------|--------------|----------------|---------------|-------------------|---|---|-----------------------|--|--|-------------------------------------|-------------|
| 40 | coast live oak | 6 | 7 | 8 | 10 | 10 | 13 | 14 | 532.2 | 26.0 | 30'± | 35'-40'± | 3.0 | 2.0 | Multiple trunks forming at 2' with included attachments with deep seam. Wide crown form. Vigor and foliage density are moderately low. | Marginal | Yes | Located approximately 8' to 10' fro construction limts. Clearance pruning likely required. | 20' | 6' | MI |
| 41 | valley oak | 1 | 8 | | | | | | 50.2 | 8.0 | 20'± | 30'± | 3.0 | 2.0 | Horizontal trunk form due to shading from tree #40. Extends to southeast. Vigor is moderately low with probable pit scale. | Marginal | Yes | Located approximately 8' to 10' fro construction limts. Clearance pruning likely required. | 8' | 2' | MI |
| 42 | valley oak | 2 | 7 | 8.5 | | | | | 95.2 | 11.0 | 30'± | 20'± | 3.0 | 2.5 | Low two-trunk structure with seam at trunk attachment. Upright crown form. Vigor is moderately low with probable pit scale. | Fair | Yes | Located 15' from construction area. | 12' | 4' | Ni |
| 43 | valley oak | 3 | 6 | 7 | 7 | | | | 105.2 | 11.6 | 25'± | 25'± | 3.0 | 2.5 | Low, multiple trunk structure originating from basal sprouts at grade. Unions are not yet included. Vigor is moderately low with probable pit scale. | Fair | Yes | Located at least 25' from grading limits. | 12' | 4' | LI |
| 44 | Raywood ash (<i>Fraxinus angustifolia</i> 'Raywood') | 1 | 12 | | | | | | 113.0 | 12.0 | 25'± | 25'± | 3.0 | 2.5 | Single trunk structure with closely spaced, multiple limb attachments forming at 10'. No significant structural defects observed. Vigor and foliage density are moderately low. Located in small planter. | Fair | No | Located within project grading and construction limits. Removal required. | | | RC |
| 45 | coast live oak | 1 | 7 | | | | | | 38.5 | 7.0 | 15'± | 10'± | 4.0 | 2.0 | Leaning, asymmetrical form due to heavy pruning. Previously topped. Volunteer seedling. Good vigor and foliage density. | Marginal | Yes | Located within project grading and construction limits. Removal required. | | | RC |
| 46 | Chinese elm (<i>Ulmus parvifolia</i>) | 1 | 7 | | | | | | 38.5 | 7.0 | 18'± | 12 | 4.0 | 2.0 | Single trunk structure previously topped. Vigor and foliage density are moderate. 4" elm nearby. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 47 | Raywood ash | 1 | 9 | | | | | | 63.6 | 9.0 | 20'± | 18'± | 3.0 | 2.0 | Single trunk structure with closely spaced, multiple limb attachments forming at 6'. Vigor and foliage density are moderately low. Located in small planter. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 48 | Raywood ash | 1 | 7.5 | | | | | | 44.2 | 7.5 | 18'± | 15'± | 3.0 | 2.0 | Single trunk structure with closely spaced, multiple limb attachments forming at 5'. Vigor and foliage density are moderately low. Located in small planter. | Marginal | No | Located within project grading and construction limits. Removal required. | | | RC |
| 49 | Raywood ash | 4 | 4 | 4 | 5 | 6 | | | 73.0 | 9.6 | 15'± | 12'± | 3.0 | 1.0 | Multiple trunk structure originating from basal sprouts at grade. Very poor structure. | Poor | No | Located within project grading and construction limits. Removal required. | | | RC |

Appendix B

Tree Mitigation Chart

Redwood Market Tree Mitigation Chart
Appendix B

Redwood Market Tree Mitigation Chart

Health Rating Key:

- 5.0 = excellent health
- 4.0 = good health
- 3.0 = fair health
- 2.5 = marginal to fair health
- 2.0 = marginal health
- 1.5 = poor to marginal health
- 1.0 = poor health

Structural Rating Key:

- 4.0 = good condition
- 3.0 = moderate condition
- 2.5 = marginal to moderate
- 2.0 = marginal condition
- 1.5 = poor to marginal condition
- 1.0 = poor condition

| Tree # | Species | # of Trunks | Equivalent Trunk Diameter | Health Rating | Structural Rating | Replacement Ratio* | Required Replacement Inches |
|--------|----------------|-------------|---------------------------|---------------|-------------------|--------------------|-----------------------------|
| 2 | valley oak | 2 | 8.3 | 3.0 | 2.0 | 0.5 | 4.2 |
| 6 | coast live oak | 3 | 9.0 | 4.0 | 2.0 | 0.5 | 4.5 |
| 13 | valley oak | 4 | 7.4 | 3.0 | 2.5 | 0.5 | 3.7 |
| 28 | valley oak | 1 | 12.0 | 3.0 | 3.0 | 1.0 | 12.0 |
| 29 | valley oak | 1 | 12.0 | 3.0 | 3.0 | 1.0 | 12.0 |
| 45 | coast live oak | 1 | 7.0 | 4.0 | 2.0 | 0.5 | 3.5 |

| | | | | |
|--|---------------------------|----|--------------------|------------------------|
| | Total Replacement Inches: | 40 | In Lieu Equivalent | |
| 24" Box Replacement Tree Requirements ** | | 10 | \$4,000.00 | \$400.00 per 24" box |
| Minimum 48" Box Requirements*** | | 5 | \$8,000.00 | \$1,600.00 per 48" box |

| | | |
|--|--------|-------------|
| | Total: | \$12,000.00 |
| # of 36" Box Mitigation Trees Shown on Landscape Plan: | 4 | \$3,200.00 |
| # of 48" Box Mitigation Trees Shown on Landscape Plan: | 7 | \$11,200.00 |
| Net Mitigation In Lieu Amount: | | \$0.00 |

Appendix C

Site and Tree Images



View of northwest section of property. Tree #1 (valley oak) is in foreground.



Tree #2 (valley oak) is on left with area of dense small diameter coast live oaks.



Tree #7 (valley oak in foreground) with view to west.



Area of very dense small diameter valley oak and coast live oaks on northwest side of property (within future Town section).



Common multiple trunk structure forming at grade from sprouts from previously mowed seedling.



View to north corner with mature valley oak (#17) in distance.



Tree #17 on left and area in north portion of site.



Dense grove of acacia (*A. decurrens*) in north portion of site.



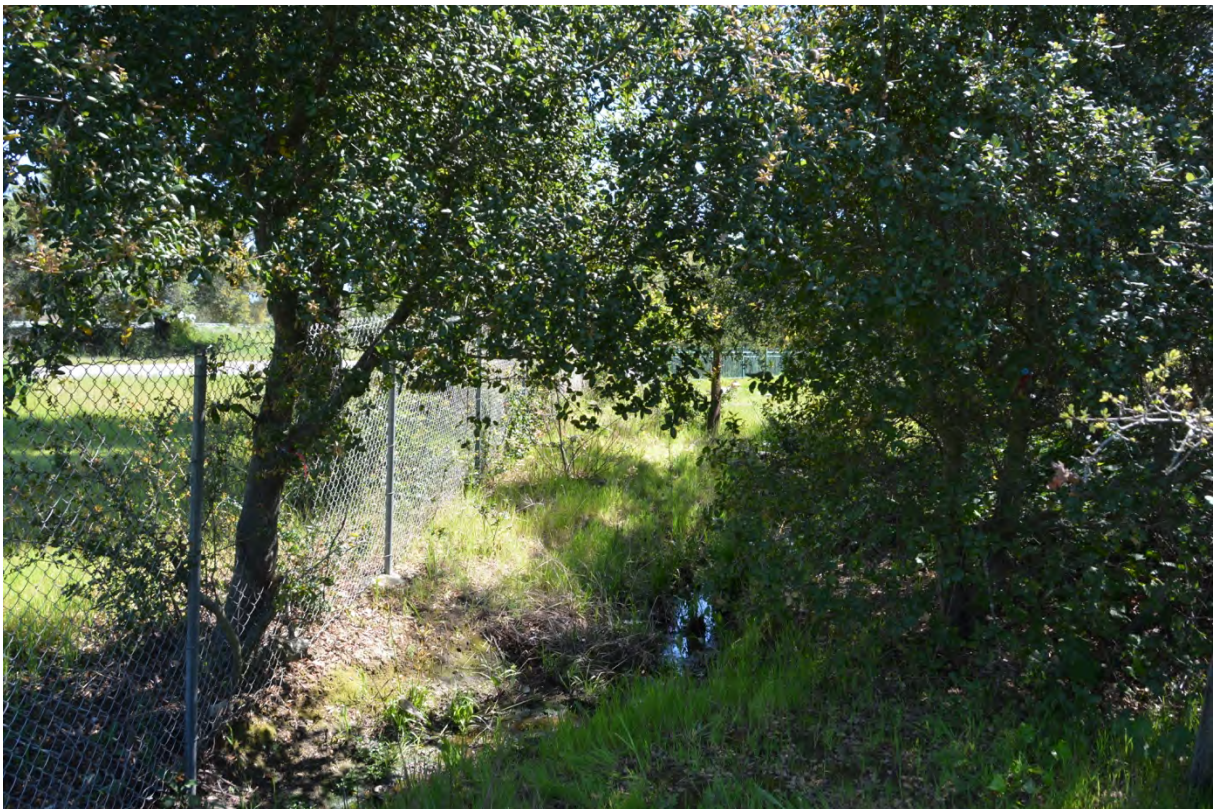
Trees growing along fence line with Caltrans ROW.



Young Canary Island date palm near parking area.



Two semi-mature valley oaks (#28 and #29).



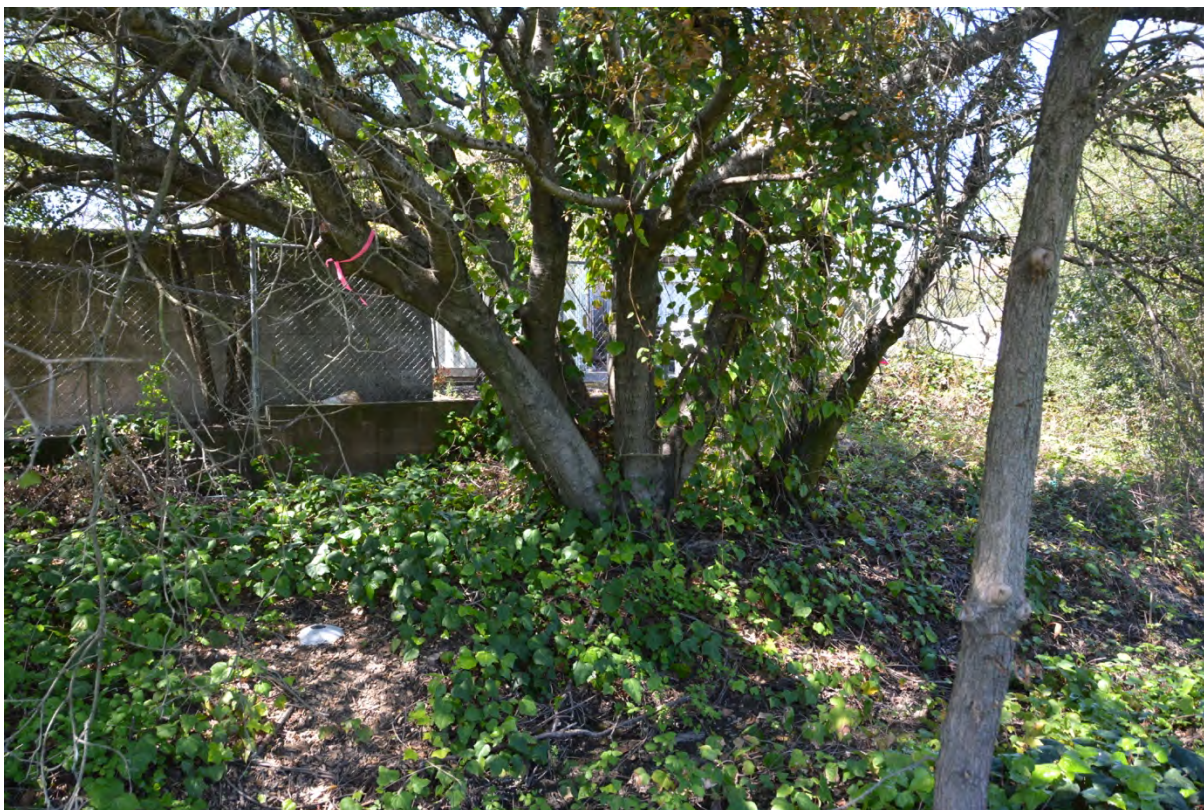
Small coast live oaks near fence and drainage swale on east side of project.



Coast live oaks on east side in area of dense ivy and poison oak.



Coast live oaks on east side. Tree #39 on left is rated in poor condition due to extensive crown dieback.



Base of coast live oak #40 with defective multiple trunk structure.



Tree #43 (valley oak) appears to be away from grading limits, although not shown on survey plan.



Small elm and volunteer coast live oak on right in parking lot planter.



Mature Raywood ash in small landscape planter.



Smaller, drought stressed Raywood ash in planters on north side of parking area.

Appendix D

Appraisal Calculation Worksheet

Redwood Market Appraisal Calculation - Appendix D
10th Edition Reproduction Method Trunk Formula Technique- Data and Calculations

| Status, and Equivalent Trunk Diameter) | | | | Depreciation Factors | | | | | | Replacement Tree and Calculations | | | | | | | | Additional Costs ² | |
|--|----------------|--|----------------------|----------------------|------------------|-------------|-------------------|-------------------------------------|----------------------|-----------------------------------|--------------------|----------------|----------------------|-----------------------|----------------|--------------------------|--------------------------------|------------------------------------|-------------------------|
| Tree Number | Species | Trunk Diameter at 4.5 ft (inches) ¹ | Cross-Sectional Area | Health Rating | Structure Rating | Form Rating | Condition Rating: | Functional Limitations ² | External Limitations | Replacement Tree Species | Box Container Size | Trunk Diameter | Cross-Sectional Area | Replacement Tree Cost | Unit Tree Cost | Basic Reproduction Cost: | Depreciated Reproduction Cost: | Replacement Tree Installation Cost | Total Reproduction Cost |
| Preserved Trees | | | | | | | | | | | | | | | | | | | |
| 1 | valley oak | 7.5 | 44 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 3,164.06 | \$ 996.68 | \$ 450.00 | \$ 1,446.68 |
| 15 | valley oak | 5.5 | 24 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,701.56 | \$ 535.99 | \$ 450.00 | \$ 985.99 |
| 17 | valley oak | 24.7 | 478 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 34,256.25 | \$ 10,790.72 | \$ 450.00 | \$ 11,240.72 |
| 18 | coast live oak | 11.9 | 111 | 70% | 50% | 50% | 57% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 7,917.19 | \$ 2,018.88 | \$ 450.00 | \$ 2,468.88 |
| 19 | valley oak | 5.9 | 27 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,940.63 | \$ 611.30 | \$ 450.00 | \$ 1,061.30 |
| 20 | valley oak | 6.7 | 35 | 70% | 50% | 70% | 63% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 2,531.25 | \$ 721.41 | \$ 450.00 | \$ 1,171.41 |
| 21 | coast live oak | 16.4 | 212 | 70% | 65% | 65% | 67% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 15,201.56 | \$ 4,560.47 | \$ 450.00 | \$ 5,010.47 |
| 24 | valley oak | 5.5 | 24 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,701.56 | \$ 535.99 | \$ 450.00 | \$ 985.99 |
| 25 | valley oak | 5.7 | 25 | 70% | 50% | 70% | 63% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,800.00 | \$ 513.00 | \$ 450.00 | \$ 963.00 |
| 26 | coast live oak | 6.7 | 35 | 70% | 65% | 65% | 67% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 2,531.25 | \$ 759.38 | \$ 450.00 | \$ 1,209.38 |
| 30 | coast live oak | 7.5 | 44 | 70% | 65% | 65% | 67% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 3,164.06 | \$ 949.22 | \$ 450.00 | \$ 1,399.22 |
| 32 | valley oak | 5.5 | 24 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,701.56 | \$ 535.99 | \$ 450.00 | \$ 985.99 |
| 33 | coast live oak | 20.0 | 313 | 70% | 65% | 65% | 67% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 22,401.56 | \$ 6,720.47 | \$ 450.00 | \$ 7,170.47 |
| 34 | coast live oak | 7.5 | 44 | 70% | 70% | 70% | 70% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 3,164.06 | \$ 996.68 | \$ 450.00 | \$ 1,446.68 |
| 35 | coast live oak | 6.0 | 28 | 70% | 70% | 70% | 70% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 2,025.00 | \$ 637.88 | \$ 450.00 | \$ 1,087.88 |
| 36 | coast live oak | 5.7 | 25 | 70% | 70% | 70% | 70% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,800.00 | \$ 567.00 | \$ 450.00 | \$ 1,017.00 |
| 37 | coast live oak | 5.0 | 20 | 70% | 70% | 70% | 70% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,406.25 | \$ 442.97 | \$ 450.00 | \$ 892.97 |
| 38 | coast live oak | 5.8 | 27 | 70% | 70% | 70% | 70% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 1,912.50 | \$ 602.44 | \$ 450.00 | \$ 1,052.44 |
| 39 | coast live oak | 13.0 | 133 | 20% | 50% | 70% | 47% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 9,520.31 | \$ 1,999.27 | \$ 450.00 | \$ 2,449.27 |
| 40 | coast live oak | 26.0 | 533 | 70% | 50% | 70% | 63% | 50% | 90% | coast live oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 38,137.50 | \$ 10,869.19 | \$ 450.00 | \$ 11,319.19 |
| 41 | valley oak | 8.0 | 50 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 3,600.00 | \$ 1,134.00 | \$ 450.00 | \$ 1,584.00 |
| 42 | valley oak | 11.0 | 95 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 6,820.31 | \$ 2,148.40 | \$ 450.00 | \$ 2,598.40 |
| 43 | valley oak | 11.6 | 105 | 70% | 70% | 70% | 70% | 50% | 90% | valley oak | 24" | 2.0 | 3 | \$ 225.00 | \$ 71.62 | \$ 7,537.50 | \$ 2,374.31 | \$ 450.00 | \$ 2,824.31 |

\$ 62,371.62

¹ Combined cross-sectional inches of individual stems and converted to a single stem equivalent diameter.

² Superadequacy depreciation (high density of trees on site)

APPENDIX B.3:
Preliminary
Wetlands Delineation

**PRELIMINARY ADVISORY ASSESSMENT
WATERS OF THE UNITED STATES
CHEVRON STATION-REDWOOD MARKET
9120 OLD REDWOOD HIGHWAY
WINDSOR, SONOMA COUNTY, CA**

Prepared for:

Mr. Peter VanAlyea
Redwood Oil Company
50 Professional Center Drive
Rohnert Park, CA 94928

Prepared by:

Ted P. Winfield, Ph.D.
Ted Winfield & Associated
1455 Wagoner Drive
Livermore, CA 94550

June 19, 2018

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1.0 SUMMARY

This report presents the results of a preliminary advisory assessment of the possible presence of features subject to the jurisdiction of the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act on two parcels located at 9120 Old Redwood Highway (APN: 161-070-034; 0.63 acre) and 9200 Old Redwood Highway (APN: 161-070-035; 0.78 acre) (collectively the Project Site) in the Town of Windsor, Sonoma County, CA.

There is a full-service gas station covering most of the parcel at 9120 Old Redwood Highway, and most of the parcel at 9200 Old Redwood Highway is undeveloped. Most of the surrounding lands have been developed for various uses including another full-service gas station, food service, retail development, and Redwood Highway (Highway 101).

The field survey for the preliminary advisory assessment at the Survey area was conducted on April 23, 2018. The presence and approximate boundaries of jurisdictional wetlands were determined using the routine on-site determination methodology as specified in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Version (Version 2.0)* (Arid West Manual). The wetland status of the plant encountered at each sample point during the field survey was determined using the *State of California 2016 Wetland Plant List*.

The total wetland acreage is approximately 3,156 sq. ft. (0.073 ac) and includes two seasonal wetlands and the bottom area below OHW along an unnamed drainage ditch that occurs along the southwestern boundary of the site. There is another section of a closed-in drainage channel that joins with this unnamed drainage ditch at the opening to a culvert at the southwest corner of the site, which is approximately 166 ft. in length and the area below OHW is approximately 665 sq. ft. (0.015 ac).

2.0 INTRODUCTION

2.1 SITE LOCATION AND DESCRIPTION

The survey area is located on two parcels located at 9120 Old Redwood Highway (APN: 161-070-034; 0.63 acre) and 9200 Old Redwood Highway (APN: 161-070-035; 0.78 acre) (collectively the Project Site) in the Town of Windsor, Sonoma County, CA (Figure 1). There is a full-service gas station covering most of the parcel at 9120 Old Redwood Highway, and most of the parcel at 9200 Old Redwood Highway is undeveloped. Most of the surrounding lands have been developed for various uses including another full-service gas station to the south, food service and empty lot to the west, retail development to the northwest, and Redwood Highway (Highway 101) to the northwest and east (Figure 2).

2.2 PHYSICAL AND HYDROLOGIC CONDITIONS

2.2.1 Topography and Drainage

The undeveloped parts of the subject parcels are relatively flat with a less than one percent grade from north to south. An intermittent drainage ditch occurs along the eastern boundary of the parcel at 9120 Old Redwood Highway.

2.2.2 Soils

The soil on most of the undeveloped areas of the two parcels is mapped as Cole silty clay loam, 0 to 1 percent slopes (Figure 3).¹ The soil type along the eastern part of the parcel at 9120 Old Redwood Highway along the southern part of the site is mapped as Riverwash (Figure 3).

Cole series soils consist of somewhat poorly drained silt loams that have a dominantly clay subsoil (Miller 1972). These soils formed in alluvium from mixed sedimentary and basic rock and are found on alluvial fans. Riverwash soil consist of very recent depositions of gravel, sand, and silt alluvium along major streams and their tributaries (Miller 1972). Cole silty clay loam and Riverwash are on the list of hydric soils for California.

¹ SoilWeb, online digital soil survey.



Figure 1. Site location map.



Google Earth Pro

feet 900
meters 300



Figure 2. Aerial photograph of region showing location of survey area.

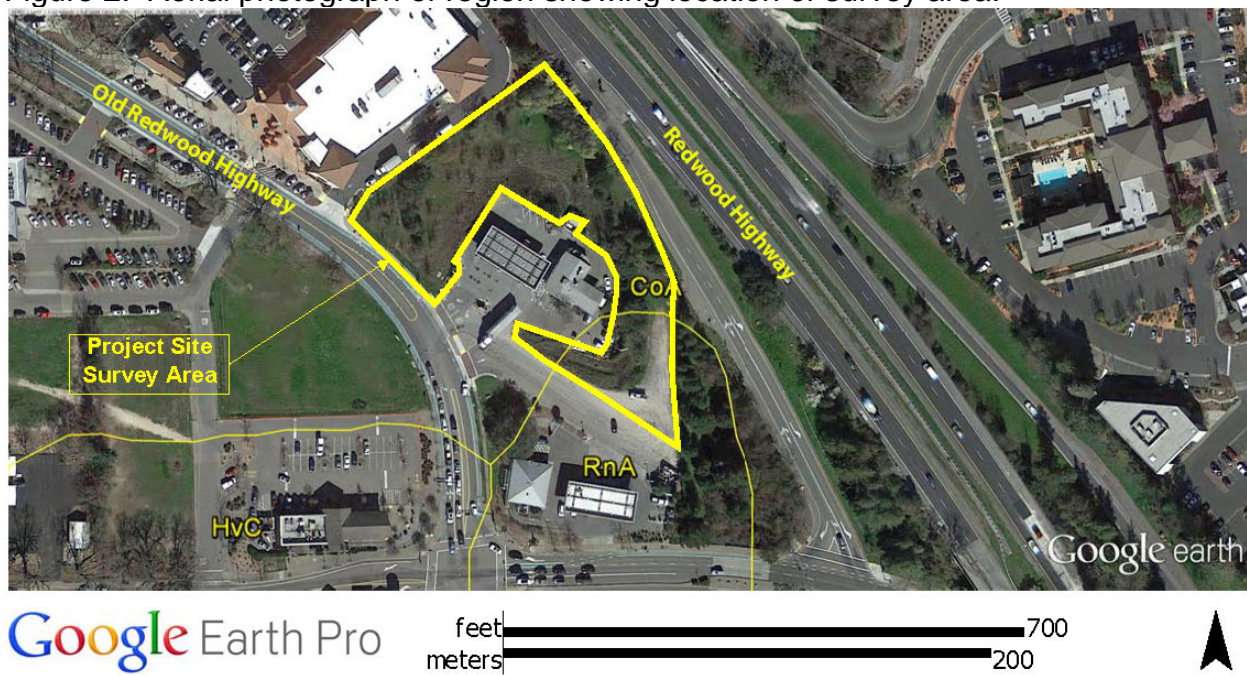


Figure 3. Soils map of Project Site survey area.

3.0 REGULATORY BACKGROUND

3.1 DEFINITIONS

3.1.1 Waters of the United States

Waters of the United States include "lakes, rivers, intermittent streams, mudflats, sandflats, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds the use, destruction, and/or degradation of which could affect interstate or foreign commerce" [Section 33, Code of Federal Regulations, Part 328.3(a)(3)].

The lateral extent of the Corps of Engineers' jurisdiction over lakes and drainages with defined beds and banks is the ordinary high water mark (OHW). Jurisdiction extends beyond ordinary high water where adjacent wetlands are present.

3.1.2 Wetlands

For the Corps of Engineers to regulate an area as a wetland under the Clean Water Act it must be "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 CFR 328.3(b)]. Three criteria determine whether or not an area satisfies the definition under "normal circumstances." Under normal circumstances, hydrophytic vegetation, hydric soils, *and* a wetland hydrologic regime must be present for an area to be a wetland.

Hydrophytic Vegetation. Hydrophytic vegetation is dominated by plants adapted to wetland inundation or saturated soils because of physiological and reproductive adaptations. The U. S. Fish and Wildlife Service's National Wetlands Inventory has used field observations, expert opinion, and technical documents to identify wetland plant species and has developed wetland species lists which identify species which occur in wetlands.²

An area is considered vegetated if it has at least five percent vegetative cover. Indicators of hydrophytic vegetation include dominance of the vegetation by plant species with a wetland indicator status using absolute cover and the "50/20" rule; a prevalence indicator of 3.0 or less using numeric assignments to each indicator status (OBL = 1, FACW = 2, FAC = 3, FACU = 5, UPL = 5); or plant morphological adaptations such as adventitious roots, shallow root systems, including those on FACU species as long as they are detected on at least 50 percent of the FACU plants if the site is characterized by hydric soils and wetland hydrologic function.

Hydric Soils. Hydric soils are soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the

² Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. State of California 2016 Wetland Plant List. (<http://wetland-plants.usace.army.mil/>)

upper part (Federal Register, July 13, 1994). Field indicators for identifying hydric soils are described in NRCS (2010) and summarized in the Arid West Manual.

The site is located in the Mediterranean California (LRR C) subregion of the Arid West Region. In non-sandy soils, prolonged anaerobic conditions cause chemical reactions, evidence of which can include sulfidic material, reduced soil conditions, an aquic or peraquic moisture regime, a gleyed soil matrix chroma, bright mottles and/or low matrix chroma, and iron and/or manganese concretions.

Although the physical properties described to assess the presence of hydric soils have not changed the new supplement for the Arid West Region lists several new hydric soil indicators that employ horizon thickness, soil matrix characteristics, the abundance and distinctness or prominence of redoximorphic features, and microtopography in setting indicator names. The indicators most likely to occur in soils in the region include a depleted matrix (indicator F3), a redox dark surface (F6), a depleted dark surface (F7), redox depressions (F8), and vernal pools (V9).

Wetland Hydrology. Wetland hydrologic function or “hydrology” implies periodic inundation or soil saturation to the surface for some period during the growing season. Areas which have seasonally inundated or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met (soils with compacted surfaces may be inundated but remain unsaturated because of extremely low infiltration rates).

Areas that are inundated or saturated between five percent and 12.5 percent of the growing season may or may not be wetlands. The growing season for the central part of Sonoma County is defined in the Soil Survey for Sonoma County (Miller 1972) as between 230 and 260 days, but observations in the field indicate that some plant growth occurs year around.

In order for there to be wetland hydrology, the ground must be saturated and/or inundated for a minimum of five percent of the growing season, which would be between approximately 12 and 13 consecutive days using the estimated growing season from the county soil survey. Based on field observations of mid-winter plant growth (emergence of herbaceous plants; new crown development from perennial rootstocks; bud burst, leaf elongation, and flower development on woody plants) at the project site, the actual growing season for natural and naturalized vegetation is probably year around, which means that for wetland hydrology to be present the area must be inundated and/or saturated for a minimum of 18 consecutive days.

In addition to surface water and saturated soils (within the root zone) several other forms of field evidence indicate that a site may exhibit wetland hydrologic function. Such evidence includes water-matted plant material and water-stained leaves; cracks associated with shrink-swell soils; sediment and drift deposits; deep cattle hoof prints and soil “pedestals” standing above the surrounding ground (indicating periods of long saturation during the cattle grazing season); algal staining or crusts; water marks; drift

lines; eggs of frogs, salamanders and other amphibians that breed in water; freshwater clams, snails; and other aquatic invertebrates; crayfish burrows.

4.0 METHODS

The status and the limit of the wetland in the survey area were determined using procedures for routine on-site determination as described in the *Regional Supplement to the Corps of Engineers' Wetland Manual; Arid West Region (Version 2.0)* (U. S. Army Corps of Engineers 2008) on April 23, 2018. At most sample locations, a series of paired sample sites distributed across the survey area were established and data on plant cover, soil characteristics and signs of hydrology were collected at each of the sample sites and recorded in a field notebook. Sample sites were located in areas that were dominated by OBL, FACW or FAC species and that showed surface indicators of hydrology.

The preliminary advisory wetland map was prepared by Trans Tech Consultants using the field survey base map prepared during the field survey.

5.0 POTENTIAL JURISDICTIONAL WETLANDS

The location and extent of the possible jurisdictional features occurring at the Survey area is shown on Figure 4. A full-scale version of Figure 4 is appended to this report in Appendix B. Appendix A contains the field data sheets (Wetland Determination Data Form – Arid West Region). Appendix B is the full-scale map of the site showing the preliminary extent of jurisdictional wetlands.

5.1 GENERAL VEGETATION DESCRIPTION

5.1.1 Upland Habitat

The upland areas of the survey area consisted primarily of non-native annual grasses and forbs. The common species observed in the survey included slender wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), ryegrass (*Festuca perennis*), brome fescue (*Festuca bromoides*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), annual bluegrass (*Poa annua*), rattlesnake grass (*Briza maxima*), hairy catsear (*Hypochaeris radicata*), subterranean clover (*Trifolium subterraneum*), spring vetch (*Vicia sativa*), field mustard (*Brassica rapa*), English plantain (*Plantago lanceolata*), red stemmed filaree (*Erodium cicutarium*), cut-leaf geranium (*Geranium dissectum*), and Himalayan blackberry (*Rubus armeniacus*).

Several native species also occurred throughout the upland areas, including California oatgrass (*Danthonia californica*), coyote brush (*Baccharis pilularis*), blue eyed grass (*Sisyrinchium bellum*), and several species of oak trees (*Quercus agrifolia*, *Q. lobata*, *Q. Kelloggii* and *Q. wislizeni*).

5.1.2 Seasonal Wetlands

The seasonal wetlands were dominated primarily by non-native species, such as ryegrass, Mediterranean barley, little quaking grass (*Briza minor*), prickly ox-tongue (*Helminthotheca echioides*) and English plantain. The vegetation in the small isolated wetland on the east side of the survey area included several native species, including semaphore grass (*Pleuropogon californicus*), California oatgrass, slender rush (*Juncus tenuis*), and tall flatsedge (*Cyperus erogrostis*).

The unnamed drainage ditch along the frontage with Redwood Highway supports a sparse cover of plants usually found in wetlands, including pennyroyal (*Mentha pulegium*), tall flatsedge, dense sedge (*Carex densa*) along with facultative species, such as curly dock (*Rumex crispus*), and ryegrass. The other section of the ditch along the southwest side of the parcel where the gas station is located was dominated by a mixture of primarily upland and facultative species.

5.2 POTENTIAL JURISDICTIONAL WETLANDS

The occurrence of seasonal wetlands potentially subject to the Corps' jurisdiction was limited to separate seasonal wetlands located along the northern end of the survey area and sections of the unnamed drainage ditch (Figure 4). The larger of the two seasonal

wetlands covers approximately 2,397 sq. ft. (0.055) and the smaller seasonal wetland covers approximately 166 sq. ft. (0.004 ac) for a total of 2,563 sq. ft. (0.059 ac). The section of the unnamed drainage ditch in the survey area is approximately 157 ft. and the area below ordinary high water (OHW) is approximately 593 sq. ft. (0.014 ac) (Figure 4). Wetlands are restricted to the bottom of the channel.

The total wetland acreage, therefore, is approximately 3,156 sq. ft. (0.073 ac). The remaining section of the other drainage ditch is approximately 166 ft. and the area below OHW is approximately 665 sq. ft. (0.015 ac). Table 1 provides a summary of presence or absence of indicators at each of the sample points.

Table 1. Summary of indicators present at each sample point.

| Sample Point | Indicators Present at Sample Point | | | Wetland Sample Point |
|--------------|------------------------------------|--------------|-------------------|----------------------|
| | Hydric Vegetation | Hydric Soils | Wetland Hydrology | |
| 1 | | | | |
| 2 | X | X | X | X |
| 3 | | X | X | |
| 4 | X | X | X | X |
| 5 | X | X | | |
| 6 | | X | | |
| 7 | | | | |
| 8 | X | X | X | X |
| 9 | X | X | X | X |
| 10 | | | | |
| 11 | | | | |
| 12 | X | X | X | X |
| 13 | | | | |
| 14 | X | X | X | X |
| 15 | | | | |
| 16 | X | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | X | X | X | X |
| 20 | | | | |



Figure 4. Preliminary advisory assessment jurisdictional map for the Chevron-Windsor Site.

6.0 REFERENCES CITED

Miller, V.C. 1972. Soil survey of Sonoma County. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of California Agricultural Experiment Station.

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U.S. Department of Agriculture, Natural Resources Conservation Service (NRDC). 2010. Field indicators of hydric soils in the United States. A guide for identifying and delineating hydric soils, version 7.0. L.M. Vasilas, B.W. Hurt and C.V. Noble (eds). USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.

APPENDIX A. FIELD DATA SHEETS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 1
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clayloam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) |
|---|-------------------------------|-------------------|------------------|---|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>25</u> x 3 = <u>75</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>20</u> x 5 = <u>100</u> Column Totals: <u>60</u> (A) <u>235</u> (B) Prevalence Index = B/A = <u>3.92</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Bryza maxima</u> | <u>20</u> | <u>X</u> | <u>NI/UPL</u> | |
| 2. <u>Festuca perennis</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Phalaris aquatica</u> | <u>10</u> | | <u>FACU</u> | |
| 4. <u>Plantago lanceolata</u> | <u>5</u> | | <u>FAC</u> | |
| 5. <u>Vicia sativa</u> | <u>5</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| Herb Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| % Bare Ground in Herb Stratum <u>40</u> | % Cover of Biotic Crust _____ | | | |
| Remarks: | | | | |

SOIL

Sampling Point: 1

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|---|----------------|-----|-------------------|------------------|---------|---------------------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-0.2 | 10YR4/2 | | | | | | fill | mixed fill material |
| 0.2-1.3 | 10YR4/2 | | 10YR3/3 | >5% | C | M | loam | faint mottles |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☒

Remarks:

faint mottles

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

no surface hydrology indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 2
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clayloam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</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 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>39</u> x 3 = <u>117</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>1</u> x 5 = <u>5</u> Column Totals: <u>50</u> (A) <u>162</u> (B) Prevalence Index = B/A = <u>3.24</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Hordeum marinum ssp. gussoneanum</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | |
| 2. <u>Festuca perennis</u> | <u>15</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Phalaris aquatica</u> | <u>10</u> | <u>X</u> | <u>FACU</u> | |
| 4. <u>Rumex crispus</u> | <u>4</u> | | <u>FAC</u> | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5. <u>Geranium dissectum</u> | <u>1</u> | | <u>NI/UPL</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>50</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover: 20% of 50 = 10% cover | | | | |

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 | | |
| 0-1.3 | 10YR4/1+ | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 3
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clayloam, 0 to 1 percent slopes NWI classification: PEM2

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 <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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: | |
|---|---------------------|----------------------|---------------------|--|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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 | | | | | |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | Prevalence Index worksheet: | |
| 1. <u>Festuca perennis</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | Total % Cover of: _____ Multiply by: _____ | |
| 2. <u>Phalaris aquatica</u> | <u>15</u> | <u>X</u> | <u>FACU</u> | OBL species _____ x 1 = <u>0</u> | |
| 3. <u>Bromus hordeaceus</u> | <u>5</u> | | <u>FACU</u> | FACW species _____ x 2 = <u>0</u> | |
| 4. <u>Festuca bromoides</u> | <u>5</u> | | <u>FACU</u> | FAC species <u>21</u> x 3 = <u>63</u> | |
| 5. <u>Briza minor</u> | <u>1</u> | | <u>FAC</u> | FACU species <u>25</u> x 4 = <u>100</u> | |
| _____ = Total Cover | | | | UPL species _____ x 5 = <u>0</u> | |
| Herb Stratum (Plot size: _____) | | | | Column Totals: <u>46</u> (A) <u>163</u> (B) | |
| 1. _____ | _____ | _____ | _____ | Prevalence Index = B/A = <u>3.54</u> | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Indicators: | |
| 3. _____ | _____ | _____ | _____ | ___ Dominance Test is >50% | |
| 4. _____ | _____ | _____ | _____ | ___ Prevalence Index is ≤3.0 ¹ | |
| 5. _____ | _____ | _____ | _____ | ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) | |
| 6. _____ | _____ | _____ | _____ | ___ Problematic Hydrophytic Vegetation ¹ (Explain) | |
| 7. _____ | _____ | _____ | _____ | | |
| 8. _____ | _____ | _____ | _____ | | |
| _____ = Total Cover | | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | |
| 1. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> | |
| 2. _____ | _____ | _____ | _____ | | |
| _____ = Total Cover | | | | | |
| % Bare Ground in Herb Stratum <u>54</u> % Cover of Biotic Crust _____ | | | | | |
| Remarks: | | | | | |
| Absolute cover: 20% of 46 = ~10% cover | | | | | |

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 | | |
| 0-1.3 | 10YR4/2 | | 10YR4/4 | >5% | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 4
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: | |
|---|---------------------|----------------------|---------------------|--|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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. _____ | _____ | _____ | _____ | | |
| Herb Stratum (Plot size: <u>1m^2</u>) = Total Cover | | | | Prevalence Index worksheet: | |
| 1. <u>Festuca perennis</u> | <u>30</u> | <u>X</u> | <u>FAC</u> | Total % Cover of: _____ Multiply by: _____ | |
| 2. <u>Phalaris aquatica</u> | <u>10</u> | <u>X</u> | <u>FACU</u> | OBL species _____ x 1 = <u>0</u> | |
| 3. <u>Hordeum marinum ssp. gussoneanum</u> | <u>5</u> | _____ | <u>FAC</u> | FACW species _____ x 2 = <u>0</u> | |
| 4. <u>Rumex crispus</u> | <u>5</u> | _____ | <u>FAC</u> | FAC species <u>40</u> x 3 = <u>120</u> | |
| 5. _____ | _____ | _____ | _____ | FACU species <u>10</u> x 4 = <u>40</u> | |
| _____ = Total Cover | | | | UPL species _____ x 5 = <u>0</u> | |
| Herb Stratum (Plot size: _____) | _____ | _____ | _____ | Column Totals: <u>50</u> (A) <u>160</u> (B) | |
| 1. _____ | _____ | _____ | _____ | Prevalence Index = B/A = <u>3.20</u> | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Indicators: | |
| 3. _____ | _____ | _____ | _____ | ___ Dominance Test is >50% | |
| 4. _____ | _____ | _____ | _____ | ___ Prevalence Index is ≤3.0 ¹ | |
| 5. _____ | _____ | _____ | _____ | ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) | |
| 6. _____ | _____ | _____ | _____ | ___ Problematic Hydrophytic Vegetation ¹ (Explain) | |
| 7. _____ | _____ | _____ | _____ | | |
| 8. _____ | _____ | _____ | _____ | | |
| _____ = 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>50</u> % Cover of Biotic Crust _____ | | | | | |

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

Hydrophytic Vegetation Present? Yes ☒ No _____

Remarks:

Absolute cover: 20% of 50 = 10% cover located at the edge; decision based on presence of FAC species as understory and presence of wetland hydrology.

SOIL

Sampling Point: 4

[illegible]

HYDROLOGY

| Wetland Hydrology Indicators: | | |
|---|--|---|
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input checked="" type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe) | | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: water-matted mulch | | |

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 5
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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 _____ No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ | |
| 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: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</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 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>45</u> (A) <u>150</u> (B) Prevalence Index = B/A = <u>3.33</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Plantago lanceolata</u> | <u>15</u> | <u>X</u> | <u>FAC</u> | |
| 2. <u>Festuca bromoides</u> | <u>15</u> | <u>X</u> | <u>FACU</u> | |
| 3. <u>Festuca perennis</u> | <u>10</u> | <u>X</u> | <u>FAC</u> | |
| 4. <u>Rumex crispus</u> | <u>5</u> | | <u>FAC</u> | |
| 5. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>55</u> % Cover of Biotic Crust _____ | | | | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| Remarks: | | | | |
| Absolute cover: 20% of 45 = ~10% cover | | | | |

SOIL

Sampling Point: 5

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 | | |
| 0-1.2 | 10YR4/1+ | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

no indicators of surface hydrology indicators; soils not saturated when visited several days after rain event.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 6
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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 <input checked="" type="checkbox"/> No _____ | |
| 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: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B) |
|---|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>50</u> (A) <u>185</u> (B) Prevalence Index = B/A = <u>3.70</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Phalaris aquatica</u> | <u>25</u> | <u>X</u> | <u>FACU</u> | |
| 2. <u>Festuca perennis</u> | <u>15</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Festuca bromoides</u> | <u>10</u> | <u>X</u> | <u>FACU</u> | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>50</u> % Cover of Biotic Crust _____ | | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| Remarks: | | | | |
| Absolute cover: 20% of 50 = 10% cover | | | | |

SOIL

Sampling Point: 6

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 | | |
| 0-1.2 | 10YR4/1+ | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

no indicators of surface hydrology indicators; soils not saturated when visited several days after rain event.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 7
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) |
|---|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| Herb Stratum (Plot size: <u>1m^2</u>) _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>32</u> x 4 = <u>128</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>42</u> (A) <u>158</u> (B) Prevalence Index = B/A = <u>3.76</u> |
| 1. <u>Phalaris aquatica</u> | <u>30</u> | <u>X</u> | <u>FACU</u> | |
| 2. <u>Festuca perennis</u> | <u>10</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Hypochaeris radicata</u> | <u>2</u> | _____ | <u>FACU</u> | |
| 4. <u>Briza minor</u> | <u>t</u> | _____ | <u>FAC</u> | |
| Herb Stratum (Plot size: _____) _____ = Total Cover | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| Woody Vine Stratum (Plot size: _____) <u>42</u> = Total Cover | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>58</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover: 20% of 42 = ~8% cover | | | | |

SOIL

Sampling Point: 7

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/3 | >5% | C | M | loam | faint mottles |
| | | | | | | | | |
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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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☒

Remarks:

faint mottles

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

no indicators of surface hydrology indicators; soils not saturated when visited several days after rain event.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 8
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</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 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>55</u> x 3 = <u>165</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>60</u> (A) <u>185</u> (B) Prevalence Index = B/A = <u>3.08</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Festuca perennis</u> | <u>30</u> | <u>X</u> | <u>FAC</u> | |
| 2. <u>Hordeum marinum ssp. gussoneanum</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Helminthotheca echioides</u> | <u>5</u> | | <u>FAC</u> | |
| 4. <u>Phalaris aquatica</u> | <u>5</u> | | <u>FACU</u> | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5. <u>Convolvulus arvensis</u> | <u>t</u> | | <u>NI/UPL</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>40</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover: 20% of 60 = 12% cover | | | | |

SOIL

Sampling Point: 8

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 9
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</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 = <u>0</u> FACW species <u>20</u> x 2 = <u>40</u> FAC species <u>25</u> x 3 = <u>75</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>47</u> (A) <u>123</u> (B) Prevalence Index = B/A = <u>2.62</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Festuca perennis</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | |
| 2. <u>Cyperus eragrostis</u> | <u>20</u> | <u>X</u> | <u>FACW</u> | |
| 3. <u>Hordeum marinum ssp. gussoneanum</u> | <u>5</u> | | <u>FAC</u> | |
| 4. <u>Festuca bromoides</u> | <u>1</u> | | <u>FACU</u> | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5. <u>Bromus hordeaceus</u> | <u>1</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Convolvulus arvensis</u> | <u>t</u> | | <u>NI/UPL</u> | |
| 2. _____ | _____ | _____ | _____ | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>53</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover: 20% of 47 = ~9% cover | | | | |

SOIL

Sampling Point: 9

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 10
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2
 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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
|---|--------------------------|-------------------|------------------|---|
| 1. <u>Quercus lobata</u> | <u>100</u> | <u>X</u> | <u>FACU</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| Herb Stratum (Plot size: <u>1m^2</u>) | <u>100</u> = Total Cover | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____ |
| 1. <u>Festuca bromoides</u> | <u>2</u> | <u>X</u> | <u>FACU</u> | |
| 2. <u>Bromus diandris</u> | <u>1</u> | <u>X</u> | <u>NI/UPL</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| Herb Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Convolvulus arvensis</u> | <u>t</u> | _____ | <u>NI/UPL</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| Woody Vine Stratum (Plot size: _____) | <u>3</u> = Total Cover | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| % Bare Ground in Herb Stratum <u>97</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 3 = ~1% cover | | | | |

SOIL

Sampling Point: 10

[illegible]

HYDROLOGY

| Wetland Hydrology Indicators: | | |
|--|--|---|
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe) | | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 11
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2
 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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) |
|---|------------------|-------------------|------------------|---|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>6</u> x 4 = <u>24</u> UPL species <u>30</u> x 5 = <u>150</u> Column Totals: <u>66</u> (A) <u>264</u> (B) Prevalence Index = B/A = <u>4.00</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Trifolium subterraneum</u> | <u>30</u> | <u>X</u> | <u>NI/UPL</u> | |
| 2. <u>Plantago lanceolata</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Festuca perennis</u> | <u>10</u> | | <u>FAC</u> | |
| 4. <u>Vicia sativa</u> | <u>5</u> | | <u>FACU</u> | |
| 5. <u>Festuca bromoides</u> | <u>1</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Convolvulus arvensis</u> | <u>t</u> | | <u>NI/UPL</u> | |
| 2. <u>Bromus hordeaceus</u> | <u>t</u> | | <u>FACU</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>34</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 66 = ~13% cover | | | | |

SOIL

Sampling Point: 11

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/3 | >5% | C | M | loam | faint mottles |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 12
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</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 = <u>0</u> FACW species <u>15</u> x 2 = <u>30</u> FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>12</u> x 4 = <u>48</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>67</u> (A) <u>198</u> (B) Prevalence Index = B/A = <u>2.96</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Festuca perennis</u> | <u>30</u> | <u>X</u> | <u>FAC</u> | |
| 2. <u>Cyperus eragrostis</u> | <u>15</u> | <u>X</u> | <u>FACW</u> | |
| 3. <u>Festuca bromoides</u> | <u>10</u> | | <u>FACU</u> | |
| 4. <u>Plantago lanceolata</u> | <u>5</u> | | <u>FAC</u> | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5. <u>Hordeum marinum ssp. gussoneanum</u> | <u>5</u> | | <u>FAC</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Phalaris aquatica</u> | <u>2</u> | | <u>FACU</u> | |
| 2. <u>Briza maxima</u> | <u>t</u> | | <u>NI/UPL</u> | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. <u>Geranium dissectum</u> | <u>t</u> | | <u>NI/UPL</u> | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>33</u> | % Cover of Biotic Crust _____ | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 67 = ~13% cover | | | | |

SOIL

Sampling Point: 12

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 13
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2
 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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
|---|------------------|-------------------|------------------|---|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>1</u> x 3 = <u>3</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>43</u> (A) <u>211</u> (B) Prevalence Index = B/A = <u>4.91</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Briza maxima</u> | <u>30</u> | <u>X</u> | <u>NI/UPL</u> | |
| 2. <u>Avena barbata</u> | <u>10</u> | <u>X</u> | <u>NI/UPL</u> | |
| 3. <u>Festuca bromoides</u> | <u>1</u> | | <u>FACU</u> | |
| 4. <u>Plantago lanceolata</u> | <u>1</u> | | <u>FAC</u> | |
| 5. <u>Vicia sativa</u> | <u>1</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>57</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 43 = ~9% cover | | | | |

SOIL

Sampling Point: 13

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/3 | >5% | C | M | loam | faint mottles |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☒

Remarks:

faint mottles

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 14
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</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 = <u>0</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>27</u> x 3 = <u>81</u> FACU species <u>12</u> x 4 = <u>48</u> UPL species <u>1</u> x 5 = <u>5</u> Column Totals: <u>50</u> (A) <u>154</u> (B) Prevalence Index = B/A = <u>3.08</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Festuca perennis</u> | <u>25</u> | <u>X</u> | <u>FAC</u> | |
| 2. <u>Cyperus eragrostis</u> | <u>10</u> | <u>X</u> | <u>FACW</u> | |
| 3. <u>Phalaris aquatica</u> | <u>10</u> | <u>X</u> | <u>FACU</u> | |
| 4. <u>Plantago lanceolata</u> | <u>2</u> | | <u>FAC</u> | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5. <u>Festuca bromoides</u> | <u>2</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Geranium dissectum</u> | <u>1</u> | | <u>NI/UPL</u> | |
| 2. _____ | _____ | _____ | _____ | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>50</u> | % Cover of Biotic Crust _____ | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 50 = 10% cover | | | | |

SOIL

Sampling Point: 14

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
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| | | | | | | | | |

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.)**

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

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ 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 _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes ☒ No _____

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 15
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2
 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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) |
|--|-------------------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>25</u> x 5 = <u>125</u> Column Totals: <u>60</u> (A) <u>235</u> (B) Prevalence Index = B/A = <u>3.92</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Briza maxima</u> | <u>25</u> | <u>X</u> | <u>NI/UPL</u> | |
| 2. <u>Plantago lanceolata</u> | <u>20</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Festuca perennis</u> | <u>10</u> | | <u>FAC</u> | |
| 4. <u>Phalaris aquatica</u> | <u>2</u> | | <u>FACU</u> | |
| 5. <u>Vicia sativa</u> | <u>2</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Festuca bromoides</u> | <u>1</u> | | <u>FACU</u> | |
| 2. <u>Geranium dissectum</u> | <u>t</u> | | <u>NI/UPL</u> | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| _____ = Total Cover | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | | | | |
| 2. _____ | | | | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| % Bare Ground in Herb Stratum <u>40</u> | % Cover of Biotic Crust _____ | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 60 = 12% cover | | | | |

SOIL

Sampling Point: 15

[illegible]

HYDROLOGY

| Wetland Hydrology Indicators: | | |
|--|--|---|
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe) | | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 16
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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 _____ 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: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</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 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>31</u> x 3 = <u>93</u> FACU species <u>12</u> x 4 = <u>48</u> UPL species <u>15</u> x 5 = <u>75</u> Column Totals: <u>58</u> (A) <u>216</u> (B) Prevalence Index = B/A = <u>3.92</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Anthoxanthum aristatum</u> | <u>15</u> | <u>X</u> | <u>NI/UPL</u> | |
| 2. <u>Plantago lanceolata</u> | <u>15</u> | <u>X</u> | <u>FAC</u> | |
| 3. <u>Festuca perennis</u> | <u>15</u> | <u>X</u> | <u>FAC</u> | |
| 4. <u>Vicia sativa</u> | <u>10</u> | | <u>FACU</u> | |
| 5. <u>Bromus hordeaceus</u> | <u>2</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Rubus armeniacus</u> | <u>1</u> | | <u>FAC</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>42</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 58 = ~12% cover | | | | |

SOIL

Sampling Point: 16

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/3 | >5% | C | M | loam | faint mottles |
| | | | | | | | | |
| | | | | | | | | |
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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.)**

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

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ 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 ☒

Remarks:

faint mottles

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes _____ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 17
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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>25</u> (A/B) |
|---|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>25</u> x 4 = <u>100</u> UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>80</u> (A) <u>345</u> (B) Prevalence Index = B/A = <u>4.31</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Avena barbata</u> | <u>25</u> | <u>X</u> | <u>NI/UPL</u> | |
| 2. <u>Bromus hordeaceus</u> | <u>20</u> | <u>X</u> | <u>FACU</u> | |
| 3. <u>Festuca perennis</u> | <u>15</u> | <u>X</u> | <u>FAC</u> | |
| 4. <u>Anthoxanthum aristatum</u> | <u>15</u> | <u>X</u> | <u>NI/UPL</u> | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 5. <u>Phalaris aquatica</u> | <u>5</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 80 = 16% cover | | | | |

SOIL

Sampling Point: 17

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 | | |
| 0-1.2 | 10YR4/2 | | 10YR3/3 | >5% | C | M | loam | faint mottles |
| | | | | | | | | |
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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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☒

Remarks:

faint mottles

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 18
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
|---|---------------------|----------------------|---------------------|---|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>18</u> x 3 = <u>54</u> FACU species <u>30</u> x 4 = <u>120</u> UPL species <u>32</u> x 5 = <u>160</u> Column Totals: <u>80</u> (A) <u>334</u> (B) Prevalence Index = B/A = <u>4.18</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Bromus hordeaceus</u> | <u>30</u> | <u>X</u> | <u>FACU</u> | |
| 2. <u>Anthoxanthum aristatum</u> | <u>20</u> | <u>X</u> | <u>NI/UPL</u> | |
| 3. <u>Festuca perennis</u> | <u>15</u> | | <u>FAC</u> | |
| 4. <u>Briza maxima</u> | <u>10</u> | | <u>NI/UPL</u> | |
| 5. <u>Danthonia californica</u> | <u>3</u> | | <u>FAC</u> | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | |
| 1. <u>Avena barbata</u> | <u>2</u> | | <u>NI/UPL</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 80 = 16% cover | | | | |

SOIL

Sampling Point: 18

[illegible]

HYDROLOGY

| Wetland Hydrology Indicators: | | |
|--|--|---|
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe) | | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 19
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) 1. _____ 2. _____ 3. _____ 4. _____ _____ = Total Cover | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| Herb Stratum (Plot size: <u>1m^2</u>) 1. <u>Juncus tenuis</u> <u>30</u> <u>X</u> <u>FACW</u> 2. <u>Festuca perennis</u> <u>30</u> <u>X</u> <u>FAC</u> 3. <u>Briza maxima</u> <u>10</u> <u>NI/UPL</u> 4. <u>Vicia sativa</u> <u>2</u> <u>FACU</u> 5. _____ _____ = Total Cover | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species <u>10</u> x 5 = <u>50</u> Column Totals: <u>72</u> (A) <u>208</u> (B) Prevalence Index = B/A = <u>2.89</u> |
| Herb Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ _____ = Total Cover | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) |
| Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| % Bare Ground in Herb Stratum <u>28</u> % Cover of Biotic Crust _____ Remarks: Absolute cover (Herb Stratum): 20% of 72 = ~14% cover | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ |

SOIL

Sampling Point: 19

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 | | |
| 0-1.2 | 10YR4/1+ | | 10YR3/4 | >5% | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? Yes ☐ No ☐ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

water-matted mulch

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 9120 Old Redwood Highway City/County: Windsor, Sonoma County Sampling Date: April 23, 2018
 Applicant/Owner: Redwood Oil Company State: CA Sampling Point: 20
 Investigator(s): T. Winfield Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): low terrace Local relief (concave, convex, none): slightly concave Slope (%): <1%
 Subregion (LRR): Mediterranean California (LRR C) Lat: 38.548790° Long: -122.810891° Datum: WGS 84
 Soil Map Unit Name: Cole silty clay loam, 0 to 1 percent slopes NWI classification: PEM2

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: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
|---|------------------|-------------------|------------------|---|
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>32</u> x 4 = <u>128</u> UPL species <u>16</u> x 5 = <u>80</u> Column Totals: <u>68</u> (A) <u>268</u> (B) Prevalence Index = B/A = <u>3.94</u> |
| Herb Stratum (Plot size: <u>1m^2</u>) | | | | |
| 1. <u>Phalaris aquatica</u> | <u>30</u> | <u>X</u> | <u>FACU</u> | |
| 2. <u>Briza maxima</u> | <u>15</u> | <u>X</u> | <u>NI/UPL</u> | |
| 3. <u>Festuca perennis</u> | <u>10</u> | | <u>FAC</u> | |
| 4. <u>Festuca bromoides</u> | <u>10</u> | | <u>FAC</u> | |
| 5. <u>Vicia sativa</u> | <u>2</u> | | <u>FACU</u> | |
| _____ = Total Cover | | | | |
| Herb Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) |
| 1. <u>Geranium dissectum</u> | <u>1</u> | | <u>NI/UPL</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| Woody Vine Stratum (Plot size: _____) | | | | Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>32</u> % Cover of Biotic Crust _____ | | | | |
| Remarks: | | | | |
| Absolute cover (Herb Stratum): 20% of 68 = ~14% cover | | | | |

SOIL

Sampling Point: 20

[illegible]

HYDROLOGY

| Wetland Hydrology Indicators: | | |
|--|--|---|
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe) | | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | | |
| Remarks: | | |

APPENDIX B. PRELIMINARY WETLAND MAP

