

# BOTANICAL SURVEY REPORT

## FOR SPECIAL STATUS NATIVE PLANT POPULATIONS AND NATURAL COMMUNITIES

677 Petaluma Ave. Sonoma, California, 95476

Assessor Parcel Number (APN):

052 – 452 – 008



**Prepared For:**

**Lori Cantwell**

677 Petaluma Ave  
Sonoma, CA 95476

**Prepared By:**

**Naiad**  
Biological  
Consulting

[www.naiadbiological.com](http://www.naiadbiological.com)

PO Box 121  
Samoa, CA 95564

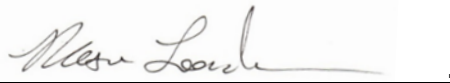


**Date Prepared:**

July 9<sup>th</sup>, 2024

**Certification:** I hereby certify that the statements furnished in this report present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

X



Mason London, MSc Biology

Naiad Biological Consulting Principal Biologist

## Table of Contents

<b>Section 1 Summary Information</b> .....	2
<b>Section 2 Introduction and Project Description</b> .....	3
2.1 Purpose and Need .....	3
2.2 Surveyor’s Qualifications .....	3
2.3 Study Area Description and Geographic Setting .....	3
2.4 Soil, Topography, and Hydrology .....	4
<b>Section 3 Definitions</b> .....	5
3.1 Special Status Plants and Plant Communities .....	5
<b>Section 4 Methods</b> .....	6
4.1 Pre-Site Visit Data Compilation and Preparation .....	6
4.2 Reference Populations.....	6
4.2 Botanical Field Survey and Habitat Investigation .....	6
<b>Section 5 Results</b> .....	8
5.1 Habitats Observed .....	8
5.2 Species Observed .....	8
<b>Section 6 Conclusion and Discussion</b> .....	9
6.1 Conclusion .....	9
6.2 Recommendations .....	9
<b>Section 6 References</b> .....	10
<b>Appendices:</b>	
Appendix A – Figures	
Appendix B – Photo Documentation	
Appendix C – Tables	

## Section 1 Summary Information

Legal description: Portions of section 00 of T5N, R6W, Mount Diablo Principal Meridian  
APN: 052-452-008  
USGS 7.5' Quad: Sonoma (3812234)  
Parcel size: 2.03 Acres  
Dates of survey: May 20<sup>th</sup>, 2023, March 19<sup>th</sup>, 2024, April 18<sup>th</sup>, 2024, and June 24<sup>th</sup>, 2024  
Surveyed by: Mason London  
Field survey effort: 7.5 hours  
Results: **No CRPR 1, 2, 3 or 4 plants were observed**

## Section 2 Introduction and Project Description

### 2.1 Purpose and Need

This report addresses the County of Sonoma's Natural Resources Division (NRD) Completeness Referral Comments issued on January 18, 2023, concerning a Minor Subdivision project. The project aims to divide a 2.03-acre parcel into two parcels of 0.99 and 1.04 acres, both to be serviced by public sewer and water. The NRD identified that the initial Biological Assessment Report lacked a protocol-level survey for rare plants. It was noted that the rare plant reconnaissance surveys were focused on a targeted list of potential listed plant species, and acknowledged that species not in bloom on the date of reconnaissance (May 20, 2023) may still be present. Consequently, the NRD requested a rare plant survey following the CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018). This request from the County emphasizes the necessity to ensure that the proposed subdivision does not inadvertently affect any rare plants, highlighting the need for a comprehensive and compliant botanical survey to support the project's environmental review process.

### 2.2 Surveyor's Qualifications

The botanical survey described in this report was conducted by Mason London.

Mr. London, with a MSc in Biology with a specialization in aquatic ecology from Humboldt State University (HSU), serves as the Principal Biologist at Naiad Biological Consulting (NBC). His previous roles include serving as a wildlife biologist for The Nature Conservancy, a botanist for the Bureau of Land Management in Medford, OR, and an Aquatic Research Scientist for the HSU River Institute. Mr. London has worked on a wide array of projects, ranging from conducting protocol-level surveys for species such as the California red-legged frog, foothill yellow-legged frog, and western pond turtle to performing botanical surveys across various upland and aquatic habitats. Additionally, Mr. London has extensive experience in pre-construction and compliance monitoring surveys throughout California, with a focus on amphibians/reptiles, nesting birds, and mammals. Mason has over five years of experience with wetland delineations and has completed a 40-hour Introduction to Wetland Delineation Course led by California Professional Soil Scientist #243, and retired USDA-NRCS & USDI-NPS Soil Scientist Joe Seney. With over 14 years of professional experience, Mr. London's expertise spans wildlife biology, botany, aquatic ecology, and educational instruction at the university level.

### 2.3 Study Area Description and Geographic Setting

The Study Area, located at 677 Petaluma Avenue in Sonoma, California and has an of APN 052-452-008, is a residential lot that is mostly undeveloped (Photos 1 - 6). The approximate average elevation of the parcel is 86 ft (~26 meters) (Google Earth Pro, 2024). It is situated in Section 00, Township 5 North, Range 6 West (S00, T5N, R6W) of the Mount Diablo Principal Meridian. The central coordinates of the Study Area are approximately Latitude N 38.292672° and Longitude W -122.484053° (Figure 1).

To access the Study Area at 677 Petaluma Avenue in Sonoma, California, take US-101 N from San Francisco, exit onto CA-37 E, and then onto CA-121 N. Follow CA-12 E, turn left onto W Napa St, left onto 7th St W, and finally right onto Petaluma Ave.

The Study Area occurs within the Sonoma 7.5-minute United States Geological Survey (USGS) quadrangle (Quad code: 3812234) within the Dowdall Creek Watershed (CDFW Region: 3). Dowdall Creek is a tributary of Sonoma Creek which discharges to the vast Napa-Sonoma Marsh at the northern tip of San Pablo Bay.

## 2.4 Soil, Topography, and Hydrology

Data from Web Soil Survey for the Study Area do not indicate any unique soil types that would provide habitat for rare plants such as serpentinite or peat. The Study Area's soil is Clear Lake clay loam with 0-2% slopes, elevation from 10 to 320 feet, 27-41 inches annual precipitation, and 57-59°F average temperature. The frost-free period is 265-354 days. Clear Lake soils dominate (85%), with 15% minor components. The soil, found on concave basin floors, is derived from volcanic and sedimentary alluvium, featuring clay loam and clay layers. It is poorly drained, with negligible runoff, moderate water transmission, and is classified as Hydric with high water availability.

The Study Area is relatively flat with no major topographic features. No Hydrologic features such as watercourses or wetlands occur within the Study Area.

## Section 3 Definitions

### 3.1 Special Status Plants and Plant Communities

Special status plants include taxa that are listed under the Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA) in addition to plants which meet the definition of rare or endangered under the California Environmental Quality Act (CEQA). CDFW recommends that plants on California Rare Plant Ranks (CRPR) Lists 1A (presumed extinct or extirpated), 1B (rare, threatened, or endangered in California and elsewhere), 2A (presumed extirpated) and 2B (rare, threatened, or endangered in California but more common elsewhere), or other species that warrant consideration based on local or biological significance, be addressed during California Environmental Quality Act (CEQA) review of proposed projects. Plants of rank 3 and 4, which are under review and watch lists respectively, are addressed by Naiad Biological Consulting, and may warrant consideration under CEQA if potential or cumulative impacts to the plant exist.

CDFW's natural community rarity rankings follow NatureServe's 2012 NatureServe Conservation Status Assessment: Methodology for Assigning Ranks, in which all alliances are listed with a global (G) and (S) rank. NCSC are those natural communities that are ranked S1 to S3 (CDFW, 2023), where 1 is critically imperiled, 2 is imperiled, and 3 is vulnerable. However, they may not warrant protection under CEQA unless they are considered high quality. Human disturbance, invasive species, logging, and grazing are common factors considered when judging whether the stand is high quality and warrants protection.

## Section 4 Methods

### 4.1 Pre-Site Visit Data Compilation and Preparation

Prior to conducting the field surveys, the following database information was reviewed to determine the location and types of botanical resources that possibly exist in the survey area. This pre-field investigation included searches of the California Natural Diversity Database (CNDDDB, 2024) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS, 2024) (Table 1). This list includes CRPR (California Rare Plant Rank) species that have been observed within a 9-quadrant search centered on the Sonoma quadrangle. USGS quadrangles within the search area include Kenwood (3812245), Rutherford (3812244), Yountville (3812243), Napa (3812233), Glen Ellen (3812235), Petaluma River (3812225), Sears Point (3812224), and Cuttings Wharf (3812223).

### 4.2 Reference Populations

Reference populations guided the timing of seasonally appropriate surveys, with data on their blooming periods gathered from Research Grade observations on iNaturalist (iNaturalist, 2024). The following rare plant reference populations informed the timing of the surveys for this project:

- *Blennosperma bakeri*: Located 1 mile south of the Study Area, off Leveroni Rd, observed in bloom March 2024.
- *Hemizonia congesta* ssp. *congesta*: Located 22 miles northwest of the Study Area, off Sexton Rd. outside of Sebastopol, CA, observed in bloom June 2024.
- *Amsinckia lunaris*: Located 21 miles northwest of the Study Area, south of Nicasio Reservoir, observed in bloom April 2024.
- *Hosackia gracilis*: Located 21.5 miles southwest of the Study Area, off Ragle Ranch Rd outside of Sebastopol, CA, observed in bloom May 20th, 2024.
- *Trichostema ruygtii*: Located 16.5 miles northwest of the Study Area, in Southwest Santa Rosa, CA, observed in bloom June 2024.
- *Fritillaria liliacea*: Located 7 miles south to southwest of the Study Area, near Gravity Hill, observed in bloom April 2024.
- *Limnanthes vinculans*: Located 7.3 miles northwest of the Study Area, near Wingo, observed in bloom March 2024.

### 4.2 Botanical Field Survey and Habitat Investigation

The botanical field survey, completed by Mason London, was floristic in nature and conducted in a manner consistent with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). Plants were identified to the lowest taxonomic level necessary to ensure that they were not a species of concern. Plants not identifiable in the field were identified off site with the use of The Jepson Manual, Vascular Plants of California. Other resources used to identify plants can be found in the reference section towards the end of this report.

Botanical surveys were conducted throughout the areas that could be affected by future proposed for development operations associated with the subdivision. Surveys were conducted in an intuitive meander focused on areas likely to provide habitat for rare plant species and/or potentially affected (directly or indirectly) by construction operations. These areas include but are not limited to existing the open grassland habitat, underneath the canopies of the oaks, along the parcel's boundary line, and surrounding the residential house. Refer to Figure 2 for the survey routes.



## Section 5 Results

### 5.1 Habitats Observed

The Study Area has undergone extensive alterations from its natural state, impacting its integrity and habitat quality due to surrounding landform modifications and urban development. Roads border the area on the west, east, and south sides, while residences are located to the north, resulting in significant habitat fragmentation (Figure 1 & 2). In the southeastern corner, there is a single-family residence and a detached garage, with several non-native and invasive ornamental plant species present (Photo 1 & 2).

The predominant habitat within the Study Area is open grassland, largely dominated by non-native and invasive plant species, which pose challenges for native flora and fauna. Regular mowing further affects the potential for this habitat to be considered intact. Despite this, the presence of coast live oak (*Quercus agrifolia*) and valley oak (*Quercus lobata*), along with other tree species within the grassland, contributes positively to habitat quality (Photos 3 - 6). However, the density and distribution of these trees do not meet the criteria for oak woodland, which requires a tree canopy that is more open than oak forests but less open than oak savannas, typically blocking 30–70% of the sky. Given the species composition within the Study Area, no Sensitive Natural Communities were identified.

### 5.2 Species Observed

Botanical surveys identified 58 plant taxa within the Study Area, with approximately 81% being non-native species, of which 38.3% are invasive. For a complete list of species observed, refer to Table 2 (Appendix B). No CRPR 1, 2, 3, or 4 plants were found in the Study Area.

## Section 6 Conclusion and Discussion

### 6.1 Conclusion

The likelihood of false negative survey results is low but still possible for several reasons:

- Prolonged drought conditions may have precluded some sensitive plants from blooming or shortened their bloom period.
- The bloom periods of reference populations might not accurately represent the bloom periods of target plants within the survey area due to differences in elevation or proximity to the coast. There are likely other reference populations that would more accurately predict the bloom period of target rare plants within the survey area, but those reference populations were not publicly accessible.
- Grazing by herbivores, such as deer, could remove identifiable portions of the plants before they are located.

Although no listed species were observed during the field survey, previous land use practices, climate, and weather patterns may have affected survey results.

### 6.2 Recommendations

The low habitat quality, resulting from historic land use practices and invasive species, makes it unlikely that the subdivision operations will harm any special status plants or sensitive natural plant communities. If tree removal is proposed in association with this subdivision, compliance with the Tree Protection Ordinance, Section 26-88-010(m), and the Valley Oak Habitat Ordinance, Section 26-67 of the Sonoma County Code, is required. Please note that the Tree Protection Ordinance is currently under review by the Sonoma County Board of Supervisors. Coordinate with the Project Planner regarding any revisions to the Tree Ordinance before resubmission.

## Section 6 References

- Baldwin, B. C., D. H. Goldman, D. J. Keili, R. Patterson, and T. J. Roasatti. Eds. 2012. The Jepson Manual, Vascular Plants of California, Second Edition. University of California Press. Berkeley, CA.
- California Department of Fish and Wildlife (CDFW). 2024. California Natural Diversity Database (CNDDB), Wildlife and Habitat Data Branch, Sacramento, CA. <https://apps.wildlife.ca.gov/bios6/> [Accesses April – July 2024]
- California Department of Fish and Wildlife (CDFW). 2024. California Natural Community List. Biogeographic Branch, Vegetation Classification and Mapping Program, Sacramento, CA.
- California Native Plant Society (CNPS). 2024. Inventory of Rare and Endangered Plants (online edition, v8-03 0.39). California Native Plant Society, Sacramento, CA. <http://www.rareplants.cnps.org>. [Accessed April – July 2024].
- Calflora. 2024. Information on California plants for education, research, and conservation. The Calflora Database. Berkeley, CA. <https://www.calflora.org/> [Accessed April-July 2024].
- CDFW. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. California Department of Fish and Wildlife, Sacramento, CA.
- iNaturalist. 2024. Research Grade Observations. <https://www.inaturalist.org/home> [accessed Feb -June 2024].
- Jepson Flora Project (eds.) 2024. Jepson eFlora. <https://ucjeps.berkeley.edu.eflora/> [accessed April -July 2024].
- London, M. 2023. Biological Reconnaissance and Project Feasibility Assessment Report. [Unpublished].
- Sawyer, J.O., T. Keeler-Wold and J.M. Evans. 2009. A Manual of California Vegetation, 2nd Edition. California Native Plant Society. Sacramento, CA.
- Smith, J. P. Jr. 2014. Field Guide to Grasses of California. University of California Press. Berkeley, CA.
- United States Department of Agriculture, Natural Resource Conservation Service (USDA, NRCS). 2024. Web Soil Survey. <http://websoilsurvey.sc.egov.usda.gov> [Accessed July 6, 2024].

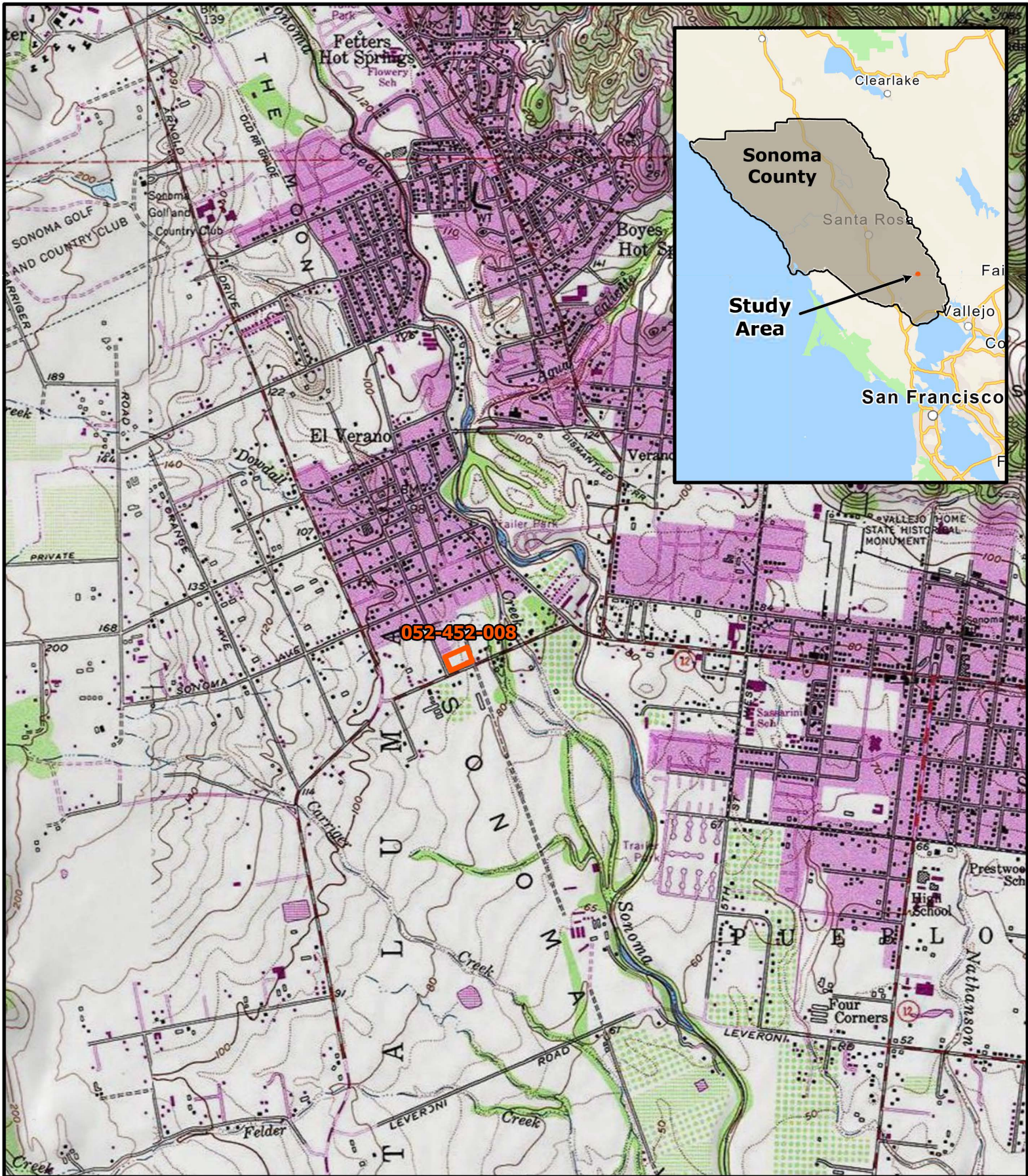
# Appendix A

## Figures

### **BOTANICAL SURVEY REPORT**

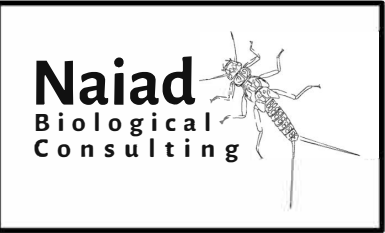
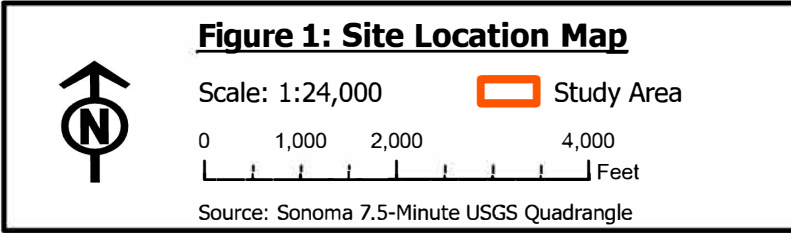
**APN: 052-452-008  
677 Petaluma Ave  
Sonoma CA, 95476**

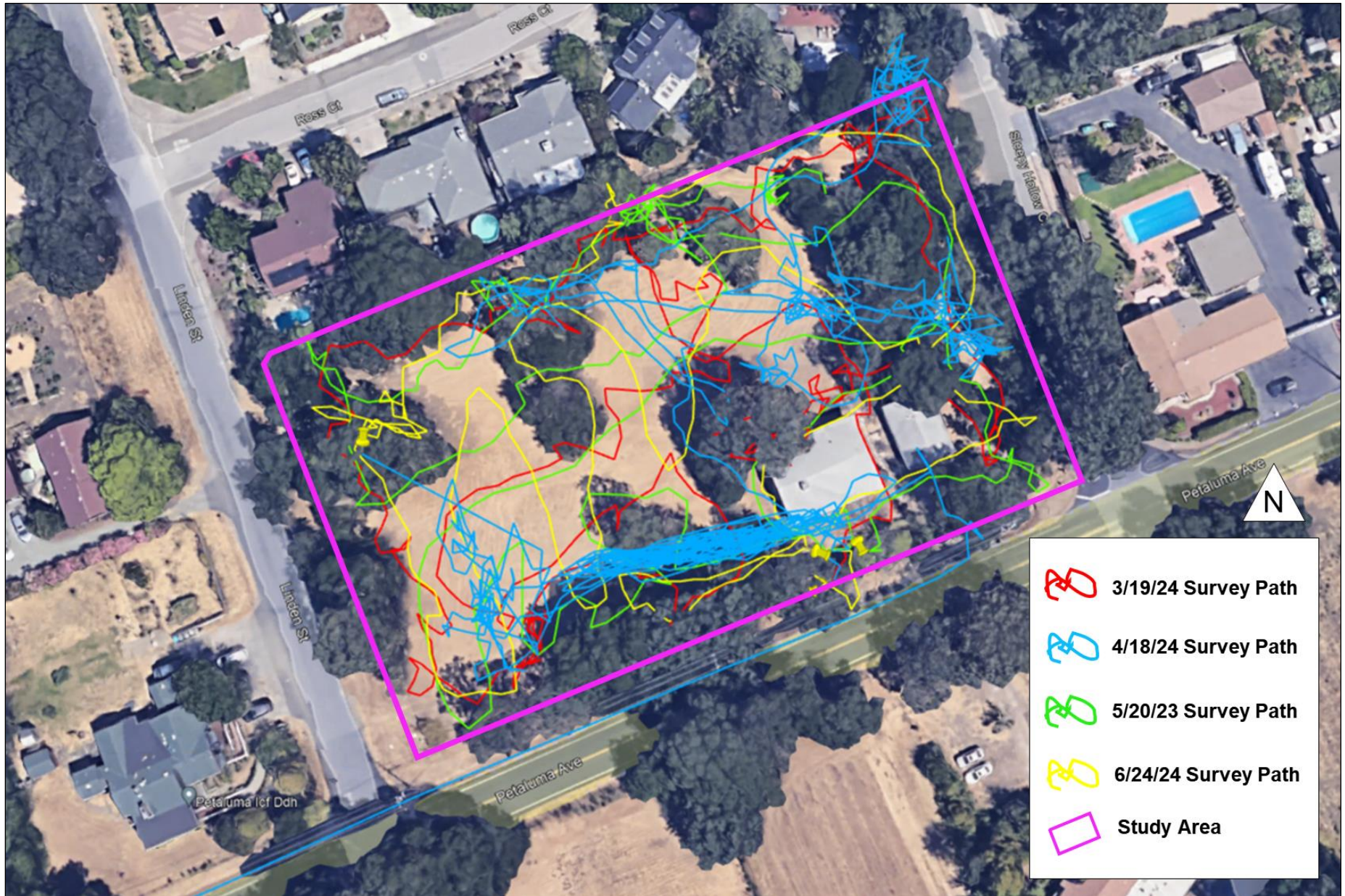
**July 2024**



Lori Cantwell  
 677 Petaluma Ave  
 Sonoma, CA 95476

APN: 052-452-008





**Figure 2.** The survey path's taken on all 4 survey dates displayed in different colors.

# Appendix B

## Photo Documentation

### **BOTANICAL SURVEY REPORT**

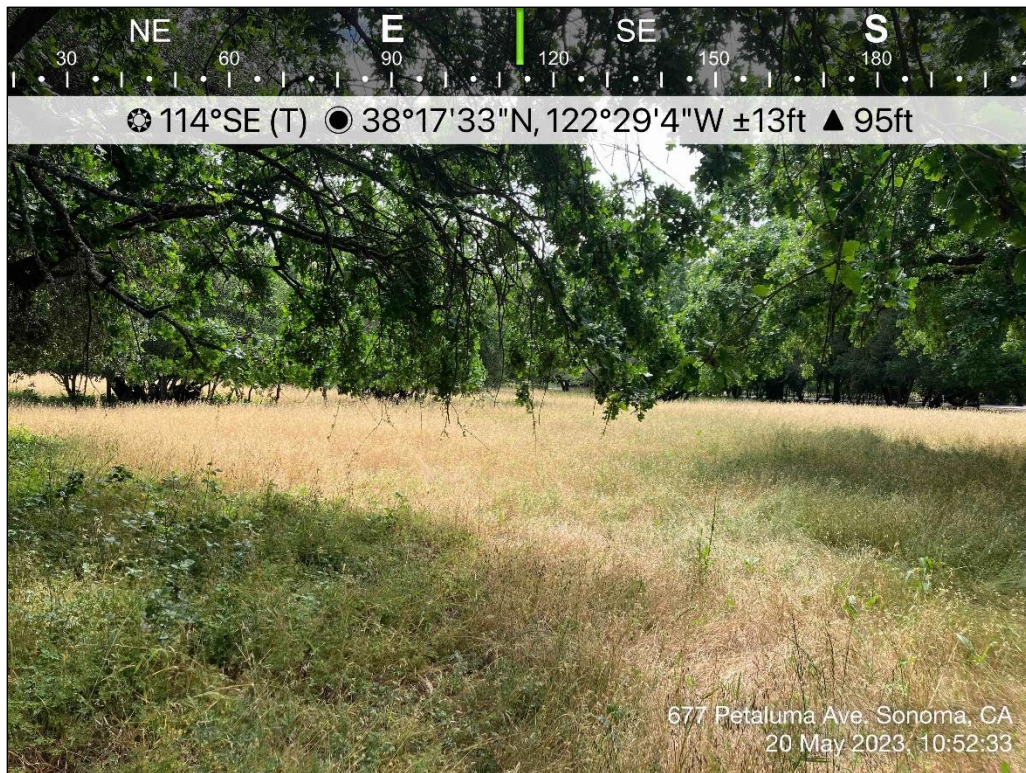
**APN: 052-452-008  
677 Petaluma Ave  
Sonoma CA, 95476**

**July 2024**





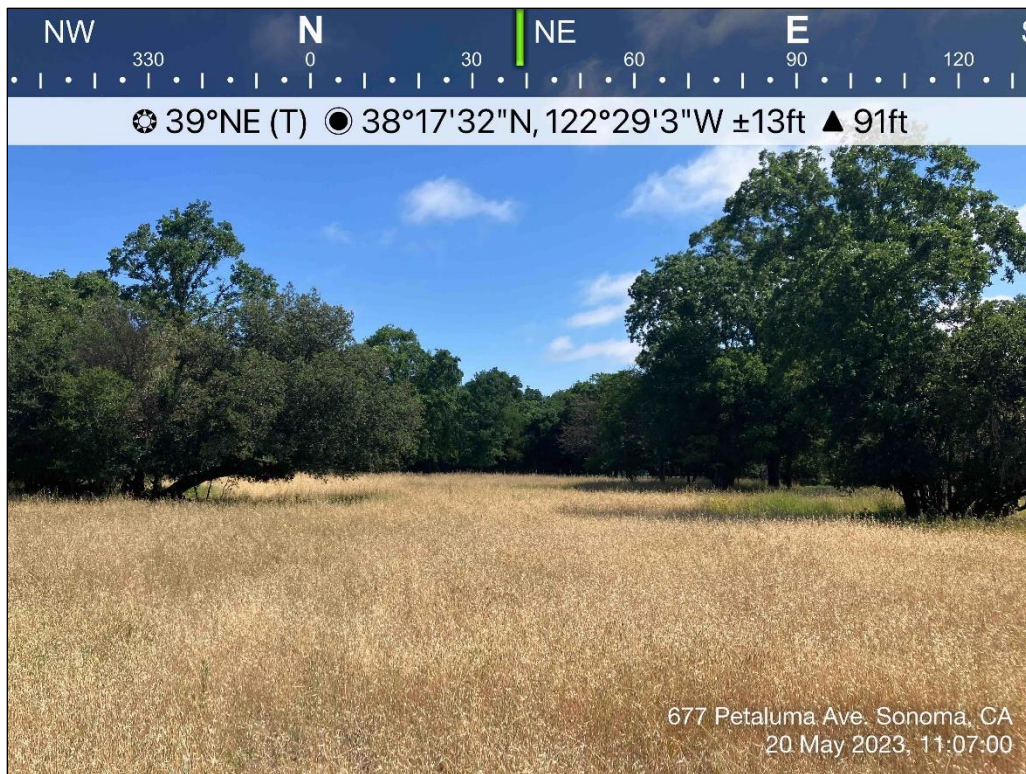
**Photo 3.** The grassland habitat within the Study Area dominated by non-native and invasive species.



**Photo 4.** The grassland habitat within the Study Area dominated by non-native and invasive species. Photo taken under oak canopy; note the change in vegetation under the tree.



**Photo 5.** The open grassland habitat within the Study Area dominated by non-native milky oats (*Avena sativa*).



**Photo 4.** The grassland habitat within the Study Area dominated by non-native and invasive species. Photo taken to show the density of oak trees.

# Appendix A

## Tables

### **BOTANICAL SURVEY REPORT**

**APN: 052-452-008  
677 Petaluma Ave  
Sonoma CA, 95476**

**July 2024**

**Table 1 – Special-Status Plant Species Sonoma and surrounding 7.5 min USGS quadrangles**

Scientific Name	Common Name	Lifeform	Federal Status	State Status	CRPR	Blooming Period	Habitat	Microhabitat	Elevation (meters)	Potential of Occurrence within Study Area
<i>Sagittaria sanfordii</i>	Sanfords arrowhead	Aquatic Perennial	None	None	1B.2	May - October	Seasonal wetlands, shallow water with slow-moving or stagnant water. Often found in ponds, marshes, and along stream edges.	Mudflats, pond margins, shallow waters	0 to 1320 m	None due to lack of suitable habitat
<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion	Perennial Herb	None	None	1B.2	May - June	Found in grasslands, coastal scrub, and rocky areas, typically on well-drained soils.	Open areas, rocky slopes	40 to 290 m	None due to elevation
<i>Eryngium jepsonii</i>	Jepsons coyote-thistle	Perennial Herb	None	None	1B.2	April - August	Thrives in grasslands, chaparral, and rocky slopes with well-drained soils.	Open areas, rocky slopes	60 to 510 m	None due to elevation
<i>Lilaeopsis masonii</i>	Masons lilaeopsis	Perennial Herb	None	Rare	1B.1	April - November	Prefers vernal pools and other wet areas, often found in shallow water and wet mud.	Wet mud, shallow water	0 to 5 m	None due to lack of suitable habitat
<i>Lomatium repostum</i>	Napa lomatium	Perennial Herb	None	None	4.2	March - June	Occurs in woodlands, grasslands, and rocky slopes on well-drained soils.	Open areas, rocky soils	400 to 940 m	None due to elevation
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	Perennial Herb	None	None	1B.2	March - June	Typically found in grasslands, open areas, and rocky slopes with well-drained soils.	Open areas, rocky soils	140 to 1910 m	None due to elevation
<i>Blennosperma bakeri</i>	Sonoma sunshine	Annual Herb	Endangered	Endangered	1B.1	March - May	Flourishes in grasslands, rocky slopes, and meadows with well-drained soils.	Open areas, well-drained soils	0 to 120 m	Low/Moderate
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	Annual Herb	None	None	1B.2	May - November	Thrives in grasslands, coastal scrub, and open areas on well-drained soils.	Open areas, well-drained soils	0 to 400 m	Low
<i>Erigeron biolettii</i>	streamside daisy	Perennial Herb	None	None	3	June - October	Grows along stream banks and wet meadows with moist soils.	Moist soils, stream edges	100 to 630 m	None due to elevation

<i>Erigeron greenei</i>	Greenes narrow-leaved daisy	Perennial Herb	None	None	1B.2	May - September	Found in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	220 to 1810 m	None due to elevation
<i>Harmonia nutans</i>	nodding harmonia	Perennial Herb	None	None	4.3	March - May	Occurs in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	440 to 830 m	None due to elevation
<i>Hemizonia congesta ssp. congesta</i>	congested-headed hayfield tarplant	Annual Herb	None	None	1B.2	April - November	Flourishes in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	20 to 420 m	High
<i>Lasthenia conjugens</i>	Contra Costa goldfields	Annual Herb	Endangered	None	1B.1	March - June	Prefers grasslands, coastal scrub, and meadows with well-drained soils.	Open areas, well-drained soils	0 to 200 m	Low
<i>Layia septentrionalis</i>	Colusa layia	Annual Herb	None	None	1B.2	April - May	Found in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	330 to 620 m	None due to elevation
<i>Lessingia hololeuca</i>	woolly-headed lessingia	Perennial Herb	None	None	3	June - October	Typically occurs in grasslands and coastal scrub on well-drained sandy soils.	Open areas, sandy soils	0 to 1350 m	Low
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed	Perennial Herb	None	None	3.2	March - May	Thrives in serpentine soils and rocky slopes.	Open areas, well-drained soils	35 to 420 m	None due to elevation
<i>Symphotrichum lentum</i>	Suisun Marsh aster	Perennial Herb	None	None	1B.2	May - November	Found in wetlands, marshes, and moist areas.	Wet soils, marsh edges	0 to 5 m	None due to elevation
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	Annual Herb	None	None	1B.2	March - June	Prefers grasslands and meadows with well-drained soils.	Open areas, well-drained soils	10 to 740 m	Moderate
<i>Plagiobothrys mollis var. vestitus</i>	Petaluma popcornflower	Annual Herb	None	None	1A	June - July	Flourishes in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	10 to 50 m	Moderate
<i>Streptanthus anomalus</i>	Mount Burdell jewelflower	Perennial Herb	None	None	1B.1	May - June	Typically found in open woodlands and on rocky slopes.	Open areas, rocky soils	50 to 115 m	None due to elevation

<i>Streptanthus hesperidis</i>	green jewelflower	Perennial Herb	None	None	1B.2	May - July	Grows in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	310 to 1050 m	None due to elevation
<i>Downingia pusilla</i>	dwarf downingia	Annual Herb	None	None	2B.2	March - May	Prefers wet meadows, grasslands, and vernal pools with moist soils.	Moist soils, vernal pool margins	0 to 860 m	None due to lack of suitable habitat
<i>Legenere limosa</i>	legenere	Annual Herb	None	None	1B.1	April - June	Occurs in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	0 to 1050 m	Moderate
<i>Viburnum ellipticum</i>	oval-leaved viburnum	Perennial Shrub	None	None	2B.3	May - June	Found in woodlands, forests, and canyons on well-drained soils.	Open areas, well-drained soils	75 to 780 m	None due to elevation
<i>Extriplex joaquinana</i>	San Joaquin spearscale	Perennial Shrub	None	None	1B.2	April - September	Thrives in grasslands and coastal scrub on well-drained soils.	Open areas, well-drained soils	0 to 870 m	Low
<i>Calystegia collina ssp. oxyphylla</i>	Mt. Saint Helena morning-glory	Perennial Vine	None	None	4.2	April - June	Prefers grasslands and rocky areas on well-drained soils.	Open areas, well-drained soils	90 to 1010 m	None due to elevation
<i>Carex lyngbyei</i>	Lyngbyes sedge	Perennial Sedge	None	None	2B.2	April - August	Grows in wetlands, marshes, and meadows with moist soils.	Moist soils, marsh edges	0 to 5 m	None due to lack of suitable habitat
<i>Eleocharis parvula</i>	small spikerush	Perennial Rush	None	None	4.3	July - August	Found in wetlands, marshes, and vernal pools with moist soils.	Moist soils, vernal pool margins	0 to 1430 m	None due to lack of suitable habitat
<i>Arctostaphylos stanfordiana ssp. decumbens</i>	Rincon Ridge manzanita	Perennial Shrub	None	None	1B.1	February - April	Occurs in woodlands, chaparral, and on rocky slopes with well-drained soils.	Open areas, well-drained soils	65 to 270 m	None due to elevation
<i>Amorpha californica var. napensis</i>	Napa false indigo	Perennial Shrub	None	None	1B.2	April - July	Prefers woodlands and chaparral with well-drained soils.	Open areas, well-drained soils	45 to 620 m	None due to elevation

<i>Astragalus claranus</i>	Clara Hunts milk-vetch	Perennial Herb	Endangered	Endangered	1B.1	March - May	Grows in grasslands, meadows, and on rocky slopes with well-drained soils.	Open areas, rocky soils	95 to 360 m	None due to elevation
<i>Astragalus clevelandii</i>	Clevelands milk-vetch	Perennial Herb	None	None	4.3	June - September	Found in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	340 to 1690 m	None due to elevation
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	Perennial Herb	None	None	1B.2	March - June	Thrives in grasslands and alkali flats with well-drained soils.	Open areas, well-drained soils	0 to 90 m	Low
<i>Hosackia gracilis</i>	harlequin lotus	Perennial Herb	None	None	4.2	March - July	Prefers grasslands and meadows with well-drained soils.	Open areas, well-drained soils	0 to 650 m	Moderate
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	Perennial Herb	None	None	1B.2	May - July	Grows in wetlands, marshes, and along stream edges with moist soils.	Moist soils, marsh edges	-2 to 5 m	None due to elevation
<i>Lupinus sericatus</i>	Cobb Mountain lupine	Perennial Herb	None	None	1B.2	March - June	Typically found in grasslands, open areas, and on rocky slopes with well-drained soils.	Open areas, rocky soils	420 to 930 m	None due to elevation
<i>Trifolium amoenum</i>	two-fork clover	Perennial Herb	Endangered	None	1B.1	April - June	Flourishes in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	35 to 210 m	None due to elevation
<i>Trifolium hydrophilum</i>	saline clover	Perennial Herb	None	None	1B.2	April - June	Grows in wetlands, marshes, and along stream edges with moist soils.	Moist soils, marsh edges	0 to 45 m	None due to lack of suitable habitat
<i>Trifolium polyodon</i>	Pacific Grove clover	Perennial Herb	None	Rare	1B.1	April - June	Found in coastal dunes and grasslands, typically on sandy soils.	Sandy soils, dune areas	35 to 830 m	None due to elevation
<i>Iris longipetala</i>	coast iris	Perennial Herb	None	None	4.2	March - May	Thrives on coastal bluffs and grasslands, typically on well-drained soils.	Open areas, well-drained soils	10 to 320 m	None due to lack of suitable habitat
<i>Monardella viridis</i>	green monardella	Perennial Herb	None	None	4.3	June - September	Occurs in woodlands, chaparral, and on rocky slopes with well-drained soils.	Open areas, rocky soils	160 to 1430 m	None due to elevation

<i>Trichostema ruygtii</i>	Napa bluecurls	Perennial Herb	None	None	1B.2	June - October	Grows in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	0 to 530 m	Moderate
<i>Calochortus uniflorus</i>	pink star-tulip	Perennial Herb	None	None	4.2	April - June	Found in woodlands and meadows with well-drained soils.	Open areas, well-drained soils	0 to 1380 m	Low
<i>Erythronium helenae</i>	St. Helena fawn lily	Perennial Herb	None	None	4.2	March - May	Grows in woodlands and meadows with well-drained soils.	Open areas, well-drained soils	310 to 980 m	None due to elevation
<i>Fritillaria liliacea</i>	fragrant fritillary	Perennial Herb	None	None	1B.2	February - April	Found in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	0 to 360 m	Low/Moderate
<i>Lilium pardalinum ssp. pitkinense</i>	Pitkin Marsh lily	Perennial Herb	Endangered	Endangered	1B.1	June - July	Flourishes in wetlands, marshes, and along stream edges with moist soils.	Moist soils, stream edges	35 to 60 m	None due to elevation
<i>Lilium rubescens</i>	redwood lily	Perennial Herb	None	None	4.2	April - August	Grows in woodlands and forests with well-drained soils.	Open areas, well-drained soils	55 to 1660 m	None due to elevation
<i>Limnanthes vinculans</i>	Sebastopol meadowfoam	Annual Herb	Endangered	Endangered	1B.1	April - May	Typically found in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	0 to 35 m	Moderate
<i>Hesperolinon congestum</i>	Marin western flax	Annual Herb	Threatened	Threatened	1B.1	April - July	Occurs in woodlands, chaparral, and rocky slopes with well-drained soils.	Open areas, rocky soils	55 to 430 m	None due to elevation
<i>Hesperolinon sharsmithiae</i>	Sharsmiths western flax	Perennial Herb	None	None	1B.2	May - July	Thrives in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	250 to 700 m	None due to elevation
<i>Sidalcea calycosa ssp. rhizomata</i>	Point Reyes checkerbloom	Perennial Herb	None	None	1B.2	April - September	Grows in wetlands, marshes, and along stream edges with moist soils.	Moist soils, stream edges	0 to 130 m	None due to lack of suitable habitat
<i>Sidalcea hickmanii ssp. napensis</i>	Napa checkerbloom	Perennial Herb	None	None	1B.1	April - June	Found in wetlands, marshes, and along stream edges with moist soils.	Moist soils, stream edges	550 to 670 m	None due to elevation
<i>Sidalcea oregana ssp. valida</i>	Kenwood Marsh checkerbloom	Perennial Herb	Endangered	Endangered	1B.1	June - September	Flourishes in wetlands, marshes, and along stream edges with moist soils.	Moist soils, stream edges	100 to 200 m	None due to elevation

<i>Calandrinia breweri</i>	Brewers calandrinia	Perennial Herb	None	None	4.2	March - June	Typically found in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	0 to 1670 m	Moderate
<i>Clarkia breweri</i>	Brewers clarkia	Annual Herb	None	None	4.2	April - June	Occurs in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	270 to 1380 m	None due to elevation
<i>Clarkia gracilis ssp. tracyi</i>	Tracys clarkia	Annual Herb	None	None	4.2	April - July	Grows in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	180 to 970 m	None due to elevation
<i>Castilleja ambigua var. ambigua</i>	johnny-nip	Perennial Herb	None	None	4.2	March - August	Typically found in open areas, grasslands, and meadows with well-drained soils.	Open areas, well-drained soils	0 to 240 m	Moderate
<i>Castilleja ambigua var. meadii</i>	Meads owls-clover	Perennial Herb	None	None	1B.1	March - August	Flourishes in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	450 to 475 m	None due to elevation
<i>Chloropyron maritimum ssp. palustre</i>	Point Reyes salty birds-beak	Annual Herb	None	None	1B.2	June - October	Grows in wetlands, marshes, and saline habitats with moist soils.	Moist soils, saline habitats	0 to 5 m	None due to elevation
<i>Chloropyron molle ssp. molle</i>	soft salty birds-beak	Annual Herb	Endangered	Rare	1B.2	July - November	Found in saline habitats, coastal scrub, and grasslands with moist soils.	Moist soils, saline habitats	-1 to 0 m	None due to elevation
<i>Cordylanthus tenuis ssp. brunneus</i>	serpentine birds-beak	Annual Herb	None	None	4.3	July - August	Thrives in serpentine soils, typically found on rocky slopes.	Open areas, rocky soils	180 to 670 m	None due to elevation
<i>Antirrhinum virga</i>	twig-like snapdragon	Annual Herb	None	None	4.3	June - July	Occurs in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	390 to 1730 m	None due to elevation
<i>Penstemon newberryi var. sonomensis</i>	Sonoma beardtongue	Perennial Herb	None	None	1B.3	April - August	Grows in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	0 to 1010 m	Moderate
<i>Alopecurus aequalis var. sonomensis</i>	Sonoma alopecurus	Perennial Grass	Endangered	None	1B.1	May - July	Typically found in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	5 to 365 m	Moderate
<i>Calamagrostis ophitidis</i>	serpentine reed grass	Perennial Grass	None	None	4.3	April - July	Thrives in serpentine soils, typically found on rocky slopes.	Open areas, rocky soils	100 to 790 m	None due to elevation

<i>Elymus californicus</i>	California bottle-brush grass	Perennial Grass	None	None	4.3	May - August	Grows in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	5 to 480 m	Moderate
<i>Leptosiphon aureus</i>	bristly leptosiphon	Annual Herb	None	None	4.2	March - June	Typically found in woodlands, chaparral, and rocky slopes with well-drained soils.	Open areas, rocky soils	120 to 2320 m	None due to elevation
<i>Leptosiphon jepsonii</i>	Jepsons leptosiphon	Annual Herb	None	None	1B.2	March - May	Occurs in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	120 to 500 m	None due to elevation
<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	Annual Herb	None	None	4.3	April - June	Grows in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	360 to 1200 m	None due to elevation
<i>Navarretia cotulifolia</i>	cotula navarretia	Annual Herb	None	None	4.2	May - June	Found in grasslands and coastal scrub on well-drained soils.	Open areas, well-drained soils	0 to 1230 m	Moderate
<i>Navarretia heterandra</i>	Tehama navarretia	Annual Herb	None	None	4.3	April - June	Occurs in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	45 to 1150 m	None due to elevation
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Bakers navarretia	Annual Herb	None	None	1B.1	April - July	Grows in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	0 to 640 m	Moderate
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	Annual Herb	Endangered	Threatened	1B.1	May - June	Flourishes in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	420 to 840 m	None due to elevation
<i>Chorizanthe valida</i>	Sonoma spineflower	Annual Herb	Endangered	Endangered	1B.1	June - August	Prefers grasslands and open areas with well-drained soils.	Open areas, well-drained soils	0 to 70 m	Moderate
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	Annual Herb	None	None	1B.2	May - September	Typically found in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	75 to 740 m	None due to elevation
<i>Polygonum marinense</i>	Marin knotweed	Annual Herb	None	None	3.1	May - August	Grows in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	0 to 0 m	Moderate

<i>Ranunculus lobbii</i>	Lobbs aquatic buttercup	Perennial Herb	None	None	4.2	February - May	Found in wetlands, marshes, and along stream edges with moist soils.	Moist soils, stream edges	100 to 820 m	None due to elevation
<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	Perennial Grass	None	None	1B.1	February - June	Occurs in woodlands and chaparral with well-drained soils.	Open areas, well-drained soils	95 to 1040 m	None due to elevation
<i>Ceanothus divergens</i>	Calistoga ceanothus	Perennial Grass	None	None	1B.2	February - April	Grows in woodlands, chaparral, and open areas with well-drained soils.	Open areas, well-drained soils	110 to 510 m	None due to elevation
<i>Ceanothus gloriosus var. exaltatus</i>	glory brush	Perennial Grass	None	None	4.3	March - June	Typically found in woodlands and chaparral on well-drained soils.	Open areas, well-drained soils	0 to 580 m	Low
<i>Ceanothus purpureus</i>	holly-leaved ceanothus	Annual Herb	None	None	1B.2	March - May	Flourishes in woodlands and chaparral with well-drained soils.	Open areas, well-drained soils	0 to 680 m	Low
<i>Ceanothus sonomensis</i>	Sonoma ceanothus	Annual Herb	None	None	1B.2	February - April	Grows in woodlands, chaparral, and rocky slopes with well-drained soils.	Open areas, well-drained soils	140 to 620 m	None due to elevation
<i>Horkelia tenuiloba</i>	thin-lobed horkelia	Annual Herb	None	None	1B.2	May - July	Found in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	120 to 480 m	None due to elevation
<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	Annual Herb	None	None	1B.2	May - July	Occurs in grasslands and meadows with well-drained soils.	Open areas, well-drained soils	240 to 680 m	None due to elevation
<i>Triteleia lugens</i>	dark-mouthed triteleia	Annual Herb	None	None	4.3	April - June	Grows in grasslands and open areas with well-drained soils.	Open areas, well-drained soils	50 to 2280 m	None due to elevation

### California Rare Plant Ranks (CRPR):

**1A:** Plants with a California Rare Plant Rank of 1A are presumed extirpated or extinct because they have not been seen or collected in the wild in California for many years.

**1B:** Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California.

**2A:** Plants with a California Rare Plant Rank of 2A are presumed extirpated because they have not been observed or documented in California for many years.

- 2B:** Except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2B would have been ranked 1B.
- 3:** Plants with a California Rare Plant Rank of 3 are united by one common theme – we lack the necessary information to assign them to one of the other ranks or to reject them.
- 4:** Plants with a California Rare Plant Rank of 4 are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly.

**Table 2 – Observed Botanical Species**

Category	Scientific Name	Common Name	Origin	Cal IPC Rank*
<b>Trees</b>	<i>Fraxinus latifolia</i>	Oregon Ash	Native	-
	<i>Juglans spp.</i>	Walnut	Native	-
	<i>Ligustrum Lucidum</i>	Glossy Privet	Invasive	Limited
	<i>Malus domestica</i>	Apple	Non-Native	-
	<i>Prunus spp.</i>	Plum	Native	-
	<i>Quercus agrifolia</i>	Coast Live Oak	Native	-
	<i>Quercus lobata</i>	Valley Oak	Native	-
	<i>Sequoia sempervirens</i>	Coast Redwood	Native	-
	<i>Umbellularia californica</i>	California Bay Laurel	Native	-
	<b>Shrubs</b>	<i>Euryops chrysanthemoides</i>	African bush daisy	Invasive
<i>Nerium oleander</i>		Oleander	Non-Native	-
<i>Pyracantha coccinea</i>		Firethorn	Non-Native	-
<i>Rubus discolor</i>		Himalayan Blackberry	Invasive	High
<i>Toxicodendron diversilobum</i>		Poison Oak	Native	-
<i>Vitis californica</i>		California Wild Grape	Native	-
<b>Forbs</b>	<i>Achillea millefolium</i>	Yarrow	Native	-
	<i>Calendula arvensis</i>	Field Marigold	Non-native	-
	<i>Cichorium intybus</i>	Chicory	Non-native	-
	<i>Convolvulus arvensis</i>	Field Bindweed	Non-Native	-
	<i>Daucus carota</i>	Wild Carrot	Non-native	-
	<i>Diploxys tenuifolia</i>	Perennial Wall-Rocket	Non-native	-
	<i>Erodium moschatum</i>	Musk Stork's Bill	Non-native	-
	<i>Galium aparine</i>	Catchweed Bedstraw	Non-native	-
	<i>Geranium dissectum</i>	Cut-leaf Cranesbill	Invasive	-

	<i>Geranium purpureum</i>	Little Robin	Invasive	Limited
	<i>Hypericum perforatum</i>	St. John's Wort	Invasive	High
	<i>Hypochaeris radicata</i>	Cat's Ear	Invasive	Moderate
	<i>Jasminum polyanthum</i>	White Jasmine	Non-Native	-
	<i>Lamium amplexicaule</i>	Henbit Deadnettle	Non-native	-
	<i>Lupinus bicolor</i>	Miniature Lupine	Native	-
	<i>Malva neglecta</i>	Common Mallow	Non-Native	-
	<i>Oxalis pes-caprae</i>	Bermuda Buttercup	Invasive	Moderate
	<i>Plantago lanceolata</i>	Ribwort Plantain	Non-Native	-
	<i>Prunella vulgaris</i>	Self-Heal	Non-Native	-
	<i>Raphanus raphanistrum</i>	Wild Radish	Non-native	-
	<i>Rumex crispus</i>	Curly Dock	Non-native	Limited
	<i>Senecio vulgaris</i>	Common Groundsel	Non-native	-
	<i>Sonchus oleraceus</i>	Sow Thistle	Invasive	Moderate
	<i>Stellaria media</i>	Common Chickweed	Non-native	-
	<i>Taraxacum officinale</i>	Common Dandelion	Non-Native	-
	<i>Vicia sativa</i>	Common Vetch	Non-native	-
<b>Grasses</b>	<i>Aira caryophyllea</i>	Common Silver-hairgrass	Non-Native	-
	<i>Avena barbata</i>	slender wild oat	Invasive	Moderate
	<i>Briza maxima</i>	Big Quakinggrass	Invasive	Limited
	<i>Briza minor</i>	Little Quakinggrass	Non-Native	-
	<i>Bromus diandrus</i>	Great Brome	Invasive	Moderate
	<i>Bromus hordeaceus</i>	Soft Brome	Invasive	Moderate
	<i>Dactylis glomerata</i>	Orchard Grass	Non-Native	-
	<i>Echinochloa crus-galli</i>	Barnyard Grass	Non-Native	-
	<i>Festuca myuros</i>	rat-tail fescue	Invasive	Moderate
	<i>Festuca perennis</i>	Italian Ryegrass	Invasive	Moderate

	<i>Holcus lanatus</i>	Yorkshire Fog	Invasive	High
	<i>Hordeum murinum</i>	Mediterranean Barley	Invasive	Moderate
	<i>Lolium multiflorum</i>	Annual Ryegrass	Non-Native	-
	<i>Lolium perenne</i>	Perennial Ryegrass	Non-Native	-
	<i>Phalaris aquatica</i>	Harding Grass	Non-Native	-
	<i>Phleum pratense</i>	Timothy Grass	Non-Native	-
<b>Succulent</b>	<i>Opuntia ficus-indica</i>	Indian Fig Opuntia	Non-native	-

This list is not comprehensive and may not cover all floristic species in the Study Area due to some species not being in bloom or fully identifiable during the site visit. It exclusively comprises specific species identified during a targeted survey focusing on potentially occurring species. To acquire a thorough inventory of botanical species, a protocol-level botanical survey conducted at seasonally appropriate periods could yield a more comprehensive list of floristic species present in the Study Area.

\*The CAL-IPC rank system is used to assess the invasiveness of plant species. The CAL-IPC evaluates and categorizes plant species based on their potential to invade and negatively impact natural ecosystems in California.

The rank system consists of four categories:

- "*Highly invasive*": This rank is assigned to plant species that have demonstrated a high propensity to spread aggressively and cause significant ecological harm. Highly invasive plants pose a severe threat to native plant communities and can outcompete native species, alter habitats, and disrupt ecosystem functions.
- "*Moderately invasive*": Plant species categorized as moderately invasive have the potential to spread and impact ecosystems but may not exhibit the same level of aggressiveness as highly invasive species. They still pose a threat to native vegetation but may have a more limited range or impact.
- "*Limited invasive*": This category includes plant species that have the potential to spread and become invasive in specific habitats or conditions. While their invasiveness is less pronounced compared to highly or moderately invasive species, they still require careful monitoring and management to prevent negative impacts.
- "*Not invasive*": This rank is assigned to plant species that have been assessed as not invasive or having a minimal invasive potential. These species do not pose a significant risk to native ecosystems and can be considered safe for planting in landscaping and restoration projects.