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2021 BOTANICAL RESOURCES SURVEY REPORT

LA HONDA AREA PRESERVES

LA HONDA CREEK, EL CORTE DE MADERA CREEK, THORNEWOOD, AND WINDY HILL OPEN SPACE PRESERVES SAN MATEO COUNTY, CALIFORNIA

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TABLE OF CONTENTS

FIGURES AND TABLES:

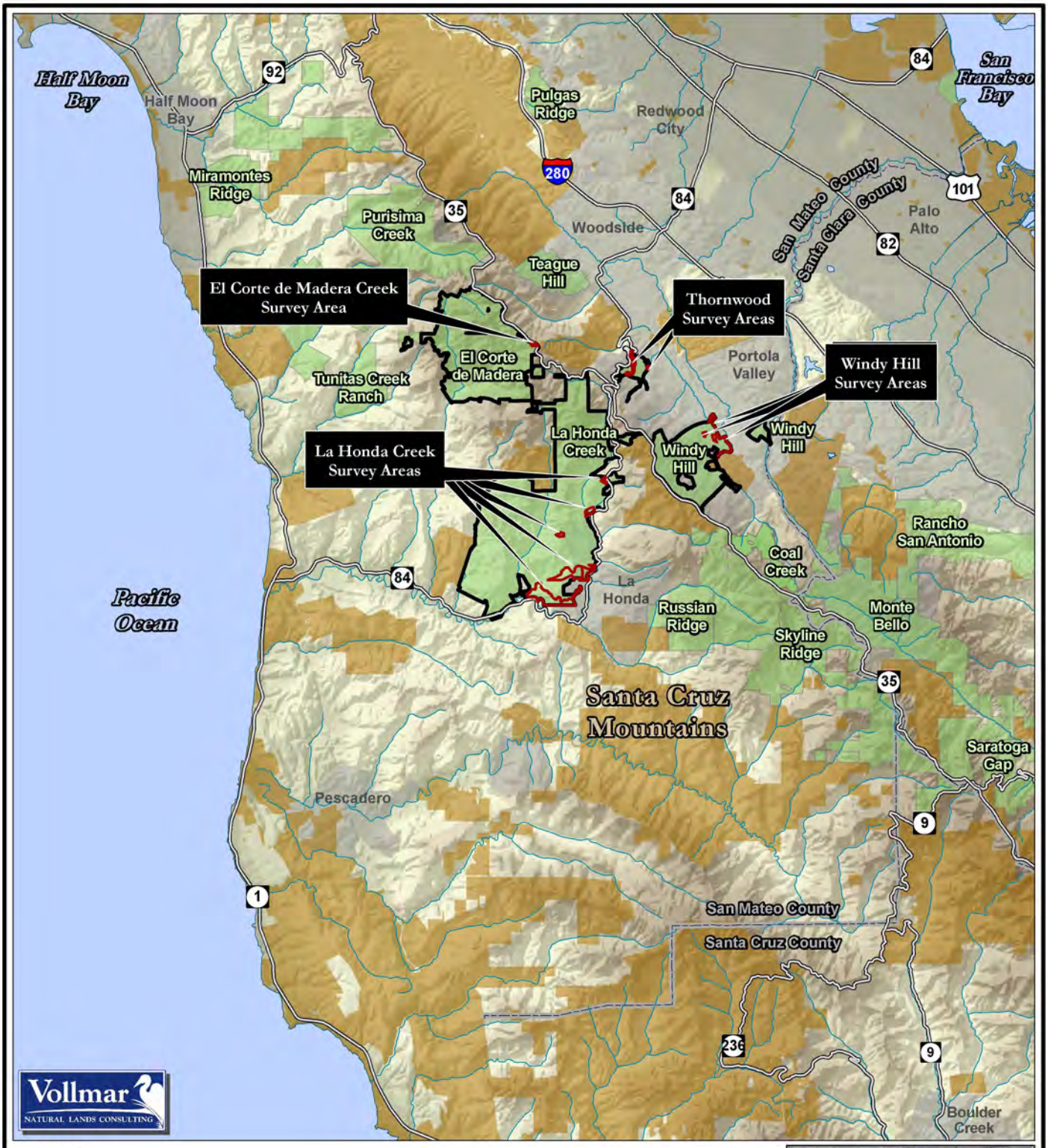
APPENDICES:

1.0 INTRODUCTION

This document presents the methods and results for botanical resource surveys conducted within the La Honda Area preserves, located within the Santa Cruz Mountains, in San Mateo County, California (**Figure 1**). The surveys were conducted by Vollmar Natural Lands Consulting (VNLC) on behalf of the Midpeninsula Regional Open Space District (District). The surveys were conducted in support of planned work at multiple distinct project sites within several preserves in the vicinity of the La Honda Creek Open Space Preserve. The project work involves invasive fuels management, including invasive species management, as well as development of recreational infrastructure, such as parking and staging areas for trailheads. The overall project and its components are part of the Wildland Fire Resilience Program, and the purpose of the surveys was to document any sensitive botanical resources that could potentially be impacted by project activities. The surveys were protocol in nature, and were scheduled to coincide with early spring, peak spring, and summer botanical seasons for the region, during the blooming periods of special-status plants with potential to occur in the study area. Two special-status plant species were detected and mapped during the surveys, along with numerous locally rare species and multiple sensitive habitat types.

The study area consists of 12 separate project sites (project site or survey area) that cumulatively amount to approximately 311 acres. The project sites are distributed across both eastern and western slopes of the central Santa Cruz Mountains. They are mapped within the following four 7.5 minute U.S. Geological Survey (USGS) topographic quadrangles: Woodside, Palo Alto, La Honda, and Mindego Hill. **Figure 2** shows the project site locations and quadrangle boundaries. As shown on the map figure, six of the 12 project sites, accounting for 265 acres (85% of the total), are located within the La Honda Creek Open Space Preserve (OSP), in the outskirts of the Town of La Honda. An additional three sites that total 21.5 acres are within the Windy Hill OSP, along the foothills adjacent to the Town of Portola Valley. One long and narrow site, covering 18.5 acres, and a small parking area that covers 1.2 acres are within the Thornewood OSP, in the hills above the Town of Woodside. The one remaining site is located within El Corte de Madera Creek OSP, along Skyline Boulevard/Highway 35, at the crest of the Santa Cruz Mountains. This site is approximately 4.5 acres. All four of the preserves are owned by the District and are managed as open space in a manner that balances public access with the protection of natural resources. Public access is provided via an existing network of hiking, bicycling, and equestrian trails, depending on the particular site.

The project sites and surrounding preserve lands consist of primarily natural habitats, but there are localized areas within several of the sites that encompass infrastructure such as parking facilities, trails, and associated infrastructure. There are also a few areas with remnant, often dilapidated structures associated with previous land uses. Because the sites are located on both the eastern and western slopes of the mountains, and within a wide elevation range, they encompass a variety of micro-climates and a corresponding diversity of habitat types. At a broad scale, dominant plant communities include grasslands, woodland and forest types, shrublands, and a variety of wetland types, including riparian corridors as well as seasonal and perennial herbaceous wetlands. The wooded habitats include both hardwood and conifer trees as well as extensive stands of exotic and invasive species (both trees and shrubs), many of which are targeted for management actions.



Legend

- Highway
- River or Stream
- Midpen Preserve
- Other Public or Preserved Land
- Water Body
- Urbanized Area
- County Boundary
- Survey Area Boundary (12 sites, 311 ac.)
- Survey Area Preserve Boundary

Data Sources: Midpen, 2020, 2020 | CPAD, 2019
USGS, Various | GAP, 1998 | VNLC, 2021
GAP Analysis Project, 1998 | TIGER, 2012
GIS/Cartography by: Jake Schweitzer, Nov. 2021
Map File: Vcnty_LH_493_A-P_2021-1108.mxd

FIGURE 1
Regional Vicinity Map

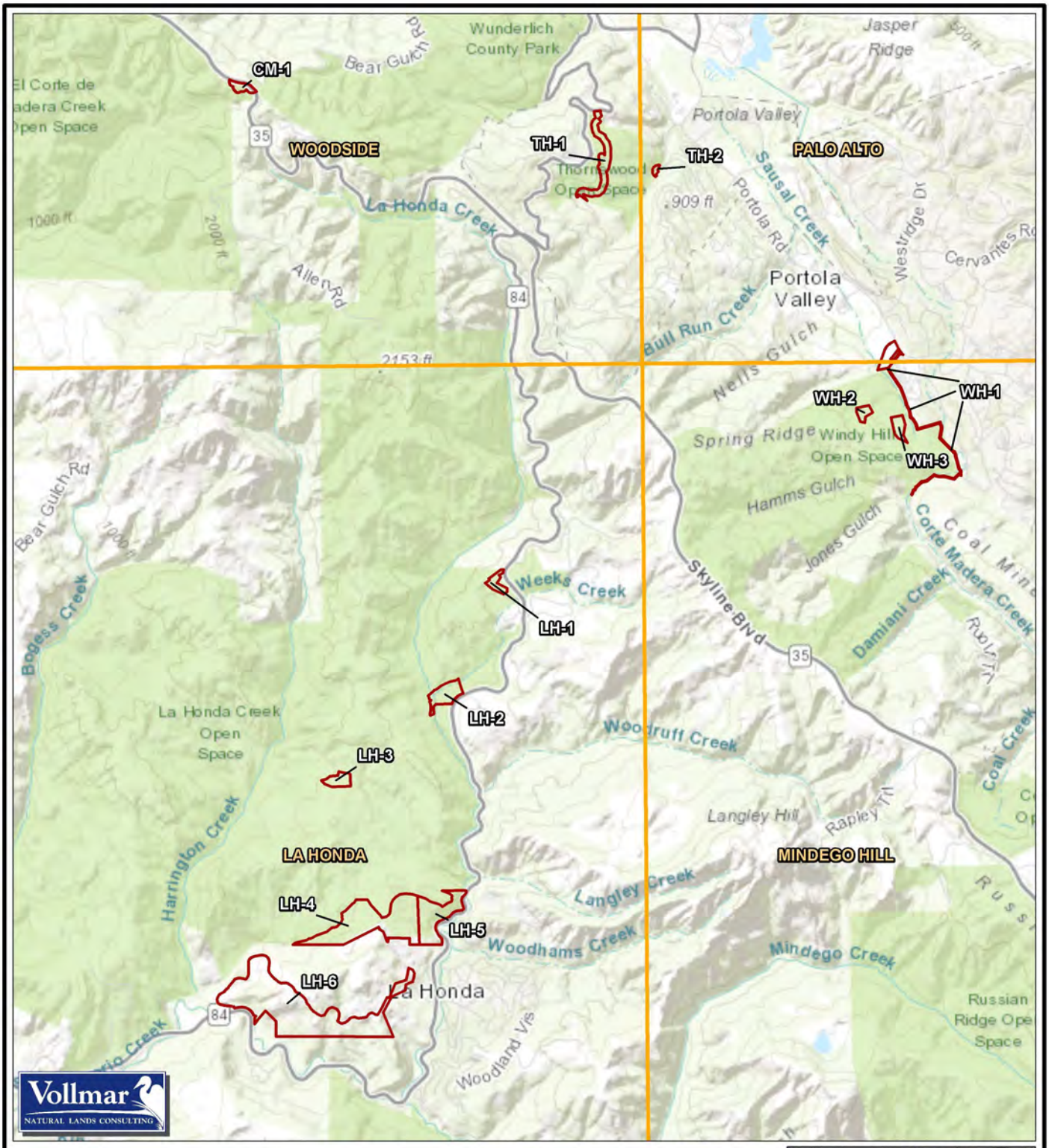
La Honda Area Preserves
Botanical Resources Survey Project
San Mateo County, California

N
W E
S

1:200,000

0 2 4 Km

0 1 2 4 Miles



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Legend

- USGS Quadrangle Boundary (with quad name)
- Survey Area Boundary (see map labels)

FIGURE 2
Local Vicinity Map

La Honda Area Preserves
Botanical Resources Survey Project
San Mateo County, California

N W E S

1:55,000

0 1 2 Km

0 0.5 1 2 Miles

Data Sources: Midpen, 2020, ESRI Topo Map USGS, Various | GAP, 1998 | VNLC, 2021 GAP Analysis Project, 1998 | TIGER, 2012
GIS/Cartography by: Jake Schweitzer, Nov. 2021
Map File: Site_LH_493_A-P_2021-1108.mxd

2.0 TARGETED BOTANICAL RESOURCES

For the purposes of this report, special-status plants include federal and/or California state listed species and species of concern as well as species included within an inventory maintained by the California Native Plant Society (CNPS), including taxa of all ranks. The surveys also targeted locally rare plants as included on a list maintained by the local chapter of the CNPS and the Jasper Ridge Biological Preserve. As discussed below, these taxa were only surveyed on an opportunistic basis.

Sensitive habitats were also targeted as part of the botanical study. Sensitive plant communities include those designated as such by the California Department of Fish and Wildlife (CDFW), either in the List of California Sensitive Natural Communities (2018) or as alliances classified in the Manual of California Vegetation (MCV) (Sawyer et al. 2009, CNPS 2021a). Alliances designated as global or state rank ("G" or "S", respectively) 1, 2, or 3 in the MCV are considered "rare or threatened" at the global and/or state level and are therefore considered sensitive. In addition, wetland and riparian habitats are considered sensitive and are regulated by environmental regulatory agencies.

3.0 METHODS

3.1 Preliminary Review and Field Preparation

A map and a list of special-status plants documented in the vicinity of the study area were compiled prior to conducting field surveys, in order to identify special-status taxa with potential to occur on the project sites. The map was compiled from the most recent spatial data within the California Natural Diversity Database (CNDDB), as available from the CDFW (2021). The list was compiled from a nine-quadrangle search using the CNPS's online "Inventory of Rare and Endangered Plants" (CNPS 2021b). Specifically, the search centered on the La Honda quadrangle and included all eight surrounding quadrangles, including Mindego Hill, Palo Alto, Woodside, Half Moon Bay, San Gregorio, Pigeon Point, Franklin Point, and Big Basin. The search centered on the La Honda quadrangle rather than any of the other four quadrangles encompassing the project sites because a majority of the sites and total acreage (6 of 12 sites and 265 of 311 acres) are within this quadrangle. Additionally, the nine quadrangles included in the La Honda search most accurately capture habitats found within the project sites, by capturing a higher percentage of the Santa Cruz Mountains. The special-status plant list derived from the quadrangle search provides information pertaining to the special-status plants, including taxonomic status, preferred habitat, elevation range, and blooming period. This information guided the development of the field survey schedule and strategies to detect special-status plants with potential to occur in the study area. The list of special-status plant taxa documented in the vicinity is available in **Appendix C**.

3.2 Field Surveys

The botanical field surveys were conducted by Jake Schweitzer and John Vollmar, VNLC Senior Botanists, with support from Ivy Poisson and Rachel Miller, VNLC Staff Botanists. The survey dates (see **Table 1** below) were scheduled to coincide with the blooming periods of all special-status plants for which potentially suitable habitats occur in the study area. Where the surveys were conducted over multiple days, the sites at the lowest elevations and/or along the drier eastern side of the mountains (i.e., those within the Windy Hill and Thornewood preserves) were

surveyed on the earlier dates, and the those at higher elevations and/or along the more moist side of the mountains (those within the La Honda Creek Preserve) were surveyed on the later dates.

Table 1. 2021 Botanical Survey Dates

Round 1	Round 2	Round 3
March	**May**	**August**
02	11	13
	12	18
	14	20
	20	

The rare plant surveys conformed to the CNPS 'Intuitive Controlled' method as well as the CDFW guidelines for conducting protocol-level botanical surveys (2018). The surveys also satisfy the U.S. Fish and Wildlife Service guidelines for conducting and reporting botanical inventories for federally listed, proposed, and candidate plants (USFWS 2000). Specifically, the entirety of each project site was investigated, though areas with higher potential to support special-status or otherwise unique plants were surveyed with greater intensity. Examples of such areas include more localized plant community types, unique soil types, rock outcroppings, wetlands, mesic shrubland habitats, and areas generally supporting a notably high proportion of native plants. All plant taxa present were recorded according to the lowest taxonomic level (i.e., species, subspecies, or variety as applicable) and dominant species as well as general habitat conditions were noted throughout each survey area. Project maps and GPS background files depicting the project boundaries, soil unit boundaries, and other features were used to navigate throughout the survey areas. Field manuals, particularly "The Jepson Manual" (Baldwin et al. 2012), "Flora of the Santa Cruz Mountains of California" (Thomas 1961), and "Plants of the San Francisco Bay Region" (Beidleman and Kozloff 2014) were used to confirm the taxonomy of some plant taxa as necessary.

Within each primary habitat type as well as various microhabitats, the most prevalent plant species from each stratum (tree, shrub/sapling/vine, and herb) were recorded in order of dominance into the GPS unit, with an effort to classify the habitat types according to the CNPS classification system (2001). This facilitated the identification of sensitive habitat types, including those ranked in the MCV as S1-3 and/or G1-3. Other habitat parameters, such as the extent of canopy cover, soil conditions, and level of disturbance, were also noted.

Secondary priority goals of the surveys included the identification and mapping of locally rare plants, likely incidences of sudden oak death syndrome (SOD), and invasive weeds. In addition, an additional objective at the outset of the surveys was to identify and map areas of excessive fuel loads and ladders. However, it became immediately clear that this problem is too widespread to address in a meaningful manner, which was not surprising given that a primary goal of the overall project is to manage fuel loads. SOD was locally common as well, and was often noted in areas with excessive fuel loads—dead coast live oak (*Quercus agrifolia*) and tanoak (*Notholithocarpus densiflorus*) trees were often major contributors to fuel loads. Incidences of SOD were generally recorded as GPS points in areas where signs of the pathogen were otherwise uncommon (and thus potentially manageable), or in some cases simply opportunistically as part of "bread-crumb" data collection to track areas that had been surveyed

versus not yet surveyed. Locally rare plants as tracked by the CNPS and Jasper Ridge Biological Preserve were found to be less widespread than excessive fuel loads, but some species were nevertheless widespread and often abundant. The compilation of locally rare plants is very much an on-going process (Rawlings per. comm.), and as such, many of the plants are actually quite common in some areas of the Santa Cruz Mountains. For species that were found to be relatively common, only a few reprehensive occurrences were mapped as GPS points, though any notably uncommon taxa were automatically recorded. For each occurrence, the observed population range was recorded as a GPS point attribute. Examples of both more common and less common species that were surveyed are provided in **Table 3**, **Section 5.2**. Finally, locations and population ranges of invasive plants were recorded as GPS points, in order to identify areas of potential management needs or threats to areas of vegetation clearing. The documentation of invasive plants focused on species rated by the California Invasive Plant Council (Cal-IPC) as "Moderate" or "High," along with all invasive species included within a list of Early Detection and Rapid Response (EDRR) species that is maintained by the District and other entities for the Santa Cruz Mountains region. A few species not rated by Cal-IPC as Moderate or High were documented because they have the potential to cause ecological problems in the study area. Most of these are tree or shrub species known to be fairly widespread in the region, with blackwood acacia (*Acacia melanoxylon*) and olive (*Olea europaea*) as examples. Conversely, there were some invasive species, including several that are rated by Cal-IPC as High, that were so widespread that consistently mapping them was too time-consuming and thus unpractical (e.g., some populations of French broom [*Genista monspessulana*]). And many grassland species that are rated as Moderate were not documented because they are so naturalized in non-native grasslands that they do not warrant documentation—it is a given that they are present (e.g., wild oat [*Avena barbata*]). Many of the mapped invasive plants are incipient occurrences, in areas where those species were otherwise uncommon, though again, some occurrences were mapped opportunistically as bread-crumb trails. Many of the most infested areas are noted on maps and in tables in **Section 5** of this report.

During the field surveys, representative digital photographs were taken of onsite plant communities and of general habitat conditions, with the direction of each photograph recorded as a GPS feature attribute. Photos were also taken of species of interest, including special-status, diagnostic, and invasive species. Selected photos are included in **Appendix B**.

3.3 Remote Mapping

In order to provide plant community mapping for each site, field data were combined with existing habitat data and overlaid onto aerial photography and topographic data using ArcGIS software. Three geographic information systems (GIS)-based vegetation layers were utilized to guide plant community mapping: District vegetation mapping (2013); Conservation Lands Network data (2019); and life form vegetation data produced by the Golden Gate National Parks Conservancy (GGNPC) for San Mateo County (2020). Each of these was compared with GPS-based field data and aerial photography to identify the most accurate habitat boundaries within the project sites—each dataset was more accurate in different locations. In general, the GGNPC dataset was found to be the most accurate, and so was used as the primary data. However, all of the datasets were produced at a regional scale, such that boundaries had to be adjusted and refined to more precisely depict habitat boundaries. In many cases the data were re-classified based on inaccuracies as observed from the field data and/or aerial photography. Two sets of air photos from two different timeframes were used in the analysis, including Digital Globe 0.5-

meter resolution color photography from August of 2020, and National Aerial Imagery Program (NAIP) 0.6-meter resolution color infrared (CIR) photography from October of 2016. Each photo set provides distinct advantages. Since the Digital Globe imagery is provided via ArcGIS software, a single mosaic image covers the entire study area, and therefore it was the primary imagery used to digitize habitat polygons. The NAIP imagery allows for analysis of vegetation cover using the infrared spectral value. Using the CIR imagery, the cover and type of vegetation is easier to discern. A minimum mapping unit (MMU) of approximately 0.1 acre (4,356 sq. ft.) was employed in the habitat analysis, based on the confidence level of field data as well as the quality of the available aerial imagery for the study area. In order to ensure consistency in the use of aerial imagery and digitized lines, the habitat boundaries were digitized at a scale of 1:1,200. As noted above, the habitat type coding corresponds to the CNPS habitat type classification (2021), which required recoding most of the community names utilized for the other three datasets.

4.0 Environmental Setting

4.1 Regional Setting

The 12 project sites are distributed along both the eastern and western sides of the central Santa Cruz Mountains. The Santa Cruz Mountains are part of the Coast Ranges Province of California, and are included in the Jepson Manual's San Francisco Bay Area (SnFrB) floristic Subregion (Baldwin et al. 2012). The SnFrB Subregion is defined as encompassing a notable diversity of vegetation types, from very wet redwood forest to dry oak/pine woodlands and chaparral (ibid). Because the various project sites are located at different elevations and occur on both sides of the primary crest of the mountains, they receive a range of climate conditions. Relative to other parts of the San Francisco Bay region, the sites are generally along the more mesic (i.e., moist) side of the spectrum. This is the result of all of them being at relatively high elevations and being located closer to the Pacific coast. Examples of more xeric (i.e., relatively arid) communities that are lacking within the study area are chaparral and more interior oak woodland types such as blue oak (*Quercus douglasii*) and interior live oak (*Q. wislizeni*) woodlands.

Elevation within the study area ranges from 235 to 2,216 (72 to 675 meters) above sea level (USGS 1997), with the El Corte de Madera Creek site (CM-1) encompassing the highest elevation, and one of the BCR sites (LH-6) encompassing the lowest elevation (**Figure 2**). Elevation rises steadily westward from Windy Hill site WH-1 (530 feet) towards the Thornewood site (average around 900 feet), then the El Corte de Madera Creek site along the mountain crest at Skyline Boulevard, and then descends toward the La Honda Creek sites (see **Table 2**). There are several high points west of the crest and within La Honda Creek, but the project sites in that preserve are along the lower elevation eastern and southern edges of the preserve (**Figure 2**). Elevation within the La Honda Creek sites ranges from 235 to 1,096 feet (ibid). The project sites encompass varied topography, from gently sloping or flat floodplains and meadows to rolling hills and steep ravines.

The El Corte de Madera Creek and La Honda Creek survey areas are within the San Gregorio Creek Watershed, while the Thornewood and Windy Hill sites are within the San Francisquito Creek Watershed (USGS 2013). Water in the vicinity of the La Honda Creek and El Corte de Madera Creek preserves flow via La Honda Creek and several more minor streams into San Gregorio Creek, which in turn flows westward into the Pacific Ocean. Water from the

Table 2. Summary of Abiotic Environmental Factors. La Honda Area Preserves, San Mateo County, California. Compiled by VNLC, 2021.

Survey Area Group (Preserve)	Elevation Range (feet)	Geologic Formations (% of Survey Area group)	Soil Units (% of Survey Area group) - Surface Texture[1]	Avg. Wet Season Precipitation (inches)	Total 2020-2021 Wet Season Precipitation (inches)	Average Wet Season Temperature (°F)	Average 2020-2021 Wet Season Temperature (°F)
CM (El Corte de Madera Creek)	2,180 - 2,216	Pomponio Mudstone Member of Purisima Formation Monterey Group Santa Cruz Mudstone Lambert Shale and shale of Mt Pajaro area (100.0%)	Hugo and Josephine sandy loams (86.4%) - sandy loam; Hugo and Josephine loams (11.2%) - loam; Alambique-McGarvey complex (2.3%) - gravelly loam	36.7	15.3	54.4	56.0
LH (La Honda Creek)	235 - 1,096	Purisima Formation undividuated. Tunitas Sandstone and Tahana Members of Purisima Formation and unnamed sandstone (44.5%); Page Mill Basalt Mindego Basalt diabase and other volcanic rocks (38.2%); Lobitos Mudstone Member of Purisima Formation Lambert Shale San Lorenzo Formation Rices Mudstone Member of San Lorenzo Formation and mudstone of Mayamus Flat (15.9%); undividuated mapped Quaternary deposits: alluvium terrace deposits Millerton Formation undivided Quaternary and some bedrock islands (1.4%)	Sweeney clay loam (27.8%) - clay loam; Mindego clay loam (20.8%) - clay loam; Hugo and Josephine loams (13.2%) - loam; Lobitos loam (10.1%) - loam; Sweeney loam (8.3%) - loam; Pomponio loam (6.1%) - loam; Sweeney clay (3.7%) - clay; Butano loam (3.4%) - loam; Pomponio clay loam (2.6%) - clay loam; Santa Lucia loam (2.5%) - channery loam; Laughlin-Sweeney loams (1%) - loam	30.1	12.9	54.0	54.5
TH (Thornewood)	492 - 1,035	Vaqueros Sandstone Butano Sandstone and Locatelli Formation (81.6%); Pomponio Mudstone Member of Purisima Formation Monterey Group Santa Cruz Mudstone Lambert Shale and shale of Mt Pajaro area (14.2%); open water (3.0%); Butano Sandstone (1.2%)	Alambique-McGarvey complex (100.0%) - gravelly loam	32.5	12.8	55.2	56.6
WH (Windy Hill)	530 - 872	Corte Madera facies of Santa Clara Formation (53.9%); undividuated unmapped Quaternary deposits incl. colluvium between surficial deposits and hillside materials and mapped colluvium (40.4%); Butano (?[*sic*]) Sandstone (5.7%)	Fagan loam (35.4%) - loam; Botella loam (32.0%) - loam; Alambique-McGarvey complex (25.3%) - gravelly loam; Hugo and Josephine loams (3.9%) - loam; Francisquito-Urban land complex (2.4%) - no surface texture listed; Botella-Urban land complex (1.1%) - no surface texture listed	27.1	10.6	55.8	57.1

1. Excluding soils units that constitute <1% cover within a given group of project sites. Surface texture is given for the top 24 inches.

Sources: Conservation Lands Network geology GIS data (2019; based on Wentworth 1997); USDA SoilWeb website (2021); PRISM climate data (2021)

Thornewood and Windy Hill preserves flow into Corte Madera Creek, thence San Francisquito Creek, which winds eastward for approximately 10 miles before discharging into San Francisco Bay.

4.2 Climate

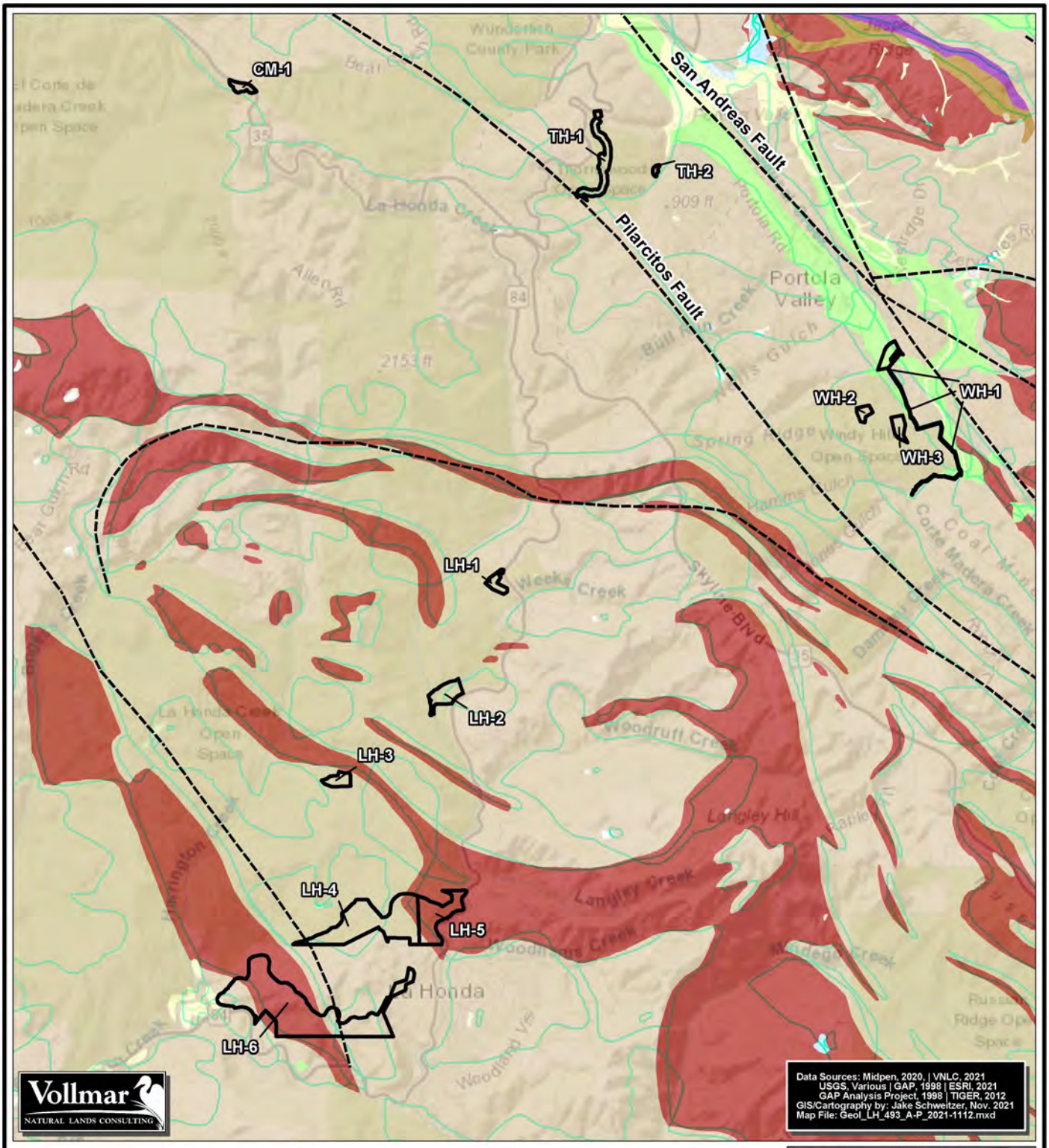
The climate of the study area and surrounding vicinity is characterized by cool, wet winters and warm, mostly rainless summers as well as high inter- and intra-annual variability in precipitation. The study area is within the "Western Mountains, Valleys, and Coast Region" of the Army Corps of Engineers climate zones (ACOE 2010), which may be defined for floristic analyses as "coastal Mediterranean." However, the Windy Hill sites are only approximately 0.2 mile west of the boundary that separates this climate zone from the "Arid West" region (ibid). The Arid West climate region features a more typically "Mediterranean" climate, with more pronounced wet and dry seasons. Mean annual precipitation in the study area ranges from almost 38 inches at the El Corte de Madera Creek site to just over 28 inches at the Windy Hill sites (PRISM 2021). Approximately 98 percent of precipitation at both areas occurs during the "wet season," from October to May. Not only is precipitation considerably higher along the western slopes of the Santa Cruz Mountains, fog augments occasional rain during the summertime, by as much as 10 inches during some years (Thomas 1961), which is not included in the precipitation data. The general lack of dry season moisture is reflected in the plant communities found in the Windy Hill area—at least one prominent plant community, Valley Oak Woodland, becomes increasingly rare to the west and drops out completely along the western slopes of the mountains (Jepson 2021).PRISM 2021

As shown on **Table 2** above, the study area experienced lower than average rainfall during the 2020-2021 wet season. At Windy Hill, the driest site, wet season precipitation was 10.6 inches, which is 39 percent of the mean for the area (27.1 inches), and at El Corte de Madera Creek, the wettest site, precipitation was 15.3 inches, or 42 percent of the mean of 36.7 inches (ibid). The other two project areas (Thornewood and La Honda Creek) had similarly dry wet seasons. However, the timing of the precipitation was generally conducive to plant germination and growth, if not in a manner that supported vigorous growth or extended bloom periods. A large storm in late December was just in time to initiate germination of annual plants, and though there were no subsequent major storms, precipitation occurred at fairly regular intervals, occurring as "shots" of rain that facilitated persistence into the flowering period. Based on survey results at the project sites, as well as at other sites throughout the greater Bay Area, it appeared that most plants, including annual plants, did indeed germinate and bloom, though most were slightly stunted in stature and, in most cases, senesced earlier than normal.

4.3 Geology and Soils

Geology

The majority of the project sites encompass sedimentary rocks of various ages and origins, as well as localized areas of volcanic and alluvial materials (Wentworth 1997). **Figure 3** below depicts the primary rock types as generalized geologic units, and the many geologic formations



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Legend

- Fault Line
- Survey Area Boundary (see map labels)

Generalized Geologic Units

- Alluvium
- Alluvium
- Sedimentary Rocks
- Franciscan Complex Chert
- Volcanic Rocks
- Great Valley Complex Serpentinite

Note: see Table 2 for subunits within each project site

FIGURE 3
Geologic Units Map

La Honda Area Preserves
Botanical Resources Survey Project
San Mateo County, California

N
W E
S

1:55,000

0 1 2 Km

0 0.5 1 2 Miles

that the rock types form within each preserve area are listed in **Table 2**. The variety of sedimentary rocks range in age from the Eocene epoch (over 50 million years old) to as recent as the Pleistocene epoch (1.8 to 0.01 million years old), and include various sandstone, mudstone, and shale materials, as shown in the table. The volcanic materials consist almost entirely of basalt of upper period age (66.5 to 2 million years old). Finally, the alluvial materials are of Pleistocene age, with localized areas of Holocene materials along the largest stream floodplains.

The basement rocks upon which these materials rest or have been mixed with are divided by the major fault lines that traverse the area and have been responsible for the region's topography (**Figure 3**). The La Honda Block, which includes areas west of the Pilarcitos Fault, an ancient and inactive fault, consist of granite basement rocks that have migrated north from southern California over many millions of years (Sloan 2006)**.** Thus, these are the basement rocks below the El Corte de Madera Creek and La Honda Creek preserves. The Pilarcitos Block, which includes areas east of the Pilarcitos Fault, but west of the younger—and still active—San Andreas Fault, consist of Franciscan materials. The Franciscan materials consist largely of graywacke, chert, and occasionally limestone and pillow basal, but the latter two types do not occur within the local Thornewood or Windy Hill project sites. Incidentally, east of the San Andreas is the San Francisco Bay Block, which consists of other Franciscan materials (ibid). Most of the rocks in the area, regardless of formation or age, were amalgamated in transit to a subduction zone (where the Pacific Plate was forced under the North American Plate upon contact), where the sediments were ground up and indurated at great depths. Most of the rocks also consist of marine sediments, primarily derived from materials deposited in marine fans resulting from turbidity currents (the marine equivalent of landslides, possibly caused by earthquakes) at the tectonic plate edges (Sloan 2006). Thus, though some rocks may be highly deformed from being thrust deep into the subduction zone, occasionally forming metamorphic rocks, a majority consist primarily of continental minerals and elements. Such materials tend to provide relatively abundant nutrients that are necessary for plant growth, especially as compared to serpentinite and other materials from deeper within the earth.

In general, exposed rock was found to be relatively rare at all of the sites. There were very few medium to large-sized rock outcrops, and exposed bedrock was observed primarily along stream beds and banks as well as road cuts.

Soil Units

As expected given the wide distribution of the project sites, there are numerous mapped soil types within the sites. Accounting for all slope and texture-based subunits, there are 35 mapped units throughout the study area (USDA 2021). These have been agglomerated and stripped down into 14 units, as shown on **Table 2**, by combining the primary unit and texture types and discounting slope modifiers, and also excluding units that cover less than one percent of any group of project sites. For example, all Sweeney loam types have been combined. Additionally, the units at different sites are, in some cases, within distinct soil survey areas, such that some of the differently named soil units are quite similar or even nearly identical.

The table includes the dominant surface texture of each unit, as well as the percent cover of each within the preserve group, and **Appendix E** provides the mapped boundaries of the surface textures as well as pH. Despite the large number of units, most of them are fairly similar to one

another, as all of them are derived from sandstone, shale, basalt, or alluvium, depending upon the geologic formation. All of the soil units consist of one of several types of loam, including loam, clay loam, sandy loam, channery loam (composed of thin, flat fragments), and gravelly loam. All of them are classified as either well drained or moderately well drained, and all of them feature either moderately acidic to neutral pH, with most units featuring a pH ranging from around 6 to 7 (ibid). There are a few units with a pH as low as 5.2, but these cover very small portions of the sites (e.g., Butano loam, which cover 3.4% of the La Honda Creek sites). Given the loamy texture and often mildly acidic to neutral pH, the soils may be considered relatively fertile. Where strata were visible, the topsoils appeared to be deep and rich. As noted above, rock outcrops and exposed bedrock were found to be uncommon within the project areas, as are edaphic micro-habitats.

5.0 RESULTS

5.1 Summary of Key Findings

A total of 309 plant taxa were identified within the 12 project sites during the 2021 field surveys, two of which have California Rare Plant Rank (CRPR) designations, as assigned by the CNPS (see **Section 5.3** and **Appendix D**). Of all plant taxa identified within the study area, 185 (60%) are native to California, while 123 (40%) are introduced in the state. The origin of one species, spiny cocklebur (*Xanthium spinosum*), is uncertain and is listed as "native or naturalized" in Calflora (2021) and as "native to North America" in the Jepson Flora Project database (2021). Among the native species, three are native to California, but not to the study area—these are trees that have been planted in the region. Seven of the native taxa are considered by the local chapter of the CNPS and Jasper Ridge Biological Preserve to be locally rare. Among the introduced species, 58 (19% of all taxa) are considered invasive by the Cal-IPC (2021), including seven taxa that are rated as "High," 28 rated as "Moderate," and 23 rated as "Limited." One additional taxon is included on the list of EDRR invasive weeds that is maintained for the region (**Appendix D**). All of the other EDRR species are also rated by Cal-IPC. Among the introduced species, there are numerous cultivar garden escapes, including some that have become naturalized as noxious weeds, and some that are only found in localized areas surrounding former residential developments.

The proportion of introduced plant taxa as well as that of invasive species is relatively high, especially given the high percentage of wooded habitats (more than half of the total area). Forests, woodlands, and shrublands tend to feature a higher cover of native species, as a result of dispersal mechanisms of most constituent plants (i.e., fewer are dispersed by wind), less disturbance from land use practices, the fact that there is often little available habitat to colonize (especially within dense shrubland habitats), and other factors. However, many of the wooded habitats within the study area are more disturbed than typical, from historical logging, former settlements, neighboring land use, and high mortality of trees from SOD, which has resulted in more open canopies. Indeed, many the project sites have been specifically targeted for management activities because they are disturbed. The project is targeting areas with dense fuels that have accumulated from SOD-infected oaks as well as from infestations of French broom and other potential fuel ladders in historically cleared or otherwise disturbed areas. The project is also targeting formerly developed areas with hazardous dilapidated structures and/or widespread cultivars that could (or already have) spread into the surrounding natural habitats. It is also worth noting that, while invasive weeds were documented within nearly all of the project sites,

they are generally most concentrated in localized areas of historical disturbance and in areas where preserves lands are adjacent to residential areas or other developments. As tends to be the case with invasive weeds in wooded habitats, a majority of the documented species are escaped cultivars, including French broom and Spanish broom (*Spartium junceum*), English ivy (*Hedera helix*), and most of the invasive tree species. Encompassing a former homestead and being bounded by residential housing, the larger Thornewood project site (TH-1) is particularly disturbed and features the highest diversity and cover of invasive weeds.

There are also a wide variety of exotic species within grassland habitats in the project sites, especially where the grasslands are not currently managed. Some of these are invasive and of concern, but most are the sort that have been thoroughly naturalized in California for decades or even centuries. Where livestock are present, these species are generally kept in check to some degree by carefully managed grazing regimes. The grasslands of the La Honda Creek preserve, which are managed by livestock grazing as part of the District's Conservation Grazing Program, are representative of moderately disturbed but well-managed grasslands. Most of the grasslands within the other project sites are un-grazed, and therefore more disturbed.

Plant communities documented within the study area include, in order of extent, Valley and Foothill Grassland, Cismontane Woodland, North Coast Coniferous Forest, Coastal Scrub, Developed (including roads), Freshwater Wetland, Closed Cone Pine Forest, Open Water or Wetland, and Riparian Woodland. These habitats are mapped in **Appendix A**, and attributes of the individual project sites are provided below in **Table 3**, including dominant plant communities, sensitive plant communities, the presence of CRPR and special-status species, invasive species, and potential sudden oak death. As noted above, the habitat nomenclature conforms to the classification system used by the CNPS to describe habitat types for special-status plant taxa (see **Appendix C**). Among many of these broadly defined habitats, seven plant communities were identified that are ranked as sensitive (S and/or G 1-3) in the MCV. These are summarized in **Table 4** below. Wetland and riparian habitats were also identified—these may be subject to the jurisdiction of state and/or federal regulatory agencies. Among the constituent plants within the plant communities, six locally rare taxa, as defined by the local CNPS chapter and the Jasper Ridge, were identified and mapped. In addition, multiple occurrences of potential SOD were identified and mapped, based on the presence of likely *Phytophthora ramorum* cankers and/or *Hypoxylon* fungus on oak or tanoak trees. As with invasive weeds and many of the locally rare plants, the mapping of SOD was conducted on an opportunistic basis, such that documented occurrences shown in **Appendix A** and on **Table 3** may for the most part be considered representative, and it may be assumed that not all occurrences are mapped.

The onsite plant communities are described in detail below, excluding areas mapped as Developed or Major Road, where vegetation is either very limited or consists almost entirely of remnant cultivars (i.e., as at an old residential site). Note also that Freshwater Wetland is described within the Valley and Foothill Grassland sub-section, since this is habitat is essentially a seep or spring micro-habitat within the grasslands. Representative photographs of each habitat are included in **Appendix B**. **Appendix D** presents a list of all 309 vascular plant taxa identified within the study area during the 2021 field surveys, and provides information pertaining to each plant's status with respect to origin, Cal-IPC invasive rank, and other taxonomic information.

Table 3. Summary of Habitat Attributes. La Honda Area Preserves, San Mateo County, California. Compiled by VNLC, 2021.

Survey Area ID Acreage Preserve Name Botanical Map	CNPS Habitat Types	Sensitive Communities[1]	CRPR and/or Locally Rare Plant Taxa[2]	Invasive Weeds[3]	Sudden Oak Death[4]	Remarks
CM-1 4.5 acres El Corte de Madera Appendix A-8	Developed or Major Road; North Coast Coniferous Forest	Redwood forest and woodland	Red baneberry	Bigleaf periwinkle French broom Yellow star thistle	No	Localized areas of disturbed grassland present within survey area, below MMU. Mapped as Developed.
LH-1 5.4 acres La Honda Creek Appendix A-1	Cismontane Woodland; Developed or Major Road; Valley and Foothill Grassland; Closed Cone Pine Forest			Blue gum eucalyptus English ivy Harding grass	No	The majority of the survey area is fairly disturbed.
LH-2 13.7 acres La Honda Creek Appendix A-2	Cismontane Woodland; Valley and Foothill Grassland; North Coast Coniferous Forest; Riparian Forest; Coastal Scrub	Redwood forest and woodland. Stream corridors and wetlands present.	California bottle-brush grass Western leatherwood California bedstraw Foamflower Red baneberry Scouler's willow	Blackwood acacia French broom Himalayan blackberry Monterey cypress Silver wattle Upright veldt grass	No	Riparian vegetation is present in localized areas along the stream (below the redwood canopy).
LH-3 7.0 acres La Honda Creek Appendix A-3	Cismontane Woodland; Valley and Foothill Grassland			Blue gum eucalyptus Bull thistle Fennel	No	Additional invasive species present (Cal-IPC Limited), such as black locust.
LH-4 72.8 acres La Honda Creek Appendices A-4, A-5	Cismontane Woodland; Developed or Major Road; Valley and Foothill Grassland; Coastal Scrub; Open Water or Wetland; Freshwater Wetland; Closed Cone Pine Forest; North Coast Coniferous Forest	Hazelnut Scrub, Ashy ryegrass – Creeping wildrye turfs Wetlands and wet meadows also present	California bottle-brush grass Interior live oak Beardless wild rye California bedstraw Red baneberry	English ivy Bull thistle Harding grass Cape ivy Fennel Poison hemlock Italian thistle	Yes	Grasslands are generally disturbed. SOD is widespread among coast live oak in eastern portion of survey area. California bottle-brush grass is common. Portions of the survey area are inaccessible due to impenetrable scrub.

Survey Area ID Acreage Preserve Name Botanical Map	CNPS Habitat Types	Sensitive Communities[1]	CRPR and/or Locally Rare Plant Taxa[2]	Invasive Weeds[3]	Sudden Oak Death[4]	Remarks
LH-5 31.3 acres La Honda Creek Appendix A-5	Cismontane Woodland; Valley and Foothill Grassland; North Coast Coniferous Forest; Coastal Scrub	Redwood forest and woodland Madrone forest	Interior live oak	English ivy French broom Himalayan blackberry	Yes	Drainages present, but limited to no wetlands. SOD is widespread among coast live oaks and tanoaks. Portions of the survey area are inaccessible due to impenetrable scrub.
LH-6 134.9 acres La Honda Creek Appendices A-6, A-7	Cismontane Woodland; Valley and Foothill Grassland; North Coast Coniferous Forest; Coastal Scrub	Redwood forest and woodland California buckeye groves Hazelnut Scrub	California bottle-brush grass Western leatherwood Coast fescue California bedstraw Interior live oak Red baneberry	English ivy French broom Himalayan blackberry	Yes	California bottle-brush grass is very abundant. Multiple western leatherwood occurrences as well.
TH-1 18.5 acres Thornewood Appendices A-9, A-10	Cismontane Woodland; Developed or Major Road; Valley and Foothill Grassland; North Coast Coniferous Forest; Coastal Scrub	Valley oak woodland (quite localized) and forest Redwood forest and woodland		Bermuda buttercup Bigleaf periwinkle Blackwood acacia Cotoneaster English ivy French broom Himalayan blackberry Upright veldt grass Olive Poison hemlock Spanish broom Sweet pea	No	Extensive cover of invasive weeds and escaped cultivars, especially in northern half. Stream at southern edge supports a few hydrophytic species.
TH-2 1.2 acres Thornewood Appendix A-11	North Coast Coniferous Forest; Cismontane Woodland	Redwood forest and woodland		English ivy English holly	Yes	Site crosses Martin Creek, a seasonal stream that does not support true riparian habitat. The majority of the site is a steep hillslope.

Survey Area ID Acreage Preserve Name Botanical Map	CNPS Habitat Types	Sensitive Communities[1]	CRPR and/or Locally Rare Plant Taxa[2]	Invasive Weeds[3]	Sudden Oak Death[4]	Remarks
WH-1 11.8 acres Windy Hill Appendices A-12, A-13	Cismontane Woodland; Developed or Major Road; Valley and Foothill Grassland; Riparian Forest; Coastal Scrub	Valley oak woodland and forest (quite localized) California buckeye groves Bigleaf maple forest and woodland		Bigleaf periwinkle French broom Himalayan blackberry	No	Grassland is un-grazed and generally disturbed. A few stretches of the southern portion not thoroughly surveyed due to steep, impenetrable slopes.
WH-2 3.9 acres Windy Hill Appendix A-13	Cismontane Woodland; Coastal Scrub			Wild teasel	No	Much of the survey area features impenetrable poison oak scrub.
WH-3 5.8 acres Windy Hill Appendix A-13	Cismontane Woodland; Valley and Foothill Grassland; Coastal Scrub				No	Grasslands are un-grazed and generally disturbed.

1. Based on Manual of California Vegetation (2009 and 2021) but including federal or state jurisdictional habitats, including wetlands and riparian habitats
2. Based on list developed by the California Native Plant Society, Santa Clara Valley Chapter and Jasper Ridge Preserve botanical team
3. Primarily plants rated by the California Invasive Plant Council as High or Moderate, but including some lower-rated species with potential to cause management problems in the region
4. Only representative stands were mapped. The identification and mapping of SOD was conducted on an opportunistic basis, so it may be present in some preserves where it was not identified

Table 4. Summary of Sensitive Habitats. La Honda Area Preserves, San Mateo County, CA. Compiled by VNLC, 2021.

Sensitive Community	MCV Designation and Membership Rules[1,2]	CNPS Habitat Type(s)	Survey Area ID Botanical Map(s)	Commonly Associated Plant Taxa
Redwood forest and woodland	S3.2, G3 *Sequoia sempervirens* is > 50% relative cover in the tree canopy, or > 30% relative cover with other conifers such as *Pseudotsuga menziesii* or with a lower tier of hardwood trees such as *Notholithocarpus densiflorus* (Keeler-Wolf et al. 2003a, Evens and Kentner 2006). *Sequoia sempervirens* is characteristic in the tree canopy, rarely with as little as 5% absolute cover (Buck-Diaz et al. 2021, Sikes et al. 2021).	North Coast Coniferous Forest	CM-1, LH-2, LH-5, LH-6, TH-1, TH-2 Appendices A-1, A-5, A-6, A-7, A-8, A-10, and A-11	*Notholithocarpus densiflorus*, *Pseudotsuga menziesii*, *Torreya californica*, *Acer macrophyllum*, *Rubus ursinus*, *Corylus cornuta*, *Heteromeles arbutifolia*, *Symphoricarpos albus*, *Ribes sanguineum.*
Hazelnut scrub	S3, G3 *Corylus cornuta* is > 50% relative cover in shrub canopy (Keeler-Wolf et al. 2003a), or > 30% relative cover with *Baccharis pilularis* (Buck-Diaz et al. 2021, Sikes et al. 2021).	Cismontane Woodland, North Coast Coniferous Forest	LH-4, LH-6 Appendices A-4, A-5, A-6 and A-7	*Symphoricarpos albus*, *Maianthemum stellatum*, *Polystichum munitum*, *Lysimachia latifolia*, *Cynoglossum grande*, *Dryopteris arguta*.
Ashy ryegrass-Creeping wildrye turfs	S3, G3 *Leymus cinereus* > 50% relative cover in the herbaceous layer (CNDDB 2008). *Leymus triticoides* > 50% relative cover in the herbaceous layer (Keeler-Wolf and Vaghti 2000, Evens and San 2004). *Leymus triticoides* > 30% relative cover in the herbaceous layer (Buck-Diaz et al. 2012). *Leymus cinerus* or *Leymus triticoides* > 30% relative cover in the herbaceous layer (Boul et al. 2021). *Leymus triticoides* > 50% relative cover in the herbaceous layer, or > 30% relative cover with *Lolium perenne* or other non-native grasses or forbs (Buck-Diaz et al. 2021, Sikes et al. 2021).	Valley and Foothill Grasslands	LH-4 Appendices A-4 and A-5	*Hordeum brachyantherum*, *Hordeum marinum* ssp. *gussoneanum*, *Oenanthe sarmentosa*, *Mentha pulegium*.

Sensitive Community	MCV Designation and Membership Rules[1,2]	CNPS Habitat Type(s)	Survey Area ID Botanical Map(s)	Commonly Associated Plant Taxa
California buckeye groves	S3, G3 *Aesculus californica* > 50% relative cover in the tree canopy (Evens and Kentner 2006) or conspicuous in the tree canopy (Keeler-Wolf et al. 2003b). *Aesculus californica* > 60% relative cover in the tree canopy (Klein et al. 2007). *Aesculus californica* > 50% relative cover in the tree canopy, if *Umbellularia californica* is present it is < 30% relative cover (Buck-Diaz et al. 2021, Sikes et al. 2021).	Cismontane Woodland	LH-6, WH-1 Appendices A-6, A-7 A-12 and A-13	*Quercus agrifolia*, *Q. kelloggii*, *Pseudotsuga menziesii*, *Arbutus menziesii*, *Acer macrophyllum*, *Rubus ursinus*, *Toxicodendron diversilobum*, *Holodiscus discolor*, *Baccharis pilularis.*
Valley oak woodland and forest	S3, G3 *Quercus lobata* > 50% relative cover in the tree canopy or > 30% relative cover when other tree species, such as *Q. agrifolia* or *Q. douglasii* are present (Allen et al. 1989, Keeler-Wolf and Evens 2006). *Quercus lobata* > 50% relative cover in the tree canopy, or > 30% relative cover with *Q. agrifolia* and/or *Umbellularia californica* in upland habitat (Buck-Diaz et al. 2021, Sikes et al. 2021).	Cismontane Woodland	TH-1, TH-2, WH-1 Appendices A-9, A-11, A-12 and A-13	*Aesculus californica*, *Pseudotsuga menziesii*, *Arbutus menziesii*, *Acer macrophyllum*, *Rubus ursinus*, *Toxicodendron diversilobum*, *Holodiscus discolor*, *Baccharis pilularis*, *Corylus cornuta*.
Big-leaf maple forest and woodland	S3, G4 *Acer macrophyllum* > 25% relative cover in the tree canopy (NatureServe 2007). *Acer macrophyllum* > 5% absolute cover in the tree canopy (Jimerson et al. 1996) and usually > 30% relative cover.	Cismontane Woodland	WH-1 Appendices A-12, A-13	*Quercus agrifolia*, *Q. kelloggii*, *Aesculus californica*, *Pseudotsuga menziesii*, *Arbutus menziesii*, *Rubus ursinus*, *Toxicodendron diversilobum*, *Holodiscus discolor*, *Baccharis pilularis.*

Sensitive Community	MCV Designation and Membership Rules[1,2]	CNPS Habitat Type(s)	Survey Area ID Botanical Map(s)	Commonly Associated Plant Taxa
Madrone forest	S3.2, G4 *Arbutus menziesii* is > 50% relative cover in tree canopy (Evens and Kentner 2006). *Arbutus menziesii* > 50% relative tree cover with *Quercus agrifolia* < 30% relative cover, or > 30% relative cover with *Quercus kelloggii* and/or *Umbellularia californica* (Buck-Diaz et al. 2021, Sikes et al. 2021).	Cismontane Woodland	LH-5 Appendix A-5	*Quercus agrifolia, Q. kelloggii, Aesculus californica, Pseudotsuga menziesii, Rubus ursinus, Toxicodendron diversilobum, Holodiscus discolor, Baccharis pilularis*.

1. Based on Manual of California Vegetation (2009 and 2021). Note that where two membership rules conflict, the first was used for this project.
2. Rarity ranks: MCV S/G2 (globally—'G' or statewide—'S') —the "2" indicates that the community is imperiled— at high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors". MCV S/G3—the "3" designation indicates that community is vulnerable—at moderate risk of extirpation in the jurisdiction [globally—'G' or statewide—'S'] due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.. The ".2" indicates that this community is "threatened," as opposed to "no current threat known" (".3"), or "very threatened" (".1").

5.2 Plant Communities

Valley and Foothill Grassland

Valley and Foothill Grassland is the most widespread plant community, encompassing approximately 125 acres (40 percent) of the study area. The community is primarily concentrated within the La Honda Creek preserve, though there are a couple of sizable stands in the Windy Hill preserve as well (**Appendix A**). As noted above, the grasslands within the La Honda Creek preserve are grazed by livestock under the District's Conservation Grazing Program, in order to reduce the risk of wildfire, support native forb growth and persistence by reducing competitive grasses and thatch, and to generally maintain grasslands as part of habitat diversity. The exception within that preserve is the LH-1 project site, which is a former ranch area with associated structures (**Appendix A-1**). The majority of the Windy Hill grasslands, in northern WH-1 (**Appendix A-12**) were not grazed, but appeared to be managed via mowing, probably for the same reasons given for La Honda Creek. The remaining grassland in Windy Hill occurs as a fairly small stand in WH-3 (**Appendix A-13**) that is surrounded by woodlands and shrublands, and because it was not managed at all, was being encroached upon by trees and shrubs. As is typical of most cismontane annual grassland habitats, most of the plants are exotic and generally exemplify Valley and Foothill Grasslands. Aside from the management regime, the primary difference between grasslands within the two preserves is that those within La Honda Creek are more mesic, being on the western slopes of the Santa Cruz Mountains. The plant composition within grasslands at the Windy Hill preserve consisted of common annual grasses such as slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), and hare barley (*Hordeum murinum*). A number of forbs were found mingling with these grasses, including rose clover (*Trifolium hirtum*), Italian thistle (*Carduus pycnocephalus*), cat's-ear (*Hypochaeris* spp.), and bindweed (*Convolvulus arvensis*). All of these were also present within La Honda Creek, but they were accompanied by species that more typically occur in moist and/or clay rich habitats, for example burclover (*Medicago polymorpha*), Italian rye grass (*Festuca perennis*), English plantain (*Plantago lanceolata*), Chilean trefoil (*Lotus corniculatus*), and narrow-leaved clover (*Trifolium angustifolium*). Harding grass (*Phalaris aquatica*) was a dominant at the un-grazed LH-1 site. All of the above are introduced species, though several native grasses and forbs were observed at varying densities. Examples include miniature lupine (*Lupinus bicolor*), tomcat clover (*Trifolium willdenovii*), sun cup (*Taraxia ovata*), and California poppy (*Eschscholzia californica*).

The only sensitive plant communities documented within the Valley and Foothill Grasslands are associated with wetlands and quasi-wetlands, which feature exceptionally moist soils. While native grasses were found scattered throughout the grasslands, the only species that was found to form a stand is beardless wild rye (*Elymus triticoides*), which was documented in the LH-4 project site (**Appendix A-4**). Beardless wild rye is a locally rare plant and also forms Ashy Ryegrass - Creeping Wildrye Turfs, a sensitive community with an MCV rank of S3, G3. The "3" designation indicates that community is "vulnerable—at moderate risk of extirpation in the jurisdiction [globally—'G' or statewide—'S'] due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors." (Sawyer et al. 2009). The documented stand consists of the requisite 50 percent or greater cover of its namesake species, which was interspersed with a few meadow barley (*Hordeum brachyantherum*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), water parsley (*Oenanthe sarmentosa*), and pennyroyal (*Mentha pulegium*). The soil profile would need to be

examined to confirm whether this feature represents a potential jurisdictional wetland. However, there are fairly definitive wetlands that form Freshwater Wetland habitat in the surrounding vicinity in the LH-4 project site as well as other grasslands. Amounting to approximately 2.2 acres (0.7% of the study area), most of these are seeps or springs, where water is directed along an indurated subsurface until it meets the surface, typically along slopes. Occupying the seeps and springs are several wetland-associated graminoid and forb species, including many that also occur within the surrounding grasslands at lower covers. These include spreading rush (*Juncus patens*), Pacific rush (*J. effusus*), Italian rye grass, Mediterranean barley, bird's foot trefoil, hyssop loosestrife (*Lythrum hyssopifolia*), water parsley, pennyroyal, and various sedges (*Carex* spp.).

Special-status plants associated with Valley and Foothill Grasslands as well as Meadows and Seeps habitat, as listed in **Appendix C**, have potential to occur within the study area. Among the grassland species, only those taxa that are generally not associated with specialized soils (e.g., serpentine, heavy clay, or alkaline) have significant potential to occur. Within the vicinity and elevation range of the study area, there are only four such taxa, and the presence of these may be considered unlikely at any of the more disturbed grasslands—the managed La Honda Creek sites are most likely to support special-status grassland taxa. While there are several special-status plants associated with Meadows and Seeps in the region, none are documented in the local vicinity of the study area (i.e., within 5-10 air miles).

Cismontane Woodland

Covering 106 acres, Cismontane Woodland makes up 34 percent of the study area. It is the most widespread of the plant communities, being present within every project site except CM-1 (**Appendix A**). The tree canopy in the Cismontane Woodland is generally open, allowing for patchy sunlight, though a few localized areas feature a contiguous canopy that provide perennial shade, forming what could be classified as Broadleafed Upland Forest in the CNPS system, or as Mixed Evergreen Forest in other systems (e.g., Munz and Keck 1950). Oak species were found to be the most conspicuous tree species, though they give way to California bay (*Umbellularia californica*) in some locations, and a few areas have no dominant tree species. Among the oaks, coast live oak is the most dominant species in most of the project sites, with black oak (*Quercus kelloggii*) occurring as a distant second. The coast live oaks occur along more exposed ridges and slopes, while the black oaks are found in more shaded habitats. Both species as occurring in the study area include large and impressive individuals, but the live oaks are especially picturesque. Unfortunately, a number of the live oaks appeared to be suffering from SOD, though perhaps less than in many regions in the Coast Ranges—and less than nearby parts of the Santa Cruz Mountains. There are also a few interior live oaks that have elbowed their way into the mix at a few sites, primarily along the southern, lower elevation portions of La Honda Creek. This species is included on the locally rare list, and it is indeed rare along the western slopes of the Santa Cruz Mountains, but it is quite common along the drier ridges and slopes toward the eastern portion of the mountain range. A few stands of valley oak (*Q. lobata*) form Valley Oak Woodland and Forest, a community ranked in the MCV as S3, G3 and thus a sensitive community. These are on the eastern side of the mountain crest, in the Thornewood (TH-1) and Windy Hill (WH-1) preserves. Many of these stands are rather small, but because they occur along narrow corridors, they were mapped during the surveys.

Aside from oaks, commonly associated trees in the Cismontane Woodland include California buckeye (*Aesculus californica*), Douglas fir (*Pseudotsuga menziesii*), Pacific madrone (*Arbutus menziesii*), and big-leaf maple (*Acer macrophyllum*). In a few locations where big-leaf maple comprises at least 25 percent cover among the trees (WH-1), it forms Big-leaf Maple Forest and Woodland, which is designated as a S3, G4 plant community within the MCV. Therefore, it is sensitive at the state ("S") level, but not at the global ("G") level. A single mappable stand of Madrone Forest was identified within the LH-5 project site. This is an MCV S3.2, G4 sensitive community, and is defined as comprising at least 50 percent cover of Pacific madrone in the tree stratum (ibid). The ".2" indicates that this community is "threatened," as opposed to "no current threat known" (".3") or "very threatened" (".1"). Finally, California buckeye forms California Buckeye Groves, an MCV S3, G3 community where its namesake species constitutes at least 50 percent of the tree cover (**Appendix A-7**). As with the oaks, most of these trees are mature, and often exceptionally large, though seedlings and saplings among all species were observed during the surveys. Within the La Honda Creek preserve, both the shrub/vine stratum and the herb stratum were slightly more densely vegetated than is typical for Cismontane Woodland, especially as dominated by coast live oak and California bay. This is likely a result of the combination of relatively high solar radiation and abundant moisture in the habitat. Some areas encompass many shrub species associated with Coastal Scrub (see below), and in some areas formed impenetrable thickets. However, these were not mapped as such due to the consistent overstory of trees. The most common shrub and vine species are California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), oceanspray (*Holodiscus discolor*), coyote brush (*Baccharis pilularis*), and California hazelnut (*Corylus cornuta*). Poison oak is particularly dense along the steepest slopes adjacent to stream corridors at the southwestern edges of the study area. At a few locations, primarily along the southwestern edge of La Honda Creek, California hazelnut forms stands that qualify as Hazelnut Scrub, in that they feature a cover of at least 50 percent of this species in the shrub stratum (**Appendices A-4** and **A-7**). This is an MCV S2?(*sic*) G3 community. The "2" indicates that the community is "imperiled— at high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors" (Sawyer et al. 2009). The question mark included in the rank indicates that the rank needs more study. The underlying herbs consisted mostly of rough hedgenettle (*Stachys rigida*), creeping snowberry (*Symphoricarpos mollis*), milk maids (*Cardamine californica*), miner's lettuce (*Claytonia* spp.), coastal woodfern (*Dryopteris arguta*) and, in areas of slightly higher moisture and/or of clay soils, spreading rush (*Juncus patens*). Many of these same understory species were common within the Cismontane Woodlands of the more eastern preserves, but with lower cover values—a few woodlands had only scattered understory plants.

Both of the special-status plant species documented in the study area occurred primarily within the Cismontane Woodlands. These are western leatherwood (*Dirca occidentalis*) and California bottle-brush grass (*Elymus californicus*) (**Appendices A-2**, **A-4**, and **A-6**). These are described further in **Section 5.3**. The habitat within which these species occur is a particularly moist incarnation of Cismontane Woodland, primarily along north-facing slopes, along with a moderately open tree canopy, rich clay loam or silt loam soils, and a rich diversity of native plant species. The quality of this habitat is most evident within the La Honda Creek preserve and is either lacking or not as distinctive in the other preserves. However, other species associated with Cismontane Woodland, as listed in **Appendix C**, have potential to occur in this habitat within the

other preserves. There are six species that occur in the vicinity and within the elevation range of the study area, and that are not specifically associated with microhabitats that are lacking in the area. Species associated with Broadleafed Upland Forest also have potential to occur in the more mesic stands of areas mapped as Cismontane Woodland, though there are no such species that are not also associated with either Cismontane Woodland or North Coast Coniferous Forest.

North Coast Coniferous Forest

This plant community includes two mapped sub-types that cumulatively cover 47.4 acres of the study area, amounting to approximately 15 percent of the total area. This broadly defined community includes nearly pure stands of coast redwood trees as well as areas that include Douglas fir and a lower canopy of hardwood tree species. It is present within the El Corte de Madera Creek, Thornewood, and La Honda Creek preserves (**Appendix A**). The stands of redwood that meet the minimum mapping unit were mapped separately because they constitute Redwood Forest as defined in the MCV. The MCV membership rule for Redwood Forest stipulates that coast redwood "accounts for >50% relative cover in the tree canopy, or >30% relative cover with other conifers…or with a lower tier of hardwood trees such as *Notholithocarpus densiflorus*" (CNPS MCV online 2021). The areas mapped as Redwood Forest within the study area appeared to conform to this membership rule. As defined, redwood forest is ranked as S3.2 and G3 and is therefore considered sensitive.

Within North Coast Coniferous Forest, the coast redwoods dominate the most shaded habitats, while Douglas fir occupies the more sunny and well-drained habitats. The looming conifer trees are flanked by tanoak, California bay, and a few scattered coast live oaks and big-leaf maple. There are also a few scattered California nutmeg trees (*Torreya californica*), which are widespread in the region, but typically occur in very limited numbers. The shrub and vine strata are generally sparse, but there are occasional individuals and small stands of California blackberry, California hazelnut, toyon (*Heteromeles arbutifolia*), snowberry (*Symphoricarpos albus*), and blood currant (*Ribes sanguineum*). A couple of stands of the sensitive Hazelnut Scrub (MCV S3, G3) were mapped within this habitat (**Appendix A-6**). The herbaceous understory primarily consisted of creeping snowberry, starry false lily of the valley (*Maianthemum stellatum*), western sword fern (*Polystichum munitum*), Pacific starflower (*Lysimachia latifolia*), hound's tongue (*Cynoglossum grande*), and coastal woodfern. A few populations of the rare California bottle-brush grass were also documented in the herbaceous layer, along with several locally rare species (**Appendix A-6**). Unfortunately, a few populations of invasive plants were also noted, with greater periwinkle (*Vinca major*), English ivy, and panic veldt grass (*Ehrharta erecta*) being of particular concern in the long term. However, both of the incarnations of this plant community generally appeared to otherwise be in good condition. Both include a significant majority of native species and a range of age and size classes that show recruitment (though the area was logged in the 20th Century, so there are few full-sized conifers). Though SOD was observed among the tanoaks, it did not appear especially problematic among the Douglas fir and coast redwood habitats of the study area. Incidentally, habitats with tanoaks constituting approximately half of the tree canopy are designated as sensitive in the MCV, but there were no extensive areas where this was the case within the study area.

Appendix C lists special-status plant taxa that are associated with North Coast Coniferous Forest. Based on the presence of such species in the vicinity and elevation range of the study

area, as well as microhabitat conditions, there are four such taxa. These have at least some potential to occur within any of the three preserves that encompass this plant community, though the La Honda Creek preserve provides the most abundant, high-quality North Coast Coniferous Forest.

Coastal Scrub

Covering 24.4 acres and just under eight percent of the study area, Coastal Scrub is most prevalent along steeper slopes of the La Honda Creek and Windy Hill preserves. Within La Honda Creek, it is common along south-facing slopes, and consists of a notable diversity of shrub species, depending on the slope, level of solar radiation, and soil texture. On less steep slopes, especially those that are not facing due south, the most common shrub species are coyote brush, poison oak, and California blackberry, with subdominants including sticky monkeyflower (*Diplacus aurantiacus*), blue elderberry (*Sambucus nigra*), Jim brush (*Ceanothus oliganthus*), and Indian plum (*Oemleria cerasiformis*). The special-status western leatherwood was found within one of these more mesic scrub habitats, along a north facing slope within the LH-6 project site (**Appendix A-7**). The herbaceous layer featured ladies' tobacco (*Pseudognaphalium californicum*), yerba buena (*Clinopodium douglasii*), Pacific blacksnakeroot (*Sanicula crassicaulis*), and a variety of both native and introduced grass species. Localized areas of steeper and more south-facing slopes with better drained soils support California sagebrush (*Artemisia californica*), golden-yarrow (*Eriophyllum confertiflorum*), deerweed (*Acmispon glaber*), San Francisco coyote mint (*Monardella villosa*), hummingbird trumpet (*Epilobium canum*), and, within more open areas, the strictly herbaceous annual false brome (*Brachypodium distachyon*) and Bolander's golden aster (*Heterotheca sessiliflora*). The stands of Coastal Scrub along the eastern slopes of the Santa Cruz Mountains, at Windy Hill and, to a lesser extent, Thornewood, are much less diverse. These areas consist primarily of coyote brush and poison oak, along with a relatively high cover of cultivars (especially at Thornewood). As these species form nearly impenetrable scrub, the herb stratum was found to be quite depauperate, with only scattered annual grasses and, at WH-2, a very large population of invasive wild teasel (*Dipsacus* spp.).

In general, the Coastal Scrub habitats within the study area have moderate potential to support special-status plants. A large percentage of rare plants associated with Coastal Scrub primarily occur along the immediate coast, or within specialized microhabitats such as serpentine or exceptionally sandy soils. Among the special-status species associated with this plant community, as listed in **Appendix C**, five may be considered to have at least a moderate potential to occur, based on proximity, elevation range, and association with more generalized microhabitats. As with the other habitats listed above, these are most likely to occur within the La Honda Creek preserve. This is due to the fact that the Coastal Scrub there is more unique, consisting of localized mesic microhabitats and a high diversity of shrub species. Coastal scrub in the other preserves consists primarily of areas where grasslands have fairly recently been encroached upon by coyote brush, poison oak, and few other woody species.

Closed Cone Pine Forest

Within the study area, Closed Cone Pine Forest occurs as a cultivated plant community, having been established within developed areas. The community consists of 1.8 acres (less than 1% of the study area) of Monterey pine (*Pinus radiata*) and Monterey cypress (*Hesperocyparis*

macrocarpa), which were planted along a road along the southern edge of LH-4 and throughout the center of LH-1 (**Appendix A**). Both of these tree species are native to central California, and both are considered rare and endangered within their historical range but, ironically, both are considered invasive outside of their ranges. Monterey pine is native to the area around Año Nuevo, along the southern coast of San Mateo County, as well as the Monterey peninsula and in the vicinity of Cambria, in San Luis Obispo County. Monterey cypress is native to Monterey County (Sawyer et al. 2009). Both species have been planted throughout much of coastal northern California, and they have spread well beyond the original planting sites to become problematic in many regions. Associated trees noted within these habitats in the study area include both native and introduced species, primarily consisting of a few coast live oaks, blue gum eucalyptus (*Eucalyptus globulus*), cherry plum (*Prunus cerasifera*), olive, and other cultivar species. The understory is characteristic of disturbed conditions, featuring weedy and/or common native species such as coyote brush, poison oak, and creeping snowberry, as well as introduced French broom, slender wild oat, Italian rye grass, soft chess, and Harding grass. Several invasive species were not specifically mapped in this habitat, since they were found to be so common.

No sensitive botanical resources were identified or mapped within this plant community. Given that this is a planted, artificial form of Closed Cone Pine Forest, and that conditions are rather disturbed, no special-status plant taxa associated with this community are expected to occur.

Riparian Forest

While there are multiple drainages within many of the project sites throughout the study area, only a couple of stretches support Riparian Forest, amounting to approximately 0.1 acre, and only a fraction of the study area. Most of the more ephemeral streams support only oak/bay woodland types (Cismontane Woodland), Redwood Forest and Woodland, or more limited non-riparian microhabitats. Riparian Forest is hereby defined as "Broadleaved, winter deciduous trees, forming closed canopies associated with low-to mid-elevation perennial and intermittent streams…" (CNPS 2021b). The criterion of closed canopy distinguishes this habitat from Riparian Woodland, though the onsite habitats are generally intermediate in terms of canopy cover, such that at least one of the sites (e.g., at the Windy Hill preserve—see below) it could be classified as either habitat type. For the purposes of this report, this definition is refined to include only vegetation that occurs along a stream and is clearly distinct from the surrounding uplands. The habitat is mapped along the edge of San Gregorio Creek, at the southwestern edge of LH-6, in the La Honda Creek preserve, along the very edge of La Honda Creek in LH-2, and along the margin of a large pond and stream adjacent to WH-1 in Windy Hill (**Appendices A-2** and **A-12**). It should be noted that the GIS stream lines as depicted on the project plant community maps were found to be inaccurately mapped in several locations. In most such areas, GPS reception was not adequate to refine the locations, and in any case such corrections were beyond the scope of work for the project. Riparian vegetation is present in other areas that are not mapped, but is either subordinate to taller vegetation, is present only where the project site crosses a small stream, or is present as only a small fraction of the MMU. An example of the first case is within LH-2, where such vegetation is overtopped by coast redwood trees, resulting in the area being mapped as Redwood Forest and Woodland. Riparian vegetation is present along very limited portions of WH-1, where the project site polygon occasionally dips below the stream top of bank that is otherwise adjacent to the boundary. It is also present where the site

crosses the stream near the southern part of the same project site. The vegetation is similar in all riparian areas, with trees consisting primarily of willows, including arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), and at least a few white alders (*Alnus rhombifolia*). A few individuals of the locally rare Scouler's willow (*Salix sitchensis*) were identified near Weeks Creek, in the LH-2 project site in the northern portion of La Honda Creek (**Appendix A-2**). Associated shrubs and vines include creek dogwood (*Cornus sericea*), thimbleberry (*Rubus parviflorus*), Pacific ninebark (*Physocarpus capitatus*), California hazelnut, and the ubiquitous California blackberry. The herb stratum featured hoary nettle (*Urtica dioica*), giant chain fern (*Woodwardia fimbriata*), dotted smartweed (*Persicaria punctata*), and the locally rare sugarscoop (*Tiarella trifoliata*) at LH-2. No CRPR taxa were identified within the riparian habitat, and though the stream corridors themselves are sensitive and regulated, no sensitive plant communities (e.g., MCV alliances) were identified within the habitat. However, with the exception of a few weeds, most notably panic veldt grass, the riparian corridors were found to be in good condition with respect to vegetation.

Aside from western leatherwood and California bottle-brush grass, only one special-status plant species listed in **Appendix C** is associated with riparian habitats. This is Davidson's bush-mallow (*Malacothamnus davidsonii*), a species that is known from the broader region, but that does not occur in the vicinity of the study area—it is documented many miles to the south or north. As noted above, the two other species were documented within the study area, in the La Honda Creek preserve, though not within riparian habitats.

5.3 Special-Status Plants

Overview

The study area encompasses a notable diversity of habitats, with each type occurring as both fairly pristine habitat as well as quite disturbed habitat. In general, the most pristine habitats are the wooded habitats of the La Honda Creek preserve, in particular LH-2, LH-4, and LH-6. These project sites contain high quality Cismontane Woodland, North Coast Coniferous Forest, Coastal Scrub, and Riparian Forest. Not surprisingly, the less disturbed sites are those that support populations of the two state-ranked plant taxa—namely western leatherwood and California bottle-brush grass—which are described in detail below. These three project sites also encompass Valley and Foothill Grassland that have moderate potential to support special-status plants. The most disturbed habitats were found within the Thornewood TH-1 project site, the LH-3 site, and LH-1 site, all of which include developed areas and/or which have not been managed. These sites have low potential to support special-status plants, and few sensitive botanical resources of any kind were identified within them. The remaining sites, including LH-5, TH-2, and the Windy Hill project sites, have low to moderate potential to support special-status plants, and only a few other sensitive botanical resources were identified within them. These intermediate sites all feature some amount of disturbance, in the form of trails, historical roads, or areas that appear to have been historically cleared, and that now support a large cover of weedy plant species. However, they also all have at least some moderately pristine habitats, primarily in the form of woody habitats—with the exception of LH-5, the grasslands in these sites are unmanaged and dominated by weedy annual species.

Aside from the two CRPR plants that were identified during the 2021 surveys, there are 13 CRPR plant taxa that may be considered to have at least a moderate potential to occur in the

study area, which are displayed as shaded entries in **Appendix C**. Based solely on the presence of suitable habitat, multiple additional species listed in the appendix have potential to occur on the study area, but are deemed less likely based on at least one other parameter. These taxa are not shaded within the table. Given the large number of botanical surveys presumed to have been conducted in the region, special-status plants that have not been documented in the vicinity of the study area (i.e., within approximately 5-10 air miles, depending on direction and habitat similarity) are considered less likely to occur in the area. Likewise, taxa associated with microhabitats that are lacking in the study area, or that occur at elevation ranges above or below the range of the study area, are considered less likely to occur. Among the 13 other taxa considered to have potential to occur, several are known from only one or two populations in the vicinity of the study area, but they are conservatively included among those with greatest potential to occur in the area. The plant community associated with the largest number of rare plants with potential to occur in the study area is Cismontane Woodland, which is known to support six of the 13 taxa. Five of the plants are known to occur within Coastal Scrub in the region, four within Valley and Foothill Grassland, and four within North Coast Coniferous Forest. The total number of taxa exceeds 13 because several taxa are known to occur within more than one of the onsite habitat types. Following thorough, protocol-level surveys, none of these taxa were observed within the study area.

There are other habitats that occur in the study area which are known to support special-status plants in the region, including seeps and springs, wetlands, and riparian habitats, but none of these have a moderate to high potential to occur in the study area. They are known only from elevations below or above the study area or are known from microhabitats that are not present.

Western Leatherwood (*Dirca occidentalis*) (CRPR 1B.2)

Western leatherwood is a deciduous shrub in the daphne family (Thymelaeaceae) that features small yellow-colored flowers. The flowers typically bloom from January to March (sometimes April). This species is found in the San Francisco Bay Area in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma counties, at elevations ranging from 82 to 1,394 feet (25 to 425 meters) (CNPS 2021b). Its habitat is described as "generally north or northeast facing slopes, mixed-evergreen forest to chaparral, generally in the fog belt" (Jepson eFlora 2021). Western leatherwood is designated by the CNPS as CRPR 1B.2, indicating the taxon is "rare, threatened, or endangered in California and elsewhere" ("1B") and "moderately threatened in California" ("0.2") (ibid).

A total of 11 stands of western leatherwood were documented during the 2021 botanical surveys, with populations ranging from only one to 10-20. The populations were concentrated within or along the margins of Cismontane Woodlands within the La Honda Creek preserve, within project sites LH-2 and LH-6 (**Appendices A-2** and **A-7**). They were found within wooded habitats featuring a mix of trees and shrubs, within fairly dense vegetation and under a nearly closed canopy. The most commonly associated plant species observed include California blackberry, coast live oak, poison oak, brackenfern (*Pteridium aquilinum*), and thimbleberry. In general, threats to the western leatherwood populations are limited—there are nearby populations of French broom, English ivy, and Himalayan blackberry (*Rubus armeniacus*) that could encroach on the populations, but they are not immediately adjacent. Aside from some invasive species control, it seemed that little management is required in the area and any planned fuels

management should proceed with caution. In these areas, while thinning may be appropriate in localized areas (especially for SOD-infected trees), the dense vegetation is a result of natural habitat conditions that are conducive to thick and diverse plant cover (e.g., moist, rich soils, solar radiation, etc.).

California Bottle-Brush Grass (*Elymus californicus*) (CRPR 4.3)

California bottle-brush grass is a relatively tall perennial species in the grass family (Poaceae) that features a bristly ("bottle-brush" like) inflorescence. This species is distinguished from other *Elymus* species by having no glumes, and typically blooms from May to August (uncommonly to November). California bottle-brush grass is endemic to California and is found in Marin, Santa Cruz, San Mateo, and Sonoma counties, at elevations ranging from 49 to 1,542 feet (15 to 470 meters) (ibid). Its habitat is described as conifer forest (Jepson eFlora 2021). California bottle-brush grass is designated by the CNPS as CRPR 4.3, indicating the taxon is of "limited distribution" ("4") and "not very threatened in California" ("0.3") (CNPS 2021b).

Several dozen stands of California bottle-brush grass were documented within the study area during the 2021 botanical surveys, amounting to roughly 2,500 to 3,000 individuals. Individual populations ranged from a few to hundreds of plants. The occurrences were concentrated in or near Cismontane Woodland habitat in the La Honda Creek preserve, within project sites LH-6, and LH-4 (**Appendix A**). The most commonly associated plant species observed include coast live oak, California blackberry, poison oak, oceanspray, and coastal woodfern. The species also co-occurred with western leatherwood. Regarding threats and management, these are the same as those for western leatherwood, as described above. There are a few invasive plant populations of concern among the bottle-brush grasses, especially English ivy, so habitat management should proceed with caution, focusing on invasive weed control and the removal of the abundant dead trees.

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APPENDIX B:

Representative Photographs of the Study Area (March, May, and August 2021)

APPENDIX B. Representative Photographs of the Study Area

Grazed Valley and Foothill Grassland
Project site LH-6. Southwestern portion of La Honda Creek OSP

Un-grazed Valley and Foothill Grassland
Project site LH-1. Northeastern portion of La Honda Creek OSP

APPENDIX B. Representative Photographs of the Study Area

Spring wetland within Valley and Foothill Grassland
Project site LH-4. Southern portion of La Honda Creek OSP

Cismontane Woodland
Project site LH-4. Southern portion of La Honda Creek OSP

APPENDIX B. Representative Photographs of the Study Area

Hazelnut Scrub within Cismontane Woodland
Project site LH-4. Southern portion of La Honda Creek OSP

Locally rare interior live oak
Project site LH-6. Southern portion of La Honda Creek OSP

APPENDIX B. Representative Photographs of the Study Area

Invasive cape ivy within Cismontane Woodland
Project site LH-4. Southern portion of La Honda Creek OSP

North Coast Coniferous Forest (Redwood Forest and Woodland)
Project site CM-1. El Corte de Madera Creek OSP

APPENDIX B. Representative Photographs of the Study Area

Coast redwood stump (cut for timber)
Project site TH-1. Southern portion of Thornewood OSP

Locally rare red baneberry in North Coast Coniferous Forest Habitat
Project site LH-4. Southern portion of La Honda Creek OSP

APPENDIX B. Representative Photographs of the Study Area

Mesic Coastal Scrub
Project site LH-6. Southern portion of La Honda Creek OSP

Xeric Coastal Scrub along South-facing Slope
Project site LH-6. Southwestern portion of La Honda Creek OSP

APPENDIX B. Representative Photographs of the Study Area

Closed Cone Pine Forest (in background)
Project site LH-1. Northeastern portion of La Honda Creek OSP

Riparian Forest
Project site WH-1. Eastern portion of Windy Hill OSP

APPENDIX B. Representative Photographs of the Study Area

Western leatherwood (CRPR 1B.2)
Project site LH-2. Eastern portion of La Honda Creek OSP

California bottle-brush grass (CRPR 4.3)
Project site LH-4. Southern portion of La Honda Creek OSP

APPENDIX C:

Special-Status Vascular Plant Taxa Documented in the Vicinity of the Study Area (CNPS 9-Quad Search)

APPENDIX C. Special-status Vascular Plant Taxa Documented in the Vicinity of the La Honda Area Preserves, San Mateo County, California. Compiled by Vollmar Natural Lands Consulting, 2021.

Shaded entries=taxa with the highest potential to occur within the study area, based on the habitat and distribution of taxon. Bolded taxa=Observed

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Acanthomintha duttonii San Mateo thorn-mint (Lamiaceae)	FE/CE/1B.1	Chaparral, Valley and foothill grassland, serpentinite; 160-985 feet; April-June	Not expected. No serpentinite within study area.
Agrostis blasdalei Blasdale's bent grass (Poaceae)	--/--/1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie; 0-490 feet; May-July	Suitable habitat present, but not documented in the vicinity. Occurs primarily along the immediate coast.
Allium peninsulare var. *franciscanum* Franciscan onion (Alliaceae)	--/--/1B.2	Cismontane woodland, Valley and foothill grassland, clay, volcanic, often serpentinite; 170-1,000 feet; (April) May-June	Suitable habitat present, but no serpentinite or clay, and species is not documented where volcanic rocks are present.
Amsinckia lunaris bent-flowered fiddleneck (Boraginaceae)	--/--/1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland; 5-1,640 feet; March-June	Suitable habitat present, but not documented in the vicinity.
Androsace elongata ssp. *acuta* California androsace (Primulaceae)	--/--/4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland; 490-4,280 feet; March-June	Suitable habitat present, but not documented in the vicinity.
Arabis blepharophylla coast rockcress (Brassicaceae)	--/--/4.3	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, rocky; 5-3,610 feet; February-May	Suitable habitat present, but not documented in the vicinity.
Arctostaphylos andersonii Anderson's manzanita (Ericaceae)	--/--/1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest, openings, edges; 195-2,495 feet; November-May	Suitable habitat present. Not observed during 2021 surveys.
Arctostaphylos glutinosa Schreiber's manzanita (Ericaceae)	--/--/1B.2	Closed-cone coniferous forest, Chaparral, diatomaceous shale; 555-2,245 feet; (November) March-April	Suitable habitat present, but not documented in the vicinity.
Arctostaphylos ohloneana Ohlone manzanita (Ericaceae)	--/--/1B.1	Closed-cone coniferous forest, Coastal scrub, siliceous shale; 1,475-1,740 feet; February-March	Suitable habitat present, but not documented in the vicinity.
Arctostaphylos regismontana Kings Mountain manzanita (Ericaceae)	--/--/1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest, granitic or sandstone; 1,000-2,395 feet; December-April	Suitable habitat present. Not observed during 2021 surveys.
Arctostaphylos silvicola Bonny Doon manzanita (Ericaceae)	--/--/1B.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest, inland marine sands; 390-1,970 feet; January-March	Suitable habitat present, but not documented in the vicinity.

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Astragalus nuttallii var. *nuttallii* ocean bluff milk-vetch (Fabaceae)	--/--/4.2	Coastal bluff scrub, Coastal dunes; 5-395 feet; January-November	Not expected. Study area is above species elevation range.
Astragalus pycnostachyus var. *pycnostachyus* coastal marsh milk-vetch (Fabaceae)	--/--/1B.2	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides); 0-100 feet; (April) June-October	Not expected. Study area is above species elevation range.
Calandrinia breweri Brewer's calandrinia (Montiaceae)	--/--/4.2	Chaparral, Coastal scrub, sandy or loamy, disturbed sites and burns; 30-4,005 feet; (January) March-June	Suitable habitat present (but typically associated with burns or serpentinite). Not documented in the vicinity.
Calochortus umbellatus Oakland star-tulip (Liliaceae)	--/--/4.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland, often serpentinite; 325-2,295 feet; March-May	Not expected. No serpentinite within study area. Not documented in the vicinity.
Calyptridium parryi var. *hesseae* Santa Cruz Mountains pussypaws (Montiaceae)	--/--/1B.1	Chaparral, Cismontane woodland, sandy or gravelly, openings; 1,000-5,020 feet; May-August	Suitable habitat present, but not documented in the vicinity.
Castilleja ambigua var. *ambigua* johnny-nip (Orobanchaceae)	--/--/4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools margins; 0-1,425 feet; March-August	Suitable habitat present, but not documented in the vicinity.
Centromadia parryi ssp. *congdonii* Congdon's tarplant (Asteraceae)	--/--/1B.1	Valley and foothill grassland (alkaline); 0-755 feet; May-October (November)	Not expected. No alkaline valley and foothill grassland present. Not documented in the vicinity.
Chorizanthe pungens var. *hartwegiana* Ben Lomond spineflower (Polygonaceae)	FE/--/1B.1	Lower montane coniferous forest (maritime ponderosa pine sandhills); 295-2,000 feet; April-July	Not expected. No suitable habitat present.
Cirsium andrewsii Franciscan thistle (Asteraceae)	--/--/1B.2	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, mesic, sometimes serpentinite; 0-490 feet; March-July	Suitable habitat present, but not documented in the vicinity.
Cirsium fontinale var. *fontinale* Crystal Springs fountain thistle (Asteraceae)	FE/CE/1B.1	Chaparral (openings), Cismontane woodland, Meadows and seeps, Valley and foothill grassland, Serpentinite seeps; 145-575 feet; (April) May-October	Not expected. No serpentinite seeps present.
Cirsium praeteriens lost thistle (Asteraceae)	--/--/1A	Unknown habitat preference (considered extirpated); 0-330 feet; June-July	Suitable habitat present, but not documented in the vicinity.
Clarkia concinna ssp. *automixa* Santa Clara red ribbons (Onagraceae)	--/--/4.3	Chaparral, Cismontane woodland; 295-4,920 feet; (April) May-June (July)	Suitable habitat present. Not observed during 2021 surveys.

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Collinsia corymbosa round-headed Chinese-houses (Plantaginaceae)	--/--/1B.2	Coastal dunes; 0-65 feet; April-June	Not expected. Study area is above species elevation range.
Collinsia multicolor San Francisco collinsia (Plantaginaceae)	--/--/1B.2	Closed-cone coniferous forest, Coastal scrub, sometimes serpentinite; 95-820 feet; (February) March-May	Suitable habitat present. Not observed during 2021 surveys.
Cypripedium fasciculatum clustered lady's-slipper (Orchidaceae)	--/--/4.2	Lower montane coniferous forest, North Coast coniferous forest, usually serpentinite seeps and streambanks; 325-7,990 feet; March-August	Low quality habitat present (no serpentinite seeps or streambanks). Not documented in the vicinity.
Cypripedium montanum mountain lady's-slipper (Orchidaceae)	--/--/4.2	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest; 605-7,300 feet; March-August	Suitable habitat present. Not documented in the vicinity.
***Dirca occidentalis* western leatherwood (Thymelaeaceae)**	**--/--/1B.2**	**Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland, mesic; 80-1,395 feet; January-March (April)**	**Multiple populations identified during 2021 surveys.**
***Elymus californicus* California bottle-brush grass (Poaceae)**	**--/--/4.3**	**Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland; 45-1,540 feet; May-August (November)**	**Numerous populations identified during 2021 surveys.**
Eriogonum nudum var. *decurrens* Ben Lomond buckwheat (Polygonaceae)	--/--/1B.1	Chaparral, Cismontane woodland, Lower montane coniferous forest (maritime ponderosa pine sandhills), sandy; 160-2,625 feet; June-October	Suitable habitat present, but not documented in the vicinity.
Eriophyllum latilobum San Mateo woolly sunflower *(Asteraceae)*	FE/CE/1B.1	Cismontane woodland (often serpentinite, on roadcuts), Coastal scrub, Lower montane coniferous forest; 145-1,085 feet; May-June	Not expected. Marginal habitat present—no serpentinite in study area.
Eryngium aristulatum var. *hooveri* Hoover's button-celery (Apiaceae)	--/--/1B.1	Vernal pools; 5-150 feet; (June) July (August)	Not expected. Study area is above species elevation range.
Eryngium jepsonii Jepson's coyote thistle (Apiaceae)	--/--/1B.2	Valley and foothill grassland, Vernal pools, clay; 5-985 feet; April-August	Low quality habitat present (no vernal pools, no heavy clay). Not observed during 2021 surveys.
Erysimum ammophilum sand-loving wallflower (Brassicaceae)	--/--/1B.2	Chaparral (maritime), Coastal dunes, Coastal scrub, sandy, openings; 0-195 feet; February-June	Not expected. Study area is above species elevation range.
Erysimum franciscanum San Francisco wallflower (Brassicaceae)	--/--/4.2	Chaparral, Coastal dunes, Coastal scrub, Valley and foothill grassland, often serpentinite or granitic, sometimes roadsides; 0-1,805 feet; March-June	Not expected. No serpentinite or granite in study area.

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Fritillaria agrestis stinkbells (Liliaceae)	--/--/4.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland, Clay, sometimes serpentinite; 30-5,100 feet; March-June	Low quality habitat present (no serpentinite), but not documented in the vicinity. Not observed during 2021 surveys.
Fritillaria liliacea fragrant fritillary (Liliaceae)	--/--/1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland, Often serpentinite; 5-1,345 feet; February-April	Suitable habitat present (though no serpentinite). Not observed during 2021 surveys.
Grindelia hirsutula var. *maritima* San Francisco gumplant (Asteraceae)	--/--/3.2	Coastal bluff scrub, Coastal scrub, Valley and foothill grassland, sandy or serpentinite; 45-1,310 feet; June-September	Suitable habitat present, but not documented in the vicinity.
Hesperevax sparsiflora var. *brevifolia* short-leaved evax (Asteraceae)	--/--/1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie; 0-705 feet; March-June	Not expected. No suitable habitat present and not documented in the vicinity.
Hesperocyparis abramsiana var. *abramsiana* Santa Cruz cypress (Cupressaceae)	FT/CE/1B.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest, sandstone or granitic; 915-2,625 feet; no blooming period listed	Not expected. No suitable habitat present (closed-cone coniferous forest is planted/artificial).
Hesperocyparis abramsiana var. *butanoensis* Butano Ridge cypress (Cupressaceae)	FT/CE/1B.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest, Sandstone; 1,310-1,610 feet; October	Not expected. No suitable habitat present (closed-cone coniferous forest is planted/artificial)..
Hesperolinon congestum Marin western flax (Linaceae)	FT/CT/1B.1	Chaparral, Valley and foothill grassland, serpentinite; 15-1,215 feet; April-July	Not expected. No serpentinite in study area.
Horkelia cuneata var. *sericea* Kellogg's horkelia (Rosaceae)	--/--/1B.1	Closed-cone coniferous forest, Chaparral (maritime), Coastal dunes, Coastal scrub, sandy or gravelly, openings; 30-655 feet; April-September	Low quality habitat present (very limited sandy/gravelly soils). Not documented in the vicinity.
Hosackia gracilis harlequin lotus (Fabaceae)	--/--/4.2	Broadleafed upland forest, Coastal bluff scrub, Closed-cone coniferous forest, Cismontane woodland, Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Valley and foothill grassland, wetlands, roadsides; 0-2,295 feet; March-July	Suitable habitat present, but not documented in the vicinity.
Iris longipetala coast iris (Iridaceae)	--/--/4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps, mesic; 0-1,970 feet; March-May	Suitable habitat present, but not documented in the vicinity.
Lasthenia californica ssp. *macrantha* perennial goldfields (Asteraceae)	--/--/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub; 15-1,705 feet; January-November	Suitable habitat present, but not documented in the vicinity.

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Legenere limosa legenere (Campanulaceae)	--/--/1B.1	Vernal pools; 0-2,885 feet; April-June	Not expected. No vernal pools in study area.
Leptosiphon ambiguus serpentine leptosiphon (Polemoniaceae)	--/--/4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland, usually serpentinite; 390-3,705 feet; March-June	Suitable habitat present, but not documented in the vicinity.
Leptosiphon croceus coast yellow leptosiphon (Polemoniaceae)	--/CC/1B.1	Coastal bluff scrub, Coastal prairie; 30-490 feet; April-June	Not expected. No suitable habitat present and not documented in the vicinity.
Leptosiphon rosaceus rose leptosiphon (Polemoniaceae)	--/--/1B.1	Coastal bluff scrub; 0-330 feet; April-July	Suitable habitat present, but not documented in the vicinity.
Lessingia arachnoidea Crystal Springs lessingia (Asteraceae)	--/--/1B.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland, serpentinite, often roadsides; 195-655 feet; July-October	Not expected. No serpentinite in study area.
Lessingia hololeuca woolly-headed lessingia (Asteraceae)	--/--/3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland, clay, serpentinite; 45-1,000 feet; June-October	Not expected. No serpentinite and not documented in the vicinity.
Limnanthes douglasii ssp. *sulphurea* Point Reyes meadowfoam (Limnanthaceae)	--/CE/1B.2	Coastal prairie, Meadows and seeps (mesic), Marshes and swamps (freshwater), Vernal pools; 0-460 feet; March-May	Not expected. No suitable habitat present and not documented in the vicinity.
Lupinus arboreus var. *eximius* San Mateo tree lupine (Fabaceae)	--/--/3.2	Chaparral, Coastal scrub; 295-1,805 feet; April-July	Suitable habitat present, but not documented in the vicinity.
Malacothamnus arcuatus arcuate bush-mallow (Malvaceae)	--/--/1B.2	Chaparral, Cismontane woodland; 45-1,165 feet; April-September	Suitable habitat present. Not observed during 2021 surveys.
Malacothamnus davidsonii Davidson's bush-mallow (Malvaceae)	--/--/1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; 605-3,740 feet; June-January	Suitable habitat present, but not documented in the vicinity.
Micropus amphibolus Mt. Diablo cottonweed (Asteraceae)	--/--/3.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland, rocky; 145-2,705 feet; March-May	Marginal suitable habitat present (limited rocky habitat). Not documented in the vicinity.
Microseris paludosa marsh microseris (Asteraceae)	--/--/1B.2	Closed-cone coniferous forest, Cismontane woodland, Coastal scrub, Valley and foothill grassland; 15-1,165 feet; April-June (July)	Suitable habitat present, but not documented in the vicinity.

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Monolopia gracilens woodland woolythreads (Asteraceae)	--/--/1B.2	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland, Serpentine; 325-3,935 feet; (February) March-July	Low quality habitat present (no serpentine and no burned habitat) and not documented in the vicinity.
Pedicularis dudleyi Dudley's lousewort (Orobanchaceae)	--/CR/1B.2	Chaparral (maritime), Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland; 195-2,955 feet; April-June	Suitable habitat present. Not observed during 2021 surveys.
Penstemon rattanii var. *kleei* Santa Cruz Mountains beardtongue (Plantaginaceae)	--/--/1B.2	Chaparral, Lower montane coniferous forest, North Coast coniferous forest; 1,310-3,610 feet; May-June	Suitable habitat present, but not documented in the vicinity.
Pentachaeta bellidiflora white-rayed pentachaeta (Asteraceae)	FE/CE/1B.1	Cismontane woodland, Valley and foothill grassland (often serpentinite); 110-2,035 feet; March-May	Marginal habitat present (no serpentinite). Not observed during 2021 surveys.
Pinus radiata Monterey pine (Pinaceae)	--/--/1B.1	Closed-cone coniferous forest, Cismontane woodland; 80-605 feet; no blooming period listed	Observed, but study area is not within natural historical range, so not considered special-status.
Piperia candida white-flowered rein orchid (Orchidaceae)	--/--/1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, sometimes serpentinite; 95-4,300 feet; (March) May-September	Suitable habitat present, but only two occurrences known from the vicinity. Not observed during 2021 surveys.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcornflower (Boraginaceae)	--/--/1B.2	Chaparral, Coastal prairie, Coastal scrub, mesic; 5-525 feet; March-June	Suitable habitat present. Not observed during 2021 surveys.
Plagiobothrys diffusus San Francisco popcornflower (Boraginaceae)	--/CE/1B.1	Coastal prairie, Valley and foothill grassland; 195-1,180 feet; March-June	Suitable habitat present, but not documented in the vicinity.
Polemonium carneum Oregon polemonium (Polemoniaceae)	--/--/2B.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest; 0-6,005 feet; April-September	Suitable habitat present, but not documented in the vicinity.
Ranunculus lobbii Lobb's aquatic buttercup (Ranunculaceae)	--/--/4.2	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools, mesic; 45-1,540 feet; February-May	Low quality habitat present (no vernal pools and limited aquatic habitat). Not documented in the vicinity.
Sanicula hoffmannii Hoffmann's sanicle (Apiaceae)	--/--/4.3	Broadleafed upland forest, Coastal bluff scrub, Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, often serpentinite or clay; 95-985 feet; March-May	Low quality habitat present (no serpentinite and limited clay). Not documented in the vicinity.

Scientific Name Common Name (Family)	Status[1] Federal/ State/CRPR	Habitat, Elevation, and Blooming Period[2]	Potential for Occurrence within the Study Area
Senecio aphanactis chaparral ragwort (Asteraceae)	--/--/2B.2	Chaparral, Cismontane woodland, Coastal scrub, sometimes alkaline; 45-2,625 feet; January-April (May)	Suitable habitat present, but only one occurrence documented in the vicinity.
Sidalcea hickmanii ssp. *viridis* Marin checkerbloom (Malvaceae)	--/--/1B.1	Chaparral (serpentinite); 160-1,410 feet; May-June	Not expected. No suitable habitat present.
Silene scouleri ssp. *scouleri* Scouler's catchfly (Caryophyllaceae)	--/--/2B.2	Coastal bluff scrub, Coastal prairie, Valley and foothill grassland; 0-1,970 feet; (March-May) June-August (September)	Suitable habitat present, but not documented in the vicinity.
Silene verecunda ssp. *verecunda* San Francisco campion (Caryophyllaceae)	--/--/1B.2	Coastal bluff scrub, Chaparral, Coastal prairie, Coastal scrub, Valley and foothill grassland, sandy; 95-2,115 feet; (February) March-June (August)	Suitable habitat present, but only one occurrence documented in the vicinity.
Stebbinsoseris decipiens Santa Cruz microseris (Asteraceae)	--/--/1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Coastal prairie, Coastal scrub, Valley and foothill grassland, open areas, sometimes serpentinite; 30-1,640 feet; April-May	Suitable habitat present, but not documented in the vicinity.
Stuckenia filiformis ssp. *alpina* slender-leaved pondweed (Potamogetonaceae)	--/--/2B.2	Marshes and swamps (assorted shallow freshwater); 980-7,055 feet; May-July	Suitable habitat present, but not documented in the vicinity.
Trifolium amoenum two-fork clover (Fabaceae)	FE/--/1B.1	Coastal bluff scrub, Valley and foothill grassland (sometimes serpentinite); 15-1,360 feet; April-June	Suitable habitat present, but only one occurrence documented in the vicinity.
Trifolium buckwestiorum Santa Cruz clover (Fabaceae)	--/--/1B.1	Broadleafed upland forest, Cismontane woodland, Coastal prairie, gravelly, margins; 340-2,000 feet; April-October	Suitable habitat present, but only one occurrence documented in the vicinity.
Trifolium polyodon Pacific Grove clover (Fabaceae)	--/CR/1B.1	Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Valley and foothill grassland, mesic, sometimes granitic; 15-1,395 feet; April-June (July)	Suitable habitat present, but not documented in the vicinity.
Tropidocarpum capparideum caper-fruited tropidocarpum (Brassicaceae)	--/--/1B.1	Valley and foothill grassland (alkaline hills); 0-1,495 feet; March-April	Not expected. No alkaline hills.

Note: nomenclature corresponds to the most recent Jepson Interchange

1. State or federal listing: F = Federal; C = California; E = endangered; T = threatened; R = rare
   CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere; CRPR List 1B = Plants rare, threatened or endangered in CA and elsewhere; CRPR 2B = Plants rare, threatened or endangered in California but more common elsewhere; CRPR 3 = More information is needed about plant; CRPR 4 = Plants of limited distribution, a watch list
   CRPR: '.1' = Seriously threatened in CA; '.2' = Fairly threatened in CA; '.3' = Not very threatened in CA
2. Underlined habitat = present within the project area. Months in parentheses indicate occasional bloom periods

APPENDIX D:

List of All Vascular Plant Taxa Identified within the Study Area

APPENDIX D. Vascular Plant Taxa Identified within the La Honda Area Preserves, 2021. Compiled by Vollmar Natural Lands Consulting for Midpeninsula Regional Open Space District

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Adoxaceae (Muskroot Family)	*Sambucus nigra* ssp. *caerulea*	Blue Elderberry	Native	N/A	Perennial	Shrub
Adoxaceae (Muskroot Family)	*Viburnum* sp.	Viburnum	Cultivar	N/A	Perennial	Shrub
Agavaceae (Century-plant Family)	*Chlorogalum pomeridianum* var. *pomeridianum*	Wavyleaf Soap Plant	Native	N/A	Perennial	Forb/herb
Alismataceae (Water-plantain Family)	*Alisma lanceolatum*	Lanceleaf Water Plantain	Naturalized	N/A	Perennial	Forb/herb
Amaryllidaceae (Asparagus Family)	*Leucojum aestivum*	Snowflake	Waif	N/A	Perennial	Forb/herb
Amaryllidaceae (Asparagus Family)	*Narcissus pseudonarcissus*	Daffodil	Naturalized	N/A	Perennial	Shrub
Anacardiaceae (Sumac Family)	*Toxicodendron diversilobum*	Western Poison Oak	Native	N/A	Perennial	Shrub, Vine
Apiaceae (Carrot Family)	*Conium maculatum*	Poison-Hemlock	Naturalized	Moderate	Biennial	Forb/herb
Apiaceae (Carrot Family)	*Heracleum maximum*	Cow Parsnip	Native	N/A	Perennial	Forb/herb
Apiaceae (Carrot Family)	*Oenanthe sarmentosa*	Water Parsley	Native	N/A	Perennial	Forb/herb
Apiaceae (Carrot Family)	*Osmorhiza berteroi*	Sweetcicely	Native	N/A	Perennial	Forb/herb
Apiaceae (Carrot Family)	*Perideridia kelloggii*	Kellogg's Yampah	Native	N/A	Perennial	Forb/herb
Apiaceae (Carrot Family)	*Sanicula crassicaulis*	Pacific Blacksnakeroot	Native	N/A	Perennial	Forb/herb
Apiaceae (Carrot Family)	*Torilis arvensis*	Tall Sock-Destroyer	Naturalized	Moderate	Annual	Forb/herb
Apocynaceae (Dogbane Family)	*Nerium oleander*	Common Oleander	Cultivar	N/A	Perennial	Tree, Shrub
Apocynaceae (Dogbane Family)	*Vinca major*	Greater Periwinkle	Naturalized	EDRR, Moderate	Perennial	Vine, Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Aquifoliaceae (Holly Family)	*Ilex aquifolium*	English Holly	Naturalized	Limited	Perennial	Tree, Shrub
Araceae (Arum Family)	*Arum italicum*	Italian Arum	Naturalized	N/A	Perennial	Forb/herb
Araceae (Arum Family)	*Zantedeschia aethiopica*	Calla-Lily	Naturalized	Limited	Perennial	Forb/herb
Araliaceae (Ginseng Family)	*Hedera helix*	English Ivy	Naturalized	EDRR, High	Perennial	Vine
Asteraceae (Aster Family)	*Achillea millefolium*	Common Yarrow	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Achyrachaena mollis*	Blow Wives	Native	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Adenocaulon bicolor*	Trail Plant	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Anisocarpus madioides*	Woodland Tarweed	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Anthemis cotula*	Mayweed	Naturalized	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Artemisia californica*	California Sagebrush	Native	N/A	Perennial	Shrub
Asteraceae (Aster Family)	*Artemisia douglasiana*	Mugwort	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Baccharis glutinosa*	Marsh Baccharis	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Baccharis pilularis* ssp. *consanguinea*	Coyote Brush	Native	N/A	Perennial	Shrub
Asteraceae (Aster Family)	*Carduus pycnocephalus* ssp. *pycnocephalus*	Italian Thistle	Naturalized	Moderate	Annual	Forb/herb
Asteraceae (Aster Family)	*Centaurea melitensis*	Tocalote	Naturalized	Moderate	Annual, Biennial	Forb/herb
Asteraceae (Aster Family)	*Centaurea solstitialis*	Yellow Star-Thistle	Naturalized	High	Annual	Forb/herb
Asteraceae (Aster Family)	*Cichorium intybus*	Chicory	Naturalized	N/A	Biennial, Perennial	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Asteraceae (Aster Family)	*Cirsium vulgare*	Bull Thistle	Naturalized	Moderate	Biennial	Forb/herb
Asteraceae (Aster Family)	*Delairea odorata*	Cape-Ivy	Naturalized	EDRR, High	Perennial	Forb/herb, Vine
Asteraceae (Aster Family)	*Erigeron sumatrensis*	Tropical Horseweed	Naturalized	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Eriophyllum confertiflorum*	Golden-Yarrow	Native	N/A	Perennial	Subshrub, Shrub
Asteraceae (Aster Family)	*Eurybia radulina*	Roughleaf Aster	Native	N/A	Perennial	Forb/herb, Subshrub
Asteraceae (Aster Family)	*Hedypnois cretica*	Crete Weed	Naturalized	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Helenium puberulum*	Rosilla	Native	N/A	Annual, Perennial	Forb/herb
Asteraceae (Aster Family)	*Helminthotheca echioides*	Bristly Ox-Tongue	Naturalized	Limited	Annual, Perennial	Forb/herb
Asteraceae (Aster Family)	*Heterotheca sessiliflora* ssp. *bolanderi*	Bolander's Golden Aster	Native	N/A	Perennial	Subshrub, Forb/herb
Asteraceae (Aster Family)	*Hieracium albiflorum*	White Hawkweed	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Hypochaeris radicata*	Rough Cat's-Ear	Naturalized	Moderate	Perennial	Forb/herb
Asteraceae (Aster Family)	*Lactuca saligna*	Willowleaf Lettuce	Naturalized	N/A	Annual, Biennial	Forb/herb
Asteraceae (Aster Family)	*Lactuca virosa*	Bitter Lettuce	Naturalized	N/A	Annual, Biennial	Forb/herb
Asteraceae (Aster Family)	*Leucanthemum vulgare*	Ox-Eye Daisy	Naturalized	EDRR, Moderate	Perennial	Forb/herb
Asteraceae (Aster Family)	*Madia gracilis*	Slender Tarplant	Native	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Madia sativa*	Coast Tarweed	Native	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Matricaria discoidea*	Pineapple Weed	Native	N/A	Annual	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Asteraceae (Aster Family)	*Petasites frigidus* var. *palmatus*	Western Sweet Coltsfoot	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Pseudognaphalium californicum*	Ladies' Tobacco	Native	N/A	Annual, Biennial	Forb/herb
Asteraceae (Aster Family)	*Pseudognaphalium ramosissimum*	Pink Cudweed	Native	N/A	Biennial	Forb/herb
Asteraceae (Aster Family)	*Psilocarphus tenellus*	Slender Woolly-Marbles	Native	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Senecio vulgaris*	Common Groundsel	Naturalized	N/A	Annual, Biennial	Forb/herb
Asteraceae (Aster Family)	*Silybum marianum*	Milk Thistle	Naturalized	EDRR, Limited	Annual, Biennial	Forb/herb
Asteraceae (Aster Family)	*Sonchus asper* ssp. *asper*	Prickly Sow Thistle	Naturalized	N/A	Annual	Forb/herb
Asteraceae (Aster Family)	*Symphyotrichum chilense*	Pacific Aster	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Tragopogon porrifolius*	Salsify	Naturalized	N/A	Biennial	Forb/herb
Asteraceae (Aster Family)	*Wyethia glabra*	Coast Range Mule-Ears	Native	N/A	Perennial	Forb/herb
Asteraceae (Aster Family)	*Xanthium spinosum*	Spiny Cocklebur	Native Or Naturalized	N/A	Annual	Forb/herb
Berberidaceae (Barberry Family)	*Berberis aquifolium* var. *dictyota*	Jepson's Oregon Grape	Native	N/A	Perennial	Shrub
Betulaceae (Birch Family)	*Alnus rhombifolia*	White Alder	Native	N/A	Perennial	Tree
Betulaceae (Birch Family)	*Corylus cornuta* ssp. *californica*	California Hazelnut	Native	N/A	Perennial	Shrub
Blechnaceae (Chain Fern Family)	*Woodwardia fimbriata*	Giant Chain Fern	Native	N/A	Perennial	Forb/herb
Boraginaceae (Borage Family)	*Cynoglossum grande*	Grand Hound's Tongue	Native	N/A	Perennial	Forb/herb
Boraginaceae (Borage Family)	*Myosotis latifolia*	Broadleaved Forget-Me-Not	Naturalized	Limited	Perennial	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Boraginaceae (Borage Family)	*Nemophila parviflora*	Smallflower Nemophila	Native	N/A	Annual	Forb/herb
Boraginaceae (Borage Family)	*Phacelia californica*	California Phacelia	Native	N/A	Perennial	Forb/herb
Brassicaceae (Mustard Family)	*Barbarea orthoceras*	American Yellowrocket	Native	N/A	Biennial, Perennial	Forb/herb
Brassicaceae (Mustard Family)	*Brassica nigra*	Black Mustard	Naturalized	Moderate	Annual	Forb/herb
Brassicaceae (Mustard Family)	*Cardamine californica*	Milk Maids	Native	N/A	Perennial	Forb/herb
Brassicaceae (Mustard Family)	*Cardamine hirsuta*	Hairy Bittercress	Naturalized	N/A	Annual	Forb/herb
Brassicaceae (Mustard Family)	*Hirschfeldia incana*	Mediterranean Mustard	Naturalized	Moderate	Annual, Biennial, Perennial	Forb/herb
Brassicaceae (Mustard Family)	*Lepidium nitidum*	Shining Pepperweed	Native	N/A	Annual	Forb/herb
Brassicaceae (Mustard Family)	*Nasturtium officinale*	Water Cress	Native	N/A	Perennial	Forb/herb
Brassicaceae (Mustard Family)	*Raphanus sativus*	Radish	Naturalized	Limited	Annual, Biennial	Forb/herb
Brassicaceae (Mustard Family)	*Sisymbrium officinale*	Hedge Mustard	Naturalized	N/A	Annual	Forb/herb
Caprifoliaceae (Honeysuckle Family)	*Lonicera hispidula*	Pink Honeysuckle	Native	N/A	Perennial	Vine
Caprifoliaceae (Honeysuckle Family)	*Lonicera involucrata*	Twinberry	Native	N/A	Perennial	Shrub
Caprifoliaceae (Honeysuckle Family)	*Symphoricarpos albus* var. *laevigatus*	Snowberry	Native	N/A	Perennial	Subshrub, Shrub
Caprifoliaceae (Honeysuckle Family)	*Symphoricarpos mollis*	Creeping Snowberry	Native	N/A	Perennial	Subshrub, Shrub
Caryophyllaceae (Pink Family)	*Cerastium glomeratum*	Sticky Mouse-Ear Chickweed	Naturalized	N/A	Annual	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Caryophyllaceae (Pink Family)	*Silene gallica*	Small-Flower Catchfly	Naturalized	N/A	Annual, Biennial	Forb/herb
Caryophyllaceae (Pink Family)	*Spergularia rubra*	Red Sand-Spurrey	Naturalized	N/A	Annual, Perennial	Forb/herb
Caryophyllaceae (Pink Family)	*Stellaria media*	Common Chickweed	Naturalized	N/A	Annual, Perennial	Forb/herb
Celastraceae (Bittersweet Family)	*Euonymus occidentalis* var. *occidentalis*	Western Burning Bush	Native	N/A	Perennial	Shrub, Tree
Convolvulaceae (Morning-glory Family)	*Calystegia subacaulis* ssp. *subacaulis*	Hill Morning Glory	Native	N/A	Perennial	Vine, Forb/herb
Convolvulaceae (Morning-glory Family)	*Convolvulus arvensis*	Bindweed	Naturalized	N/A	Perennial	Vine, Forb/herb
Cornaceae (Dogwood Family)	*Cornus sericea*	American Dogwood	Native	N/A	Perennial	Tree, Shrub
Cucurbitaceae (Cucumber Family)	*Marah fabacea*	California Man-Root	Native	N/A	Perennial	Vine, Forb/herb
Cucurbitaceae (Cucumber Family)	*Marah oregana*	Coast Man-Root	Native	N/A	Perennial	Vine, Forb/herb
Cupressaceae (Cypress Family)	*Hesperocyparis macrocarpa*	Monterey Cypress*	Native	N/A*	Perennial	Tree
Cupressaceae (Cypress Family)	*Sequoia sempervirens*	Redwood	Native	N/A	Perennial	Tree
Cyperaceae (Sedge Family)	*Carex densa*	Dense Sedge	Native	LR	Perennial	Graminoid
Cyperaceae (Sedge Family)	*Carex hendersonii*	Henderson's Sedge	Native	N/A	Perennial	Graminoid
Cyperaceae (Sedge Family)	*Carex praegracilis*	Freeway Sedge	Native	N/A	Perennial	Graminoid
Cyperaceae (Sedge Family)	*Carex simulata*	Short-Beaked Sedge	Native	N/A	Perennial	Graminoid
Cyperaceae (Sedge Family)	*Cyperus eragrostis*	Tall Flatsedge	Native	N/A	Perennial	Graminoid
Cyperaceae (Sedge Family)	*Scirpus microcarpus*	Panicled Bulrush	Native	N/A	Perennial	Graminoid

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Dennstaedtiaceae (Bracken Fern Family)	*Pteridium aquilinum* var. *pubescens*	Hairy Brackenfern	Native	N/A	Perennial	Forb/herb
Dipsacaceae (Teasel Family)	*Dipsacus fullonum*	Wild Teasel	Naturalized	EDRR, Moderate	Biennial	Forb/herb
Dipsacaceae (Teasel Family)	*Dipsacus sativus*	Indian Teasel	Naturalized	EDRR, Moderate	Biennial	Forb/herb
Dryopteridaceae (Wood Fern Family)	*Dryopteris arguta*	Coastal Woodfern	Native	N/A	Perennial	Forb/herb
Dryopteridaceae (Wood Fern Family)	*Polystichum munitum*	Western Sword Fern	Native	N/A	Perennial	Forb/herb
Equisetaceae (Horsetail Family)	*Equisetum arvense*	Common Horsetail	Native	N/A	Perennial	Forb/herb
Equisetaceae (Horsetail Family)	*Equisetum telmateia* ssp. *braunii*	Giant Horsetail	Native	N/A	Annual	Forb/herb
Ericaceae (Heath Family)	*Arbutus menziesii*	Pacific Madrone	Native	N/A	Perennial	Tree
Ericaceae (Heath Family)	*Arctostaphylos crustacea*	Brittle Leaf Manzanita	Native	N/A	Perennial	Shrub
Ericaceae (Heath Family)	*Vaccinium ovatum*	California Huckleberry	Native	N/A	Perennial	Subshrub, Shrub
Euphorbiaceae (Spurge Family)	*Euphorbia peplus*	Petty Spurge	Naturalized	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Acacia dealbata*	Silver Wattle	Naturalized	Moderate	Perennial	Tree, Shrub
Fabaceae (Pea Family)	*Acacia melanoxylon*	Blackwood Acacia	Naturalized	Limited	Perennial	Tree
Fabaceae (Pea Family)	*Acacia verticillata*	Star Acacia	Waif	N/A	Perennial	Tree, Shrub
Fabaceae (Pea Family)	*Acmispon glaber* var. *glaber*	Deerweed	Native	N/A	Perennial	Forb/herb
Fabaceae (Pea Family)	*Genista monspessulana*	French Broom	Naturalized	EDRR, High	Perennial	Shrub
Fabaceae (Pea Family)	*Lathyrus latifolius*	Perennial Sweet Pea	Naturalized	EDRR	Perennial	Vine, Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Fabaceae (Pea Family)	*Lathyrus vestitus* var. *vestitus*	Hillside Pea	Native	N/A	Perennial	Vine, Forb/herb
Fabaceae (Pea Family)	*Lotus corniculatus*	Bird's-Foot Trefoil	Naturalized	N/A	Perennial	Forb/herb
Fabaceae (Pea Family)	*Lupinus albifrons* var. *collinus*	Silver Bush Lupine	Native	N/A	Perennial	Subshrub, Shrub
Fabaceae (Pea Family)	*Lupinus formosus* var. *formosus*	Summer Lupine	Native	N/A	Perennial	Forb/herb
Fabaceae (Pea Family)	*Lupinus succulentus*	Arroyo Lupine	Native	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Medicago arabica*	Spotted Burclover	Naturalized	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Medicago polymorpha*	Burclover	Naturalized	Limited	Annual, Perennial	Forb/herb
Fabaceae (Pea Family)	*Melilotus indicus*	Sourclover	Naturalized	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Robinia pseudoacacia*	Black Locust	Naturalized	Limited	Perennial	Tree
Fabaceae (Pea Family)	*Rupertia physodes*	Forest Scurfpea	Native	N/A	Perennial	Forb/herb
Fabaceae (Pea Family)	*Spartium junceum*	Spanish Broom	Naturalized	EDRR, High	Perennial	Shrub
Fabaceae (Pea Family)	*Trifolium angustifolium*	Narrow-Leaved Clover	Naturalized	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Trifolium campestre*	Hop Clover	Naturalized	N/A	Annual, Biennial	Forb/herb
Fabaceae (Pea Family)	*Trifolium ciliolatum*	Foothill Clover	Native	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Trifolium dubium*	Little Hop Clover	Naturalized	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Trifolium fragiferum*	Strawberry Clover	Naturalized	N/A	Perennial	Forb/herb
Fabaceae (Pea Family)	*Trifolium hirtum*	Rose Clover	Naturalized	Limited	Annual	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Fabaceae (Pea Family)	*Trifolium subterraneum*	Subterranean Clover	Naturalized	N/A	Annual	Forb/herb
Fabaceae (Pea Family)	*Vicia benghalensis*	Purple Vetch	Naturalized	N/A	Annual	Vine, Forb/herb
Fabaceae (Pea Family)	*Vicia sativa* ssp. *nigra*	Narrow-Leaved Vetch	Naturalized	N/A	Annual	Vine, Forb/herb
Fabaceae (Pea Family)	*Vicia sativa* ssp. *sativa*	Spring Vetch	Naturalized	N/A	Annual	Vine, Forb/herb
Fabaceae (Pea Family)	*Vicia tetrasperma*	Sparrow Vetch	Naturalized	N/A	Annual	Vine, Forb/herb
Fabaceae (Pea Family)	*Vicia villosa* ssp. *varia*	Winter Vetch	Naturalized	N/A	Annual, Biennial, Perennial	Vine, Forb/herb
Fagaceae (Beech Family)	*Notholithocarpus densiflorus* var. *densiflorus*	Tanoak	Native	N/A	Perennial	Tree
Fagaceae (Beech Family)	*Quercus agrifolia* var. *agrifolia*	California Live Oak	Native	N/A	Perennial	Tree, Shrub
Fagaceae (Beech Family)	*Quercus kelloggii*	California Black Oak	Native	N/A	Perennial	Tree, Shrub
Fagaceae (Beech Family)	*Quercus lobata*	Valley Oak	Native	N/A	Perennial	Tree
Fagaceae (Beech Family)	*Quercus wislizeni* var. *wislizeni*	Interior Live Oak Shrub	Native	N/A	Perennial	Tree, Shrub
Garryaceae (Silk Tassel Family)	*Garrya elliptica*	Wavyleaf Silktassel	Native	N/A	Perennial	Tree, Shrub
Gentianaceae (Gentian Family)	*Centaurium tenuiflorum*	Slender Centaury	Naturalized	N/A	Annual	Forb/herb
Geraniaceae (Geranium Family)	*Erodium botrys*	Longbeak Stork's Bill	Naturalized	N/A	Annual, Biennial	Forb/herb
Geraniaceae (Geranium Family)	*Erodium cicutarium*	Redstem Filaree	Naturalized	Limited	Annual, Biennial	Forb/herb
Geraniaceae (Geranium Family)	*Erodium moschatum*	Greenstem Filaree	Naturalized	N/A	Annual, Biennial	Forb/herb
Geraniaceae (Geranium Family)	*Geranium dissectum*	Cutleaf Geranium	Naturalized	Limited	Annual, Biennial	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Geraniaceae (Geranium Family)	*Geranium molle*	Dovefoot Geranium	Naturalized	N/A	Annual, Biennial, Perennial	Forb/herb
Geraniaceae (Geranium Family)	*Geranium purpureum*	Herb Robert	Naturalized	N/A	Annual, Biennial	Forb/herb
Grossulariaceae (Currant Family)	*Ribes californicum* var. *californicum*	Hillside Gooseberry	Native	N/A	Perennial	Shrub
Grossulariaceae (Currant Family)	*Ribes menziesii* var. *menziesii*	Canyon Gooseberry	Native	N/A	Perennial	Shrub
Grossulariaceae (Currant Family)	*Ribes sanguineum* var. *glutinosum*	Blood Currant	Native	N/A	Perennial	Shrub
Hydrangeaceae (Hydrangea Family)	*Whipplea modesta*	Common Whipplea	Native	N/A	Perennial	Shrub, Subshrub
Hypericaceae (St. John's Wort Family)	*Hypericum calycinum*	Aaron's Beard	Naturalized	N/	Perennial	Shrub
Iridaceae (Iris Family)	*Crocosmia x crocosmiiflora*	Montbretia	Naturalized	Limited	Perennial	Forb/herb
Iridaceae (Iris Family)	*Iris douglasiana*	Douglas Iris	Native	N/A	Perennial	Forb/herb
Iridaceae (Iris Family)	*Iris macrosiphon*	Bowltube Iris	Native	N/A	Perennial	Forb/herb
Iridaceae (Iris Family)	*Sisyrinchium bellum*	Western Blue-Eyed-Grass	Native	N/A	Perennial	Forb/herb
Juglandaceae (Walnut Family)	*Juglans hindsii*	Northern California Black Walnut	Native	N/A	Perennial	Tree
Juncaceae (Rush Family)	*Juncus bufonius* var. *bufonius*	Toad Rush	Native	N/A	Annual	Graminoid
Juncaceae (Rush Family)	*Juncus effusus* ssp. *pacificus*	Pacific Rush	Native	N/A	Perennial	Graminoid
Juncaceae (Rush Family)	*Juncus hesperius*	Bog Rush	Native	N/A	Perennial	Graminoid
Juncaceae (Rush Family)	*Juncus occidentalis*	Western Rush	Native	N/A	Perennial	Graminoid

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Juncaceae (Rush Family)	*Juncus patens*	Spreading Rush	Native	N/A	Perennial	Graminoid
Juncaceae (Rush Family)	*Juncus phaeocephalus* var. *phaeocephalus*	Brownheaded Rush	Native	N/A	Perennial	Graminoid
Lamiaceae (Mint Family)	*Clinopodium douglasii*	Yerba Buena	Native	N/A	Perennial	Forb/herb, Subshrub
Lamiaceae (Mint Family)	*Lepechinia calycina*	Woodbalm	Native	N/A	Perennial	Subshrub, Shrub
Lamiaceae (Mint Family)	*Melissa officinalis*	Lemon Balm	Naturalized	N/A	Perennial	Forb/herb
Lamiaceae (Mint Family)	*Mentha pulegium*	Pennyroyal	Naturalized	Moderate	Perennial	Forb/herb
Lamiaceae (Mint Family)	*Monardella villosa* ssp. *franciscana*	San Francisco Coyote Mint	Native	N/A	Perennial	Subshrub, Forb/herb
Lamiaceae (Mint Family)	*Prunella vulgaris* var. *vulgaris*	Self Heal	Naturalized	N/A	Perennial	Forb/herb
Lamiaceae (Mint Family)	*Stachys rigida* var. *quercetorum*	Rough Hedgenettle	Native	N/A	Perennial	Forb/herb
Lauraceae (Laurel Family)	*Umbellularia californica*	California Laurel	Native	N/A	Perennial	Tree, Shrub
Liliaceae (Lily Family)	*Calochortus albus*	White Globe Lily	Native	N/A	Perennial	Forb/herb
Liliaceae (Lily Family)	*Clintonia andrewsiana*	Andrew's Clintonia	Native	N/A	Perennial	Forb/herb
Liliaceae (Lily Family)	*Fritillaria affinis*	Checker Lily	Native	N/A	Perennial	Forb/herb
Liliaceae (Lily Family)	*Lilium pardalinum* ssp. *pardalinum*	Leopard Lily	Native	N/A	Perennial	Forb/herb
Liliaceae (Lily Family)	*Prosartes hookeri*	Drops-Of-Gold	Native	N/A	Perennial	Forb/herb
Linaceae (Flax Family)	*Linum bienne*	Pale Flax	Naturalized	N/A	Annual, Biennial, Perennial	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Lythraceae (Loosestrife Family)	*Lythrum hyssopifolia*	Hyssop Loosestrife	Naturalized	Limited	Annual, Perennial	Forb/herb
Malvaceae (Mallow Family)	*Malva neglecta*	Common Mallow	Naturalized	N/A	Annual, Biennial, Perennial	Forb/herb
Melanthiaceae (False-hellebore Family)	*Trillium angustipetalum*	Narrowpetal Wakerobin	Native	N/A	Perennial	Forb/herb
Melanthiaceae (False-hellebore Family)	*Trillium chloropetalum*	Giant Trillium	Native	N/A	Perennial	Forb/herb
Melanthiaceae (False-hellebore Family)	*Trillium ovatum*	Wake Robin	Native	N/A	Perennial	Forb/herb
Montiaceae (Miner's Lettuce Family)	*Claytonia perfoliata* ssp. *perfoliata*	Miner's Lettuce	Native	N/A	Annual, Perennial	Forb/herb
Myricaceae (Bayberry Family)	*Morella californica*	Wax Myrtle	Native	N/A	Perennial	Tree, Shrub
Myrsinaceae (Myrsine Family)	*Lysimachia arvensis*	Scarlet Pimpernel	Naturalized	N/A	Annual, Biennial	Forb/herb
Myrsinaceae (Myrsine Family)	*Lysimachia latifolia*	Star Flower	Native	N/A	Perennial	Forb/herb
Myrtaceae (Myrtle Family)	*Eucalyptus camaldulensis*	Red Gum	Naturalized	Limited	Perennial	Tree
Myrtaceae (Myrtle Family)	*Eucalyptus globulus*	Blue Gum	Naturalized	EDRR Moderate	Perennial	Tree
Oleaceae (Olive Family)	*Jasminum* sp.	Jasmine	Cultivar	N/A	Perennial	Shrub/vine
Oleaceae (Olive Family)	*Olea europaea*	Olive	Naturalized	EDRR, Limited	Perennial	Tree, Shrub
Onagraceae (Evening Primrose Family)	*Clarkia unguiculata*	Elegant Clarkia	Native	N/A	Annual	Forb/herb
Onagraceae (Evening Primrose Family)	*Epilobium brachycarpum*	Tall Annual Willowherb	Native	N/A	Annual	Forb/herb
Onagraceae (Evening Primrose Family)	*Epilobium canum* ssp. *canum*	Hummingbird Trumpet	Native	N/A	Perennial	Subshrub, Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Onagraceae (Evening Primrose Family)	*Epilobium ciliatum* ssp. *ciliatum*	Fringed Willowherb	Native	N/A	Perennial	Forb/herb
Onagraceae (Evening Primrose Family)	*Taraxia ovata*	Suncups	Native	N/A	Perennial	Forb/herb
Orchidaceae (Orchid Family)	*Epipactis helleborine*	Broad-Leaved Helleborine	Naturalized	N/A	Perennial	Forb/herb
Orobanchaceae (Broom-rape Family)	*Bellardia trixago*	Mediterranean Linseed	Naturalized	Limited	Annual	Forb/herb
Orobanchaceae (Broom-rape Family)	*Castilleja affinis* ssp. *affinis*	Coast Indian Paintbrush	Native	N/A	Perennial	Forb/herb, Subshrub
Orobanchaceae (Broom-rape Family)	*Castilleja foliolosa*	Woolly Paintbrush	Native	N/A	Perennial	Subshrub, Forb/herb
Orobanchaceae (Broom-rape Family)	*Pedicularis densiflora*	Warrior's Plume	Native	N/A	Perennial	Forb/herb
Oxalidaceae (Wood-Sorrel Family)	*Oxalis corniculata*	Creeping Woodsorrel	Naturalized	N/A	Annual, Perennial	Forb/herb
Oxalidaceae (Wood-Sorrel Family)	*Oxalis oregana*	Redwood Sorrel	Native	N/A	Perennial	Forb/herb
Oxalidaceae (Wood-Sorrel Family)	*Oxalis pes-caprae*	Bermuda Buttercup	Naturalized	Moderate	Perennial	Forb/herb
Papaveraceae (Poppy Family)	*Eschscholzia californica*	California Poppy	Native	N/A	Annual, Perennial	Forb/herb
Papaveraceae (Poppy Family)	*Fumaria officinalis*	Fumitory	Naturalized	N/A	Annual	Forb/herb
Phrymaceae (Lopseed Family)	*Diplacus aurantiacus*	Sticky Monkeyflower	Native	N/A	Perennial	Shrub
Phrymaceae (Lopseed Family)	*Erythranthe guttata*	Seep Monkeyflower	Native	N/A	Annual, Perennial	Forb/herb
Pinaceae (Pine Family)	*Pinus radiata*	Monterey Pine	Native*	N/A*	Perennial	Tree
Pinaceae (Pine Family)	*Pseudotsuga menziesii* var. *menziesii*	Douglas-Fir	Native	N/A	Perennial	Tree
Plantaginaceae (Plantain Family)	*Plantago lanceolata*	English Plantain	Naturalized	Limited	Annual, Biennial, Perennial	Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Plantaginaceae (Plantain Family)	*Plantago major*	Common Plantain	Naturalized	N/A	Perennial	Forb/herb
Poaceae (Grass Family)	*Agrostis pallens*	Dune Bent Grass	Native	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Aira caryophyllea*	Silver Hair Grass	Naturalized	N/A	Annual	Graminoid
Poaceae (Grass Family)	*Aira elegans*	Elegant Hair Grass	Naturalized	N/A	Annual	Graminoid
Poaceae (Grass Family)	*Avena barbata*	Slender Wild Oat	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Avena fatua*	Wild Oat	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Brachypodium distachyon*	Annual False-Brome	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Briza maxima*	Rattlesnake Grass	Naturalized	Limited	Annual	Graminoid
Poaceae (Grass Family)	*Briza minor*	Annual Quaking Grass	Naturalized	N/A	Annual	Graminoid
Poaceae (Grass Family)	*Bromus rubens*	Red Brome	Naturalized	High	Annual	Graminoid
Poaceae (Grass Family)	*Bromus sitchensis* var. *carinatus*	California Brome	Native	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Bromus diandrus*	Ripgut Brome	Naturalized	Moderate	Annual, Perennial	Graminoid
Poaceae (Grass Family)	*Bromus hordeaceus*	Soft Chess	Naturalized	Limited	Annual	Graminoid
Poaceae (Grass Family)	*Bromus laevipes*	Woodland Brome	Native	LR	Perennial	Graminoid
Poaceae (Grass Family)	*Cynosurus echinatus*	Bristly Dogtail Grass	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Dactylis glomerata*	Orchard Grass	Naturalized	Limited	Perennial	Graminoid
Poaceae (Grass Family)	*Danthonia californica*	California Oat Grass	Native	N/A	Perennial	Graminoid

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Poaceae (Grass Family)	*Ehrharta erecta*	Panic Veldt Grass	Naturalized	EDRR, Moderate	Perennial	Graminoid
Poaceae (Grass Family)	*Elymus californicus*	California Bottle-Brush Grass	Native	4.3	Perennial	Graminoid
Poaceae (Grass Family)	*Elymus glaucus* ssp. *glaucus*	Blue Wildrye	Native	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Elymus triticoides*	Beardless Wild Rye	Native	LR	Perennial	Graminoid
Poaceae (Grass Family)	*Festuca bromoides*	Brome Fescue	Naturalized	N/A	Annual	Graminoid
Poaceae (Grass Family)	*Festuca californica*	California Fescue	Native	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Festuca elmeri*	Coast Fescue	Native	LR	Perennial	Graminoid
Poaceae (Grass Family)	*Festuca perennis*	Rye Grass	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Glyceria x occidentalis*	Western Manna Grass	Naturalized	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Hordeum brachyantherum* ssp. *brachyantherum*	Meadow Barley	Native	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Hordeum marinum* ssp. *gussoneanum*	Mediterranean Barley	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Hordeum murinum* ssp. *leporinum*	Hare Barley	Naturalized	Moderate	Annual	Graminoid
Poaceae (Grass Family)	*Phalaris aquatica*	Harding Grass	Naturalized	Moderate	Perennial	Graminoid
Poaceae (Grass Family)	*Poa secunda* ssp. *secunda*	One-Sided Blue Grass	Native	N/A	Perennial	Graminoid
Poaceae (Grass Family)	*Polypogon monspeliensis*	Annual Beard Grass	Naturalized	Limited	Annual	Graminoid
Poaceae (Grass Family)	*Stipa lepida*	Foothill Needle Grass	Native	N/A	Perennial	Graminoid
Polygonaceae (Buckwheat Family)	*Eriogonum nudum* var. *nudum*	Naked Wild Buckwheat	Native	N/A	Perennial	Subshrub, Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Polygonaceae (Buckwheat Family)	*Persicaria punctata*	Dotted Smartweed	Native	N/A	Perennial	Forb/herb
Polygonaceae (Buckwheat Family)	*Rumex acetosella*	Sheep Sorrel	Naturalized	Moderate	Perennial	Forb/herb
Polygonaceae (Buckwheat Family)	*Rumex conglomeratus*	Clustered Dock	Naturalized	N/A	Perennial	Forb/herb
Polygonaceae (Buckwheat Family)	*Rumex pulcher*	Fiddle Dock	Naturalized	N/A	Perennial	Forb/herb
Polypodiaceae (Polypody Family)	*Polypodium californicum*	California Polypody	Native	N/A	Perennial	Forb/herb
Polypodiaceae (Polypody Family)	*Polypodium glycyrrhiza*	Licorice Fern	Native	N/A	Perennial	Forb/herb
Pteridaceae (Maidenhair Fern Family)	*Adiantum jordanii*	California Maidenhair	Native	N/A	Perennial	Forb/herb
Pteridaceae (Maidenhair Fern Family)	*Pellaea andromedifolia*	Coffee Fern	Native	N/A	Perennial	Forb/herb
Pteridaceae (Maidenhair Fern Family)	*Pentagramma triangularis* ssp. *triangularis*	Goldback Fern	Native	N/A	Perennial	Forb/herb
Ranunculaceae (Buttercup Family)	*Actaea rubra*	Red Baneberry	Native	LR	Perennial	Forb/herb
Ranunculaceae (Buttercup Family)	*Aquilegia formosa*	Western Columbine	Native	N/A	Perennial	Forb/herb
Ranunculaceae (Buttercup Family)	*Clematis lasiantha*	Chaparral Clematis	Native	N/A	Perennial	Vine
Ranunculaceae (Buttercup Family)	*Ranunculus californicus* var. *californicus*	California Buttercup	Native	N/A	Perennial	Forb/herb
Ranunculaceae (Buttercup Family)	*Ranunculus hebecarpus*	Delicate Buttercup	Native	N/A	Annual	Forb/herb
Ranunculaceae (Buttercup Family)	*Ranunculus muricatus*	Spinyfruit Buttercup	Naturalized	N/A	Annual, Biennial, Perennial	Forb/herb
Rhamnaceae (Buckthorn Family)	*Ceanothus oliganthus* var. *sorediatus*	Jim Brush	Native	N/A	Perennial	Shrub

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Rhamnaceae (Buckthorn Family)	*Ceanothus thyrsiflorus* var. *thyrsiflorus*	Blue Blossom	Native	N/A	Perennial	Shrub
Rhamnaceae (Buckthorn Family)	*Frangula californica* ssp. *californica*	California Coffeeberry	Native	N/A	Perennial	Shrub
Rosaceae (Rose Family)	*Cotoneaster franchetii*	Franchet's Cotoneaster	Naturalized	Moderate	Perennial	Shrub
Rosaceae (Rose Family)	*Drymocallis glandulosa* var. *glandulosa*	Sticky Cinquefoil	Native	N/A	Perennial	Forb/herb
Rosaceae (Rose Family)	*Fragaria vesca*	Wood Strawberry	Native	N/A	Perennial	Forb/herb
Rosaceae (Rose Family)	*Heteromeles arbutifolia*	Toyon	Native	N/A	Perennial	Tree, Shrub
Rosaceae (Rose Family)	*Holodiscus discolor*	Oceanspray	Native	N/A	Perennial	Shrub
Rosaceae (Rose Family)	*Oemleria cerasiformis*	Indian Plum	Native	N/A	Perennial	Tree, Shrub
Rosaceae (Rose Family)	*Physocarpus capitatus*	Pacific Ninebark	Native	N/A	Perennial	Shrub
Rosaceae (Rose Family)	*Prunus cerasifera*	Cherry Plum	Naturalized	Limited	Perennial	Tree
Rosaceae (Rose Family)	*Prunus virginiana* var. *demissa*	Western Choke Cherry	Native	N/A	Perennial	Tree, Shrub
Rosaceae (Rose Family)	*Pyracantha angustifolia*	Slender Firethorn	Naturalized	Limited	Perennial	Shrub
Rosaceae (Rose Family)	*Rosa californica*	California Rose	Native	N/A	Perennial	Subshrub
Rosaceae (Rose Family)	*Rosa gymnocarpa*	Wood Rose	Native	N/A	Perennial	Subshrub
Rosaceae (Rose Family)	*Rubus armeniacus*	Himalayan Blackberry	Naturalized	EDRR, High	Perennial	Subshrub
Rosaceae (Rose Family)	*Rubus parviflorus*	Thimbleberry	Native	N/A	Perennial	Subshrub
Rosaceae (Rose Family)	*Rubus ursinus*	California Blackberry	Native	N/A	Perennial	Subshrub

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Rosaceae (Rose Family)	*Spiraea contoniensis*	Reeve's Spiraea	Cultivar	N/A	Perennial	Shrub
Rubiaceae (Madder Family)	*Galium aparine*	Goose Grass	Native	N/A	Annual	Vine, Forb/herb
Rubiaceae (Madder Family)	*Galium porrigens* var. *porrigens*	Graceful Bedstraw	Native	N/A	Perennial	Vine, Shrub
Rubiaceae (Madder Family)	*Galium porrigens* var. *tenue*	Graceful Bedstraw	Native	N/A	Perennial	Vine, Shrub
Rubiaceae (Madder Family)	*Galium triflorum*	Sweet-Scented Bedstraw	Native	N/A	Perennial	Forb/herb, Vine
Rubiaceae (Madder Family)	*Sherardia arvensis*	Field Madder	Naturalized	N/A	Annual	Forb/herb
Ruscaceae (Butcher's-broom Family)	*Maianthemum stellatum*	Starry False Lily Of The Valley	Native	N/A	Perennial	Forb/herb
Salicaceae (Willow Family)	*Populus nigra*	Black Poplar	Naturalized	N/A	Perennial	Tree
Salicaceae (Willow Family)	*Salix laevigata*	Red Willow	Native	N/A	Perennial	Shrub
Salicaceae (Willow Family)	*Salix lasiolepis*	Arroyo Willow	Native	N/A	Perennial	Tree, Shrub
Salicaceae (Willow Family)	*Salix scouleriana*	Scouler's Willow	Native	LR	Perennial	Tree, Shrub
Sapindaceae (Soapberry Family)	*Acer macrophyllum*	Big-Leaf Maple	Native	N/A	Perennial	Tree
Sapindaceae (Soapberry Family)	*Aesculus californica*	California Buckeye	Native	N/A	Perennial	Tree, Shrub
Saxifragaceae (Saxifrage Family)	*Tellima grandiflora*	Bigflower Tellima	Native	N/A	Perennial	Forb/herb
Saxifragaceae (Saxifrage Family)	*Tiarella trifoliata* var. *unifoliata*	Sugarscoop	Native	LR	Perennial	Forb/herb
Scrophulariaceae (Figwort Family)	*Scrophularia californica*	California Figwort	Native	N/A	Perennial	Forb/herb
Solanaceae (Potato Family)	*Solanum americanum*	American Black Nightshade	Native	N/A	Annual, Perennial	Subshrub, Forb/herb

Family Name	Scientific Name	Common Name	Origin	Status[1]	Duration	Habit
Solanaceae (Potato Family)	*Solanum douglasii*	Greenspot Nightshade	Native	N/A	Perennial	Subshrub, Forb/herb
Solanaceae (Potato Family)	*Solanum umbelliferum*	Bluewitch Nightshade	Native	N/A	Perennial	Subshrub, Forb/herb
Taxaceae (Yew Family)	*Torreya californica*	California-Nutmeg	Native	N/A	Perennial	Tree
Themidaceae (Brodiaea Family)	*Dipterostemon capitatus*	Bluedicks	Native	N/A	Perennial	Forb/herb
Thymelaeaceae (Mezereum Family)	*Dirca occidentalis*	Western Leatherwood	Native	1B.2	Perennial	Shrub
Urticaceae (Nettle Family)	*Urtica dioica* ssp. *holosericea*	Hoary Nettle	Native	N/A	Perennial	Forb/herb
Valerianaceae (Valerian Family)	*Plectritis macrocera*	Longhorn Plectritis	Native	N/A	Annual	Forb/herb
Verbenaceae (Verbena Family)	*Verbena lasiostachys* var. *scabrida*	Robust Vervain	Native	N/A	Perennial	Forb/herb
Violaceae (Violet Family)	*Viola glabella*	Stream Violet	Native	N/A	Perennial	Forb/herb
Violaceae (Violet Family)	*Viola sempervirens*	Evergreen Violet	Native	N/A	Perennial	Forb/herb

1. California Invasive Plant Council Rating (2021) or California Rare Plant Rank (CNPS 2021)
   LR = Locally rare taxon
   EDRR = Early Detection Rapid Response Watch List or high priority invasive plant species for mapping and treatment (weed species of the Santa Cruz Mountains).

∗ Native to California, but not to the study area.

Notes:
Nomenclature corresponds to Jepson Manual, Second Edition (Baldwin et al. 2012) and Jepson Online Interchange (2021).
See **Appendix C** for CRPR rank definitions.

APPENDIX E:

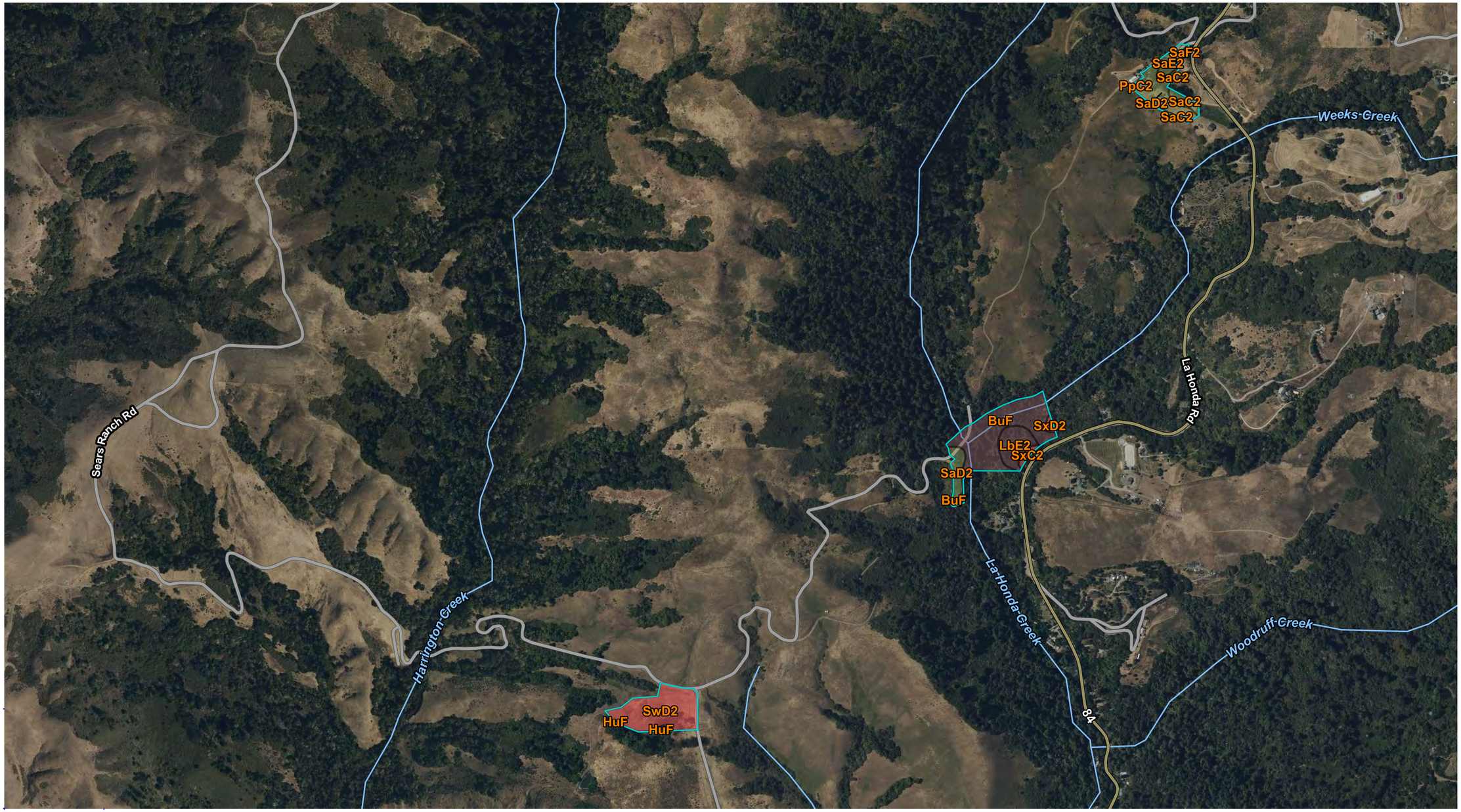
USDA Soil Texture and pH Maps of the Project Sites

122° 18' 27" W

122° 15' 26" W

Joins sheet 4

37° 21' 29" N



Joins sheet 6

37° 20' 9" N

122° 18' 27" W

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

Joins sheet 7

122° 15' 26" W

Joins sheet 8

5

Map Sheet Location

Natural Resources Conservation Service

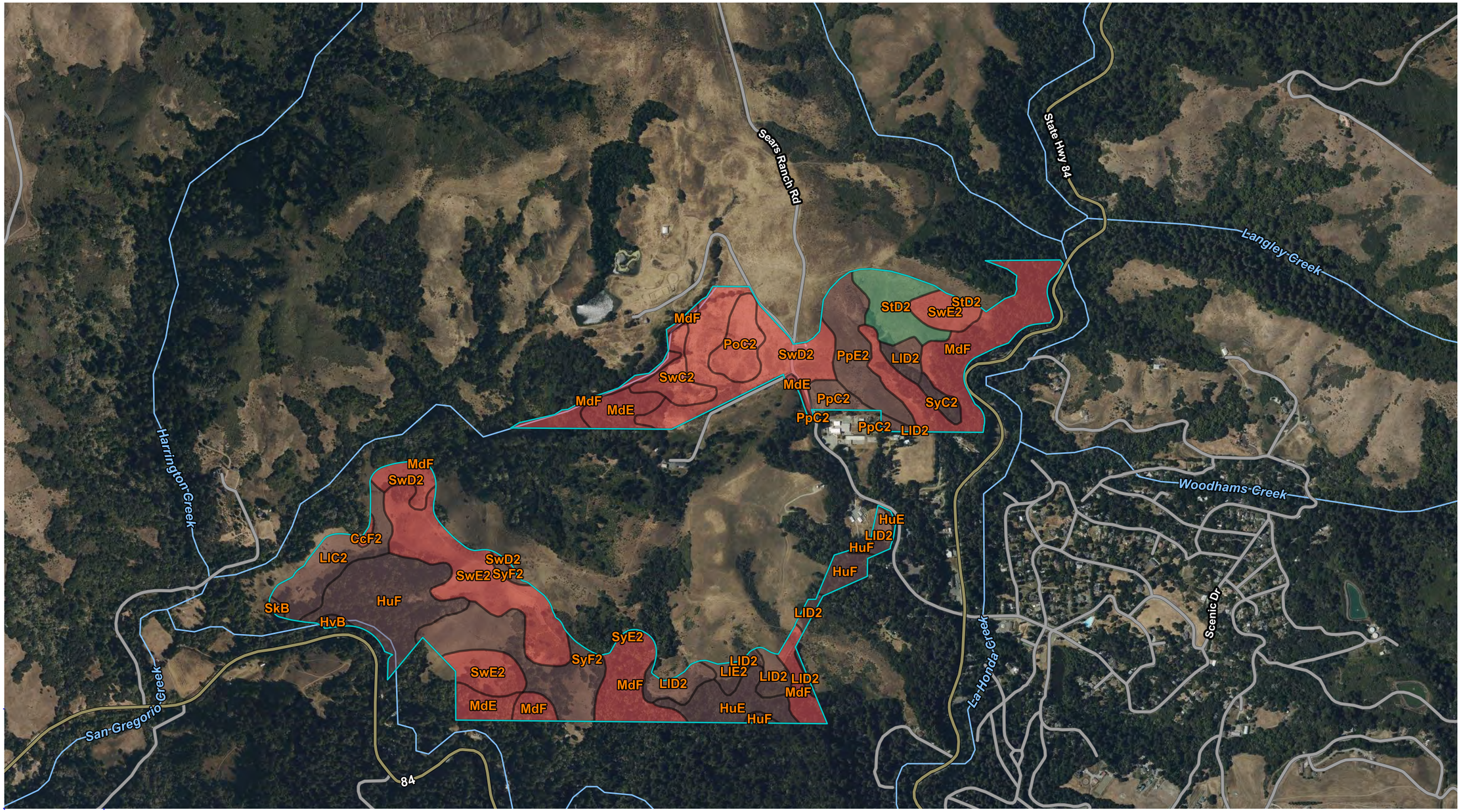
Web Soil Survey
National Cooperative Soil Survey

122° 18' 27" W

122° 15' 26" W

Joins sheet 6

37° 20' 9" N



37° 18' 49" N

122° 18' 27" W

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

0 150 300 600 900 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84

Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

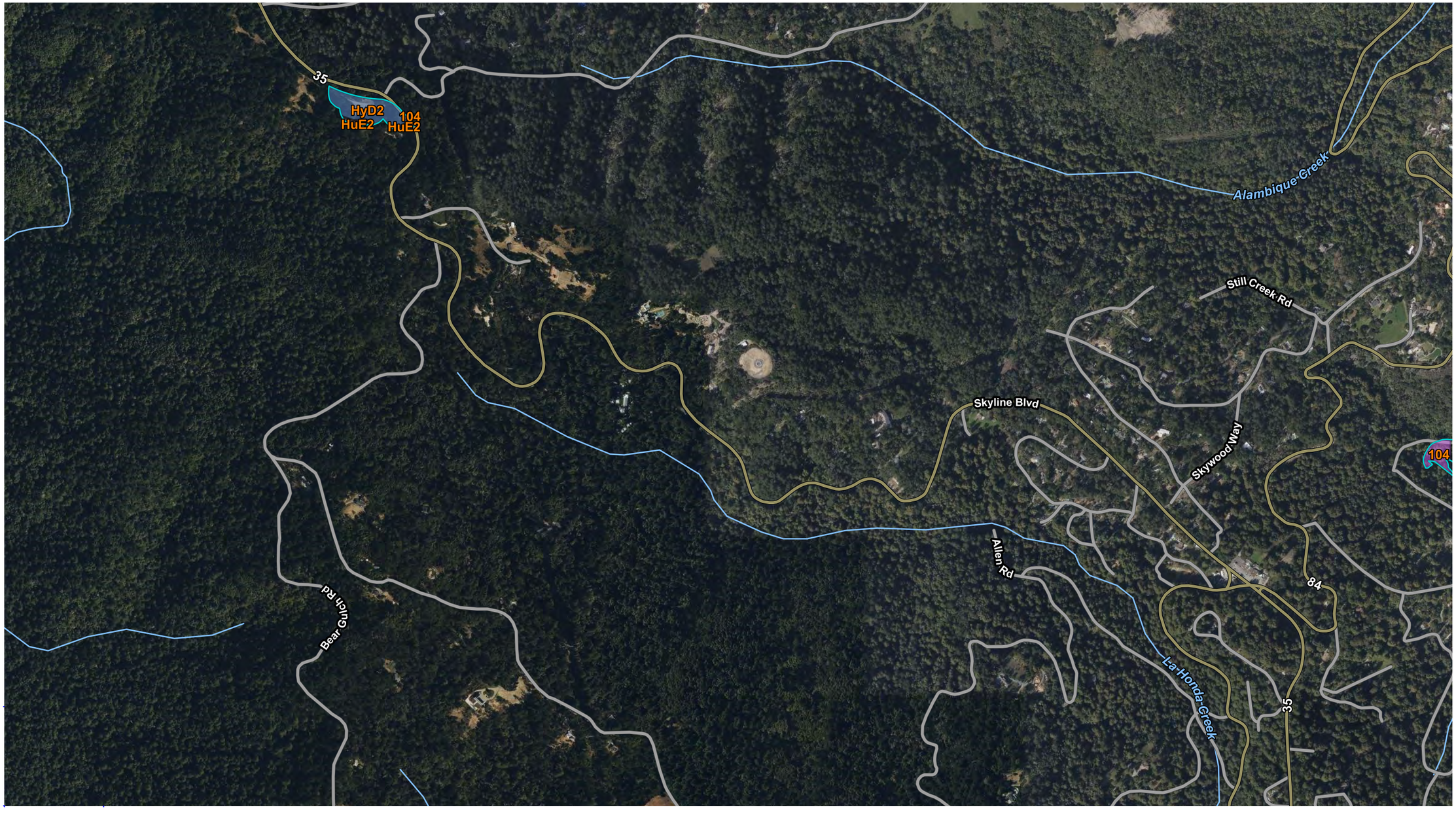
Map Sheet Location

11/22/2021

122° 18' 27" W

122° 15' 26" W

37° 24' 8" N



37° 22' 49" N

Joins sheet 2

Joins sheet 3

Joins sheet 4

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

1	

Map Sheet Location

122° 15' 26" W

122° 12' 24" W

37° 24' 8" N

37° 24' 8" N

Joins sheet 1

Joins sheet 3

37° 22' 49" N

37° 22' 49" N

122° 15' 26" W

Joins sheet 4

122° 12' 24" W

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

	2

Map Sheet Location

USDA **Natural Resources Conservation Service**

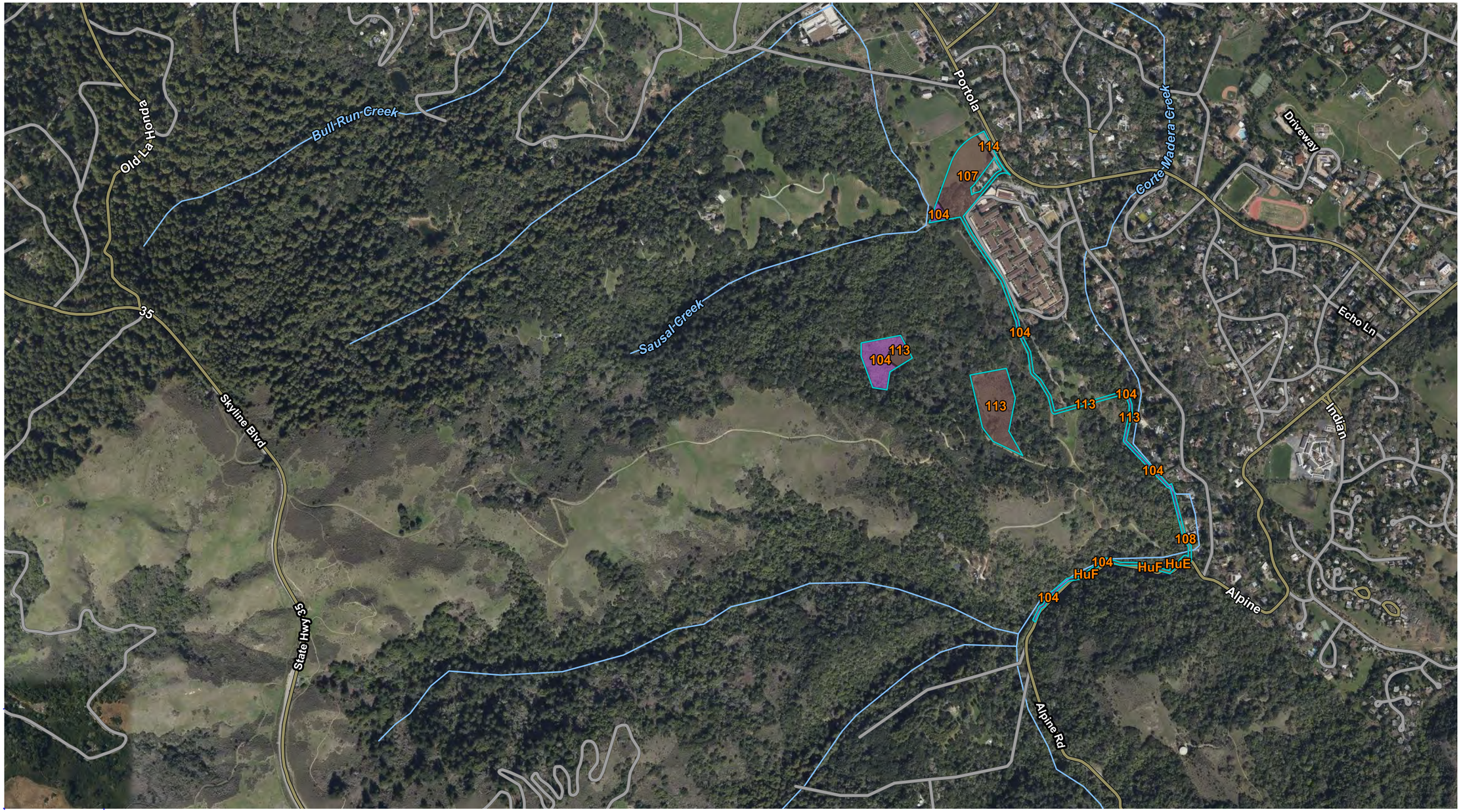
Joins sheet 1

122° 15' 26" W

122° 12' 24" W

37° 22' 49" N

37° 22' 49" N



Joins sheet 3

37° 21' 29" N

37° 21' 29" N

Joins sheet 5

122° 15' 26" W

Joins sheet 6

122° 12' 24" W

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

Meters 0 150 300 600 900

Feet 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

4

Map Sheet Location

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Channery loam
- Clay
- Clay loam
- Gravelly loam
- Loam
- Sandy loam
- Not rated or not available

Soil Rating Lines
- Channery loam
- Clay
- Clay loam
- Gravelly loam
- Loam
- Sandy loam
- Not rated or not available

Soil Rating Points
- Channery loam
- Clay
- Clay loam
- Gravelly loam
- Loam
- Sandy loam
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Mateo Area, California
Survey Area Data: Version 15, Sep 9, 2021

Soil Survey Area: San Mateo County, Eastern Part, and San Francisco County, California
Survey Area Data: Version 17, Sep 9, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2017—Mar 21, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuF	Butano loam, very steep	Loam	9.1	2.9%
CcF2	Cayucos clay loam, very steep, eroded	Clay loam	0.6	0.2%
HuE	Hugo and Josephine loams, steep	Loam	9.3	3.0%
HuE2	Hugo and Josephine loams, steep, eroded	Loam	0.5	0.2%
HuF	Hugo and Josephine loams, very steep	Loam	25.8	8.3%
HvB	Hugo and Josephine loams, very deep, gently sloping	Loam	0.7	0.2%
HyD2	Hugo and Josephine sandy loams, moderately steep, eroded	Sandy loam	3.9	1.3%
LbE2	Laughlin-Sweeney loams, steep, eroded	Loam	2.6	0.8%
LlC2	Lobitos loam, sloping, eroded	Loam	11.3	3.6%
LlD2	Lobitos loam, moderately steep, eroded	Loam	13.3	4.3%
LlE2	Lobitos loam, steep, eroded	Loam	2.4	0.8%
MdE	Mindego clay loam, steep	Clay loam	9.8	3.1%
MdF	Mindego clay loam, very steep	Clay loam	45.4	14.6%
PoC2	Pomponio clay loam, sloping, eroded	Clay loam	7.0	2.3%
PpC2	Pomponio loam, sloping, eroded	Loam	3.9	1.3%
PpE2	Pomponio loam, steep, eroded	Loam	12.3	3.9%
SaC2	Santa Lucia loam, sloping, eroded	Channery loam	0.9	0.3%
SaD2	Santa Lucia loam, moderately steep, eroded	Channery loam	4.5	1.5%
SaE2	Santa Lucia loam, steep, eroded	Channery loam	1.3	0.4%
SaF2	Santa Lucia loam, very steep, eroded	Channery loam	0.1	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
SkB	Soquel loam, gently sloping	Loam	0.5	0.1%
StD2	Sweeney clay, moderately steep, eroded	Clay	9.8	3.1%
SwC2	Sweeney clay loam, sloping, eroded	Clay loam	5.8	1.9%
SwD2	Sweeney clay loam, moderately steep, eroded	Clay loam	32.7	10.5%
SwE2	Sweeney clay loam, steep, eroded	Clay loam	34.7	11.1%
SxC2	Sweeney clay loam, deep, sloping, eroded	Clay loam	0.4	0.1%
SxD2	Sweeney clay loam, deep, moderately steep, eroded	Clay loam	0.3	0.1%
SyC2	Sweeney loam, sloping, eroded	Loam	2.0	0.6%
SyE2	Sweeney loam, steep, eroded	Loam	0.2	0.1%
SyF2	Sweeney loam, very steep, eroded	Loam	19.8	6.4%
Subtotals for Soil Survey Area			**270.7**	**87.0%**
Totals for Area of Interest			**311.1**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Alambique-McGarvey complex, 30 to 75 percent slopes	Gravelly loam	25.2	8.1%
107	Botella loam, 0 to 5 percent slopes	Loam	6.9	2.2%
108	Botella-Urban land complex, 0 to 5 percent slopes		0.2	0.1%
113	Fagan loam, 15 to 50 percent slopes	Loam	7.6	2.4%
114	Francisquito-Urban land complex, 5 to 15 percent slopes		0.5	0.2%
Subtotals for Soil Survey Area			**40.4**	**13.0%**
Totals for Area of Interest			**311.1**	**100.0%**

Description

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Rating Options

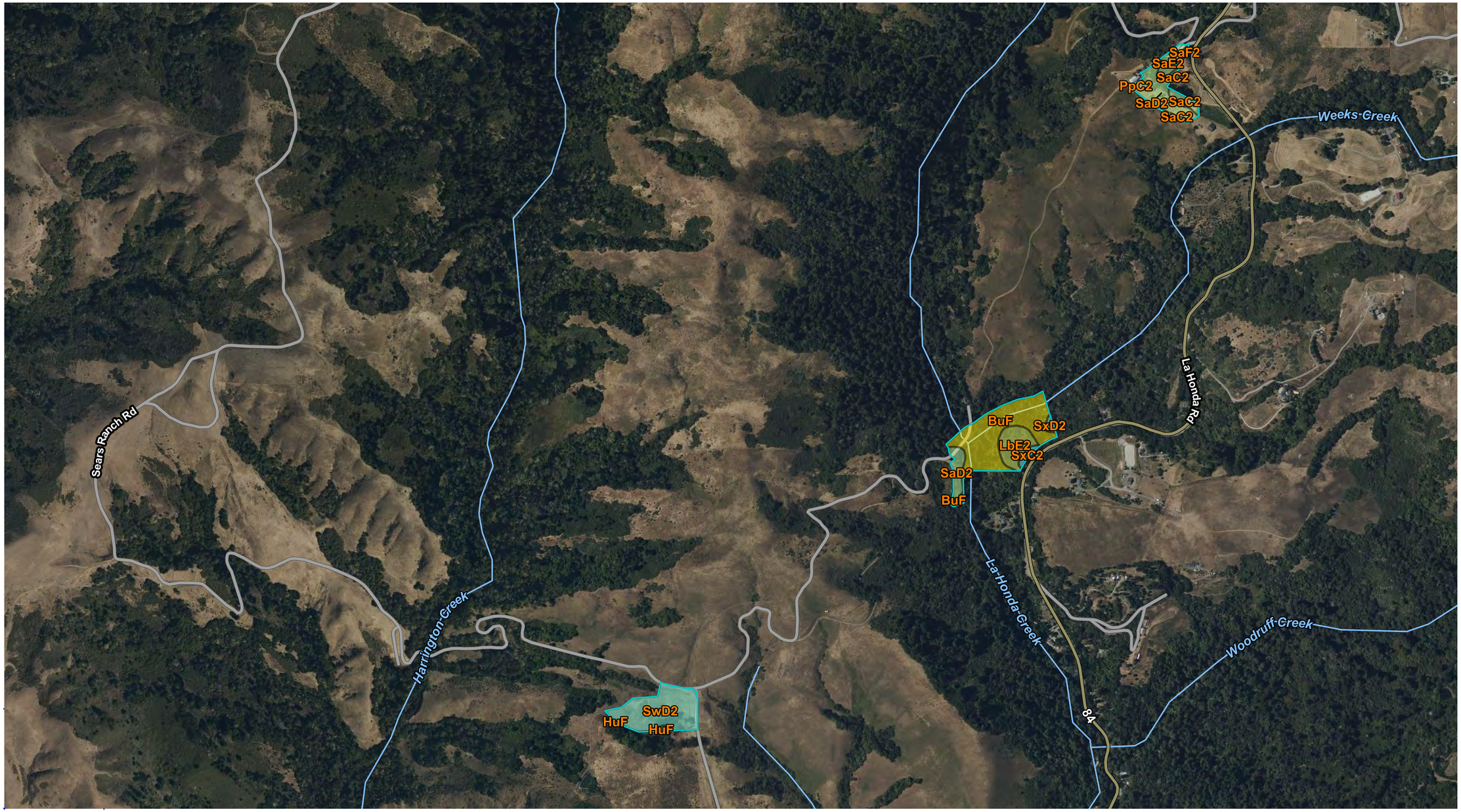
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

122° 18' 27" W
122° 15' 26" W
37° 21' 29" N
37° 20' 9" N



Joins sheet 4
Joins sheet 6
Joins sheet 7
Joins sheet 8

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

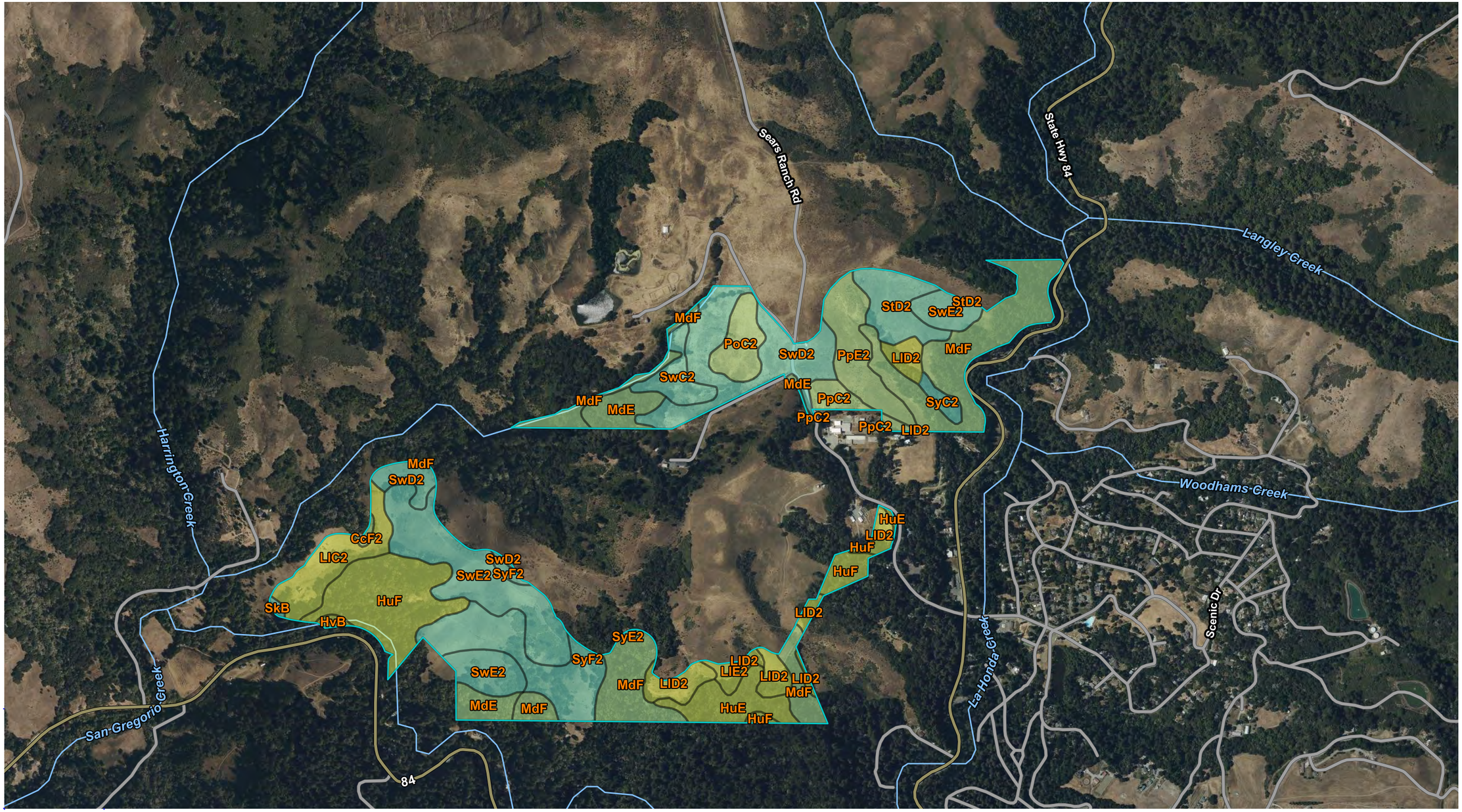
Map projection: Web Mercator Corner coordinates: WGS84

Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Map Sheet Location: 5

122° 18' 27" W
122° 15' 26" W
37° 20' 9" N
37° 18' 49" N
Joins sheet 6
Joins sheet 8



Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

0 150 300 600 900 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84

Natural Resources Conservation Service

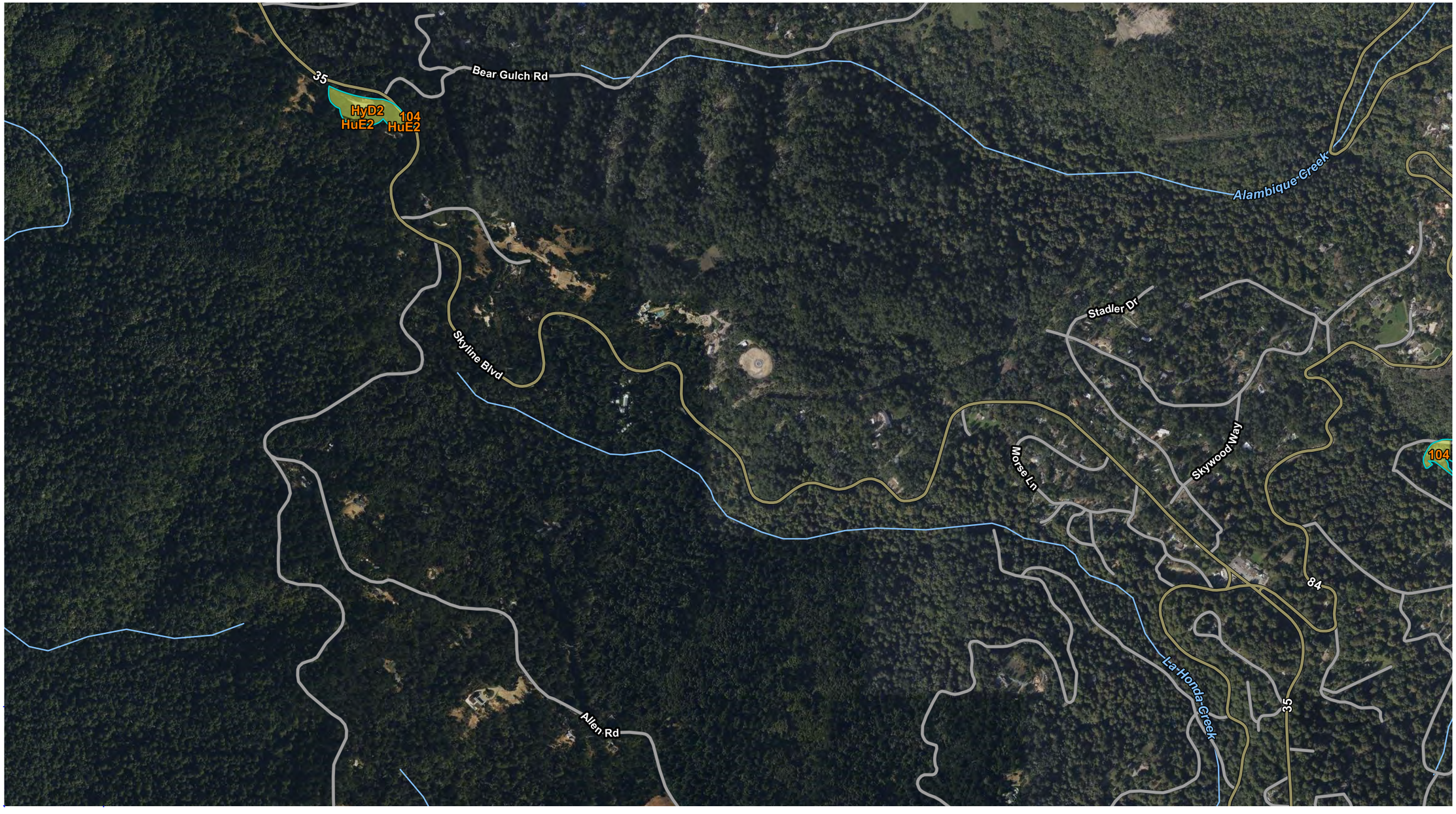
Web Soil Survey
National Cooperative Soil Survey

7
Map Sheet Location

122° 18' 27" W

122° 15' 26" W

37° 24' 8" N



37° 22' 49" N

Joins sheet 2

Joins sheet 3

Joins sheet 4

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84

1	

Map Sheet Location

122° 15' 26" W

122° 12' 24" W

37° 24' 8" N

37° 22' 49" N

Joins sheet 1

Joins sheet 3

Joins sheet 4

Map Scale: 1:12,000 if printed on B landscape (17" x 11") sheet.

N

0 150 300 600 900 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84

	2

Map Sheet Location

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (ph < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (ph < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (ph < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

pH (1 to 1 Water)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuF	Butano loam, very steep	5.1	9.1	2.9%
CcF2	Cayucos clay loam, very steep, eroded	6.1	0.6	0.2%
HuE	Hugo and Josephine loams, steep	5.9	9.3	3.0%
HuE2	Hugo and Josephine loams, steep, eroded	5.9	0.5	0.2%
HuF	Hugo and Josephine loams, very steep	5.9	25.8	8.3%
HvB	Hugo and Josephine loams, very deep, gently sloping	6.0	0.7	0.2%
HyD2	Hugo and Josephine sandy loams, moderately steep, eroded	5.8	3.9	1.3%
LbE2	Laughlin-Sweeney loams, steep, eroded	5.8	2.6	0.8%
LlC2	Lobitos loam, sloping, eroded	6.0	11.3	3.6%
LlD2	Lobitos loam, moderately steep, eroded	6.0	13.3	4.3%
LlE2	Lobitos loam, steep, eroded	6.0	2.4	0.8%
MdE	Mindego clay loam, steep	6.5	9.8	3.1%
MdF	Mindego clay loam, very steep	6.5	45.4	14.6%
PoC2	Pomponio clay loam, sloping, eroded	6.3	7.0	2.3%
PpC2	Pomponio loam, sloping, eroded	6.3	3.9	1.3%
PpE2	Pomponio loam, steep, eroded	6.3	12.3	3.9%
SaC2	Santa Lucia loam, sloping, eroded	6.1	0.9	0.3%
SaD2	Santa Lucia loam, moderately steep, eroded	6.1	4.5	1.5%
SaE2	Santa Lucia loam, steep, eroded	6.1	1.3	0.4%
SaF2	Santa Lucia loam, very steep, eroded	6.1	0.1	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
SkB	Soquel loam, gently sloping	7.0	0.5	0.1%
StD2	Sweeney clay, moderately steep, eroded	6.6	9.8	3.1%
SwC2	Sweeney clay loam, sloping, eroded	6.6	5.8	1.9%
SwD2	Sweeney clay loam, moderately steep, eroded	6.6	32.7	10.5%
SwE2	Sweeney clay loam, steep, eroded	6.6	34.7	11.1%
SxC2	Sweeney clay loam, deep, sloping, eroded	6.6	0.4	0.1%
SxD2	Sweeney clay loam, deep, moderately steep, eroded	6.6	0.3	0.1%
SyC2	Sweeney loam, sloping, eroded	6.6	2.0	0.6%
SyE2	Sweeney loam, steep, eroded	6.6	0.2	0.1%
SyF2	Sweeney loam, very steep, eroded	6.6	19.8	6.4%
Subtotals for Soil Survey Area			**270.7**	**87.0%**
Totals for Area of Interest			**311.1**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
104	Alambique-McGarvey complex, 30 to 75 percent slopes	5.6	25.2	8.1%
107	Botella loam, 0 to 5 percent slopes	8.2	6.9	2.2%
108	Botella-Urban land complex, 0 to 5 percent slopes	8.2	0.2	0.1%
113	Fagan loam, 15 to 50 percent slopes	6.5	7.6	2.4%
114	Francisquito-Urban land complex, 5 to 15 percent slopes	6.1	0.5	0.2%
Subtotals for Soil Survey Area			**40.4**	**13.0%**
Totals for Area of Interest			**311.1**	**100.0%**

Description

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion. In general, soils that are either highly alkaline or highly acid are likely to be very corrosive to steel. The most common soil laboratory measurement of pH is the 1:1 water method. A crushed soil sample is mixed with an equal amount of water, and a measurement is made of the suspension.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 1

Bottom Depth: 24

Units of Measure: Inches