APPENDIX C:
BIOLOGICAL RESOURCES DATA

BIOLOGICAL ASSESSMENT

HEMBREE LANE OAKS
7842 HEMBREE LANE
WINDSOR, CA

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SUMMARY

The Hembree Lane Oaks project site is located at 7842 Hembree Lane in Windsor, CA (APN 163-080-047) (referred to as the "site") (Figure 1). Darren Wiemeyer, a qualified biologist and botanist, performed several site visits at the site. A preliminary site visit was performed on August 3, 2021 to map habitat types and to perform a special-status animal species habitat assessment. A site visit on January 26, 2022 was performed to observe ponding in seasonal wetlands at the site. Special-status plant species surveys were performed on March 23, April 16 and May 11, 2022. A wetland delineation was performed at the site on April 16, 2022.

Habitat types at the site consist of non-native annual grassland, valley oak woodland, riparian woodland and seasonal wetland which changes into a seasonal drainage at the southern end of the site (Figure 4). Lobb's aquatic buttercup (*Ranunculus lobbii*), which is a CNPS 4.2 special-status plant species occurs in the seasonal wetland at the southeast corner of the site.

The site is not within the potential range of the California tiger salamander (*Ambystoma californiense*) (CTS) as mapped by the United States Fish and Wildlife Service (USFWS) according to the Santa Rosa Plain Conservation Strategy (SRPCS) (SRPCST, 2005). The site is categorized as "Presence for CTS is not likely but Mitigation for listed plants may be required" according to Figure 3 of the SRPCS (SRPCST, 2005). The SRPCS states that "neither surveys nor mitigation would be required for projects on these properties".

In addition, the site is categorized as "May affect listed plants, but would not likely affect CTS" according to the Programmatic Biological Opinion (PBO) – Re-initiation of Formal Consultation of Issuance of Clean Water Act, Section 404 Permits by the U.S. Army Corps of Engineers (Corps) on the Santa Rosa Plain, Sonoma County, California dated June 11, 2020 (USFWS, 2020). According to these two documents, mitigation for potential impacts to California tiger salamander habitat will not be required and a CTS site assessment will not need to be conducted.

The proposed project is a 3.03-acre single-family home residential development that will develop the western portion and a part of the southeast portion of the site. The project will result in the loss of non-native annual grassland, valley oak woodland, riparian woodland, seasonal wetland and seasonal drainage habitats at the site. A total of 0.192-acres of seasonal wetland habitat is proposed to be filled as a result of the project. In addition, a total of 75-linear feet of seasonal drainage and 0.06-acres of riparian woodland habitat are proposed to be impacted as a result of the extension of Country Meadow Lane.

A total of 315 trees are proposed to be removed as a result of site developments. A total of 271 trees are proposed to be preserved. Approximately 2.07-acres of the eastern and southern portions of the site will be dedicated to the Town of Windsor as an open space preserve to preserve valley oak woodland and seasonal wetland habitat.

Site development activities and tree removal has the potential to impact special-status bee species, special-status bat species, special-status bird species, western pond turtle and native nesting birds. All recommended avoidance, minimization and mitigation measures are proposed in Section 8 of this report to reduce impacts to non-native annual grassland, valley oak woodland, riparian woodland, seasonal wetland and seasonal drainage habitats and to special-status animal species to a less than significant level. These avoidance and minimization measures will reduce identified potential impacts to biological resources to less than significant levels.

1 PURPOSE OF STUDY

The purpose of this Biological Assessment is to determine whether the site provides habitat for any special-status plant species, special-status animal species, or special-status habitats, including seasonal wetlands and waterways. In the event these resources exist on site, the significance of potential direct and indirect impacts to biological resources would be assessed pursuant to provisions of the California Environmental Quality Act (CEQA).

This Biological Assessment will also be in compliance with the requirements of the Santa Rosa Plain Conservation Strategy as well as the Town of Windsor CEQA requirements per the Memo from Peter Chamberlin dated May 29, 2008 entitled "Contents of Biological Assessments". In addition, this Preliminary Biological Assessment will discuss compliance with the Programmatic Biological Opinion (PBO) – Re-initiation of Formal Consultation of Issuance of Clean Water Act, Section 404 Permits by the U.S. Army Corps of Engineers (Corps) on the Santa Rosa Plain, Sonoma County, California dated June 11, 2020 (USFWS, 2020).

This Biological Assessment will identify appropriate mitigation measures to off-set potential direct and indirect impacts to biological resources on the subject site as a result of site development.

1.1 PAST STUDIES

Past studies at the site consist of special-status plant species in 2006 and 2008 and a wetland delineation in 2006 by Charlie Patterson (Patterson, 2016). Because these studies are outdated, a re-delineation of wetlands and a season of updated special-status plant species surveys has been performed at the site. Wiemeyer Ecological Studies prepared a Preliminary Biological Assessment dated August 13, 2021 (WES, 2021).

2 SITE DESCRIPTION

The site is located at 7842 Hembree Lane, Windsor (APN 163-080-047) (Figure 1). The site is 5.10-acres in size. The site has no structures. There are many bike trails consisting of built jumps and berms with soil borrow pits. Photos of the site are included as Photo Plate A and Photo Plate B in the Figures section.

2.1 HABITATS

Habitat types at the site consist of non-native annual grassland, valley oak woodland, riparian woodland and seasonal wetland which changes into a seasonal drainage at the southern end of the site (Figure 4). The long, forked seasonal wetland swale in the center of the site appears to have been re-directed and channelized at the southern end of the site where the swale makes a sharp turn from south to west. The western end of this seasonal wetland changes into a seasonal drainage as it begins to exhibit a defined bed and bank. At the far southern end of this feature, more typical seasonal drainage characteristics occur with a soil and gravel bed, then revetment rock just before a culvert.

2.2 SURROUNDING LANDS

The site is completely surrounded by residential developments. Robbins Park is located directly adjacent to the east of the site.

2.3 TOPOGRAPHY

The site is flat and elevations range from 117-122 feet above sea level (Figure 2).

2.4 HYDROLOGY

The site is flat and appears that surface water runoff from the site flows into the seasonal wetland swale, except for the far eastern portion of the site where surface water runoff flows into the seasonal wetland depression at the eastern end of the site (Figure 4). The seasonal wetland swale is disconnected from other surface waters to the north or south of the site and does not appear to be part of a mapped stream (Figure 2).

The seasonal wetland swale receives water from residential areas to the northeast, then connects to a culvert at the southern end of the site. It is unknown where this culvert connects, but it appears to connect to Pool Creek on the east side of Highway 101. Pool Creek flows west under Highway 101 and connects to Windsor Creek. Windsor Creek flows into Mark West Creek which flows into the Russian River. The Russian River continues west and is the ultimate drainage prior to its terminus at the Pacific Ocean.

2.5 SOIL TYPES

The site is mapped as having a single soil type, Huichica loam, shallow, ponded, 0 to 5 percent slopes (HwB) (Figure 3).

3 PROJECT DESCRIPTION

The proposed project is a 3.03-acre, 24 lot single-family home residential development that will develop the western portion and a part of the southeast portion of the site. The proposed project will result in the loss of non-native annual grassland, valley oak woodland, riparian woodland, seasonal wetland and seasonal drainage habitats at the site. The majority of the long seasonal wetland is to be preserved. The proposed project will provide a development setback to the long seasonal wetland from 2 feet at the southwest corner of Lot 16 to 32 feet near the common line of Lots 21 and 22.

A total of 0.192-acres of seasonal wetland habitat is proposed to be filled as a result of the project from development of the homes, the widening and improvements to Cornell Avenue, a storm drain outfall and the extension of Country Meadow Drive. In addition, a total of 75-linear feet of seasonal drainage and 0.06-acres of riparian woodland habitat are proposed to be impacted as a result of the extension of Country Meadow Lane. A Preliminary Analysis of Existing Drainage Ditches report is included in Appendix D. A total of 315 trees are proposed to be removed as a result of site developments. A Tree Inventory Report and Tree Preservation Plan is included in Appendix E.

Approximately 2.07-acres of the eastern and southern portions of the site will be dedicated to the Town of Windsor as an open space preserve to preserve valley oak woodland and seasonal wetland habitat. A development agreement with the Town of Windsor is proposed which will allow the developer to dedicate the open space area to the Town of Windsor, thereby allowing the long-term preservation of trees and other habitats in exchange for not requiring the developer to pay tree mitigation in-leu fees for the portion of the site that will be developed. Furthermore, the Town of Windsor has expressed support for a "Development Agreement" to pursue a "net-zero" tree mitigation fee.

Additionally, a riparian woodland and bee/insect habitat planting plan will be incorporated into the project in the open space preserve area. Riparian woodland mitigation planting and bee/insect habitat planting are proposed along the northern and southern sides of the western end of the long seasonal wetland swale. A detailed planting plan is not included with this biological assessment, but will be prepared and submitted for approval.

A Site Plan and a Site Plan with Wetland Overlay is included in the Figures section.

4 REGULATORY CONTEXT

4.1 UNITED STATES FISH AND WILDLIFE SERVICE

The United States Fish and Wildlife Service (USFWS) administers the federal Endangered Species Act (ESA). Listed threatened and endangered species are protected from take, defined as direct or indirect harm, unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead

agency via ESA Section 7 consultation. Pursuant to the requirements of ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the study area and determine whether the proposed federal action will jeopardize the continued existence of the species.

Under ESA, habitat loss is considered to be an adverse effect to a species. In addition, the action agency is required to determine whether its action is likely to jeopardize the continued existence of any species that is proposed for listing under ESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species. The USFWS also administers the federal Migratory Bird Treaty Act of 1918. Under this legislation, it is unlawful to destroy active nests, eggs, and young.

4.2 UNITED STATES ARMY CORPS OF ENGINEERS

The United States Army Corps of Engineers (USACE) administers the federal Clean Water Act (CWA). Section 404 of the CWA requires approval prior to discharging dredged or fill material into the waters of the United States. Waters of the United States includes essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. "Wetlands" are areas characterized by growth of wetland vegetation where the soil is saturated during a portion of the growing season or the surface is flooded during some part of most years. Wetlands generally include seasonally inundated wetlands, swamps, marshes, bogs and similar areas.

4.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA). It is state policy to conserve, protect, restore and enhance any endangered or threatened species and its habitat. The CDFW has jurisdiction over species that are formally listed as threatened or endangered under the CESA. The CESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the state. In addition to CESA, the California Native Plant Protection Act (NPPA) provides protection to endangered and rare plant species. The CDFW also maintains a list of species of special concern to be considered during CEQA review.

Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether any state-listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. If significant impacts to state listed species are identified, the state lead agency must adopt reasonable and prudent alternatives as specified by CDFW to prevent or mitigate for impacts. CDFW can authorize take of a state-listed species if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with the federal ESA, or if the director of CDFW issues a permit under Section 2080 in those cases where it is demonstrated that the impacts are minimized and mitigated.

CDFW also administers the California Fish and Game Code. California Fish and Game Code Section 3503.5 makes it unlawful to take, possess or destroy birds in the Falconiformes (birds of prey, vultures, eagles, falcons) and Strigiformes (owls) families, which can include nest disturbance from construction and other activities.

4.4 STATE WATER RESOURCES CONTROL BOARD

The State Water Resources Control Board (SWRCB) administers the state CWA. Under Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredge or fill material, and projects that qualify for a Nationwide Permit, must obtain water quality certification from the RWQCB that the project will uphold state water quality standards. The SWRCB also administers the National Pollutant Discharge Elimination System (NPDES) which includes the General Permit for Storm Water Discharges from Construction Activities.

4.5 CALIFORNIA NATIVE PLANT SOCIETY

The California Native Plant Society (CNPS) is a non-profit group dedicated to preserving the state's native flora. It has developed lists of plants of special concern in California (Skinner and Pavlik 1994). In the spring of 2011, CNPS officially changed the name "CNPS List" to "California Rare Plant Rank" (CRPR). The definitions of the ranks and the ranking system have not changed, and the ranks are still used to categorize the same degrees of concern, which are described as follows:

CRPR 1A: The plants with a California Rare Plant Rank of 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct as well as those plants which are presumed extirpated in California. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range. All of the plants constituting California Rare Plant Rank 1A meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to the California Environmental Quality Act (CEQA).

CRPR 1B: Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of taxa in the CNPS *Inventory*, with more than 1,000 plants assigned to this category of rarity. All of the plants constituting California Rare Plant Rank 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

CRPR 2: Except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2 would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act. Until 1979, a similar policy was followed in California. However, after the passage of the Native Plant Protection Act in 1979, plants were considered for protection without regard to their distribution outside the state. With California Rare Plant Rank 2, we recognize the importance of protecting the geographic range of widespread species. In this way we protect the diversity of our own state's flora and help maintain evolutionary processes and genetic diversity within species. All of the plants constituting California Rare Plant Rank 2 meet

the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

CRPR 3: The plants that comprise California Rare Plant Rank 3 are united by one common theme - we lack the necessary information to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting California Rare Plant Rank 3 are taxonomically problematic. For each California Rare Plant Rank 3 plant we have provided the known information and indicated in the "Notes" section of the CNPS *Inventory* record where assistance is needed. Some of the plants constituting California Rare Plant Rank 3 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. We strongly recommend that California Rare Plant Rank 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

CRPR 4: The plants in this category are of limited distribution or infrequent throughout a broader area in California. While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a California Rare Plant Rank 4 plant change, we will transfer it to a more appropriate rank. Very few of the plants constituting California Rare Plant Rank 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and we strongly recommend that California Rare Plant Rank 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

4.6 LITERATURE REVIEW

The CDFW California Natural Diversity Data Base (CNDDB) was queried for a list of all plant and animal species reported from the *Healdsburg, Santa Rosa, Mark West Springs, Geyserville, Sebastopol, Jimtown, Kenwood, Mt. St. Helena, and Guerneville* USGS 7.5-minute quadrangles (nine quad search) (CNDDB, 2021). The Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2021) was queried for a list of all plant species reported from the *Healdsburg, Santa Rosa, Mark West Springs, Geyserville, Sebastopol, Jimtown, Kenwood, Mt. St. Helena, and Guerneville* USGS 7.5-minute quadrangles.

The following table (Table 1) is a list of special-status plant species that have the potential to occur at the site based on habitat types that exist at the site. A full list of special-status plant species is provided in Appendix A.

Table 1. Special-Status Plant Species with the Potential to Occur in the Study Area.

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	1B.1	None	Endangered	May-Jul	Marshes and swamps, Riparian scrub
Amorpha californica var. napensis	Napa false indigo	1B.2	None	None	Apr-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	None	None	Mar-Jun	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	1B.3	None	None	(Jan)Mar-May(Jul)	Chaparral, Cismontane woodland, Lower montane coniferous forest
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	1B.1	None	None	Feb-Apr(May)	Chaparral, Cismontane woodland
Asclepias solanoana	serpentine milkweed	4.2	None	None	May-Jul(Aug)	Chaparral, Cismontane woodland, Lower montane coniferous forest
Astragalus breweri	Brewer's milk-vetch	4.2	None	None	Apr-Jun	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland
Astragalus claranus	Clara Hunt's milk-vetch	1B.1	Threatened	Endangered	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Astragalus clevelandii	Cleveland's milk-vetch	4.3	None	None	Jun-Sep	Chaparral, Cismontane woodland, Riparian forest
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Blennosperma bakeri	Sonoma sunshine	1B.1	Endangered	Endangered	Mar-May	Valley and foothill grassland, Vernal pools
Brodiaea leptandra	narrow-anthered brodiaea	1B.2	None	None	May-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
Calamagrostis ophitidis	serpentine reed grass	4.3	None	None	Apr-Jul	Chaparral, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland
Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	4.2	None	None	Apr-Jun	Chaparral, Lower montane coniferous forest, Valley and foothill grassland
Carex comosa	bristly sedge	2B.1	None	None	May-Sep	Coastal prairie, Marshes and swamps, Valley and foothill grassland
Castilleja ambigua var. ambigua	johnny-nip	4.2	None	None	Mar-Aug	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools
Ceanothus confusus	Rincon Ridge ceanothus	1B.1	None	None	Feb-Jun	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Ceanothus purpureus	holly-leaved ceanothus	1B.2	None	None	Feb-Jun	Chaparral, Cismontane woodland

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Centromadia parryi ssp. parryi	pappose tarplant	1B.2	None	None	May-Nov	Chaparral, Coastal prairie, Marshes and swamps, Meadows and seeps, Valley and foothill grassland
Clarkia imbricata	Vine Hill clarkia	1B.1	Endangered	Endangered	Jun-Aug	Chaparral, Valley and foothill grassland
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	4.3	None	None	Jul-Aug	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Cypripedium montanum	mountain lady's-slipper	4.2	None	None	Mar-Aug	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest
Delphinium bakeri	Baker's larkspur	1B.1	Endangered	Endangered	Mar-May	Broadleafed upland forest, Coastal scrub, Valley and foothill grassland
Delphinium uliginosum	swamp larkspur	4.2	None	None	May-Jun	Chaparral, Valley and foothill grassland
Downingia pusilla	dwarf downingia	2B.2	None	None	Mar-May	Valley and foothill grassland, Vernal pools
Elymus californicus	California bottle-brush grass	4.3	None	None	May-Aug(Nov)	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland
Erigeron biolettii	streamside daisy	3	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest
Eriogonum umbellatum var. bahiiforme	bay buckwheat	4.2	None	None	Jul-Sep	Cismontane woodland, Lower montane coniferous forest
Erythronium helenae	St. Helena fawn lily	4.2	None	None	Mar-May	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
Fritillaria liliacea	fragrant fritillary	1B.2	None	None	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland
Fritillaria purdyi	Purdy's fritillary	4.3	None	None	Mar-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest
Gilia capitata ssp. tomentosa	woolly-headed gilia	1B.1	None	None	May-Jul	Coastal bluff scrub, Valley and foothill grassland
Gratiola heterosepala	Boggs Lake hedge-hyssop	1B.2	Endangered	None	Apr-Aug	Marshes and swamps, Vernal pools
Harmonia nutans	nodding harmonia	4.3	None	None	Mar-May	Chaparral, Cismontane woodland
Helianthus exilis	serpentine sunflower	4.2	None	None	Jun-Nov	Chaparral, Cismontane woodland
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	1B.2	None	None	Apr-Nov	Valley and foothill grassland
Hesperevax caulescens	hogwallow starfish	4.2	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools
Horkelia parryi	Parry's horkelia	1B.2	None	None	Apr-Sep	Chaparral, Cismontane woodland
Horkelia tenuiloba	thin-lobed horkelia	1B.2	None	None	May-Jul(Aug)	Broadleafed upland forest, Chaparral, Valley and foothill grassland

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Hosackia gracilis	harlequin lotus	4.2	None	None	Mar-Jul	Broadleafed upland forest, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest, Valley and foothill grassland
Lasthenia burkei	Burke's goldfields	1B.1	Endangered	Endangered	Apr-Jun	Meadows and seeps, Vernal pools
Layia septentrionalis	Colusa layia	1B.2	None	None	Apr-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Legenere limosa	legenere	1B.1	None	None	Apr-Jun	Vernal pools
Leptosiphon acicularis	bristly leptosiphon	4.2	None	None	Apr-Jul	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland
Leptosiphon jepsonii	Jepson's leptosiphon	1B.2	None	None	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Leptosiphon latisectus	broad-lobed leptosiphon	4.3	None	None	Apr-Jun	Broadleafed upland forest, Cismontane woodland
Lessingia arachnoidea	Crystal Springs lessingia	1B.2	None	None	Jul-Oct	Cismontane woodland, Coastal scrub, Valley and foothill grassland
Lessingia hololeuca	woolly-headed lessingia	3	None	None	Jun-Oct	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland
Lilium pardalinum ssp. pitkinense	Pitkin Marsh lily	1B.1	Endangered	Endangered	Jun-Jul	Cismontane woodland, Marshes and swamps, Meadows and seeps
Limnanthes vinculans	Sebastopol meadowfoam	1B.1	Endangered	Endangered	Apr-May	Meadows and seeps, Valley and foothill grassland, Vernal pools
Lomatium repostum	Napa lomatium	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland
Lupinus sericatus	Cobb Mountain lupine	1B.2	None	None	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest
Microseris paludosa	marsh microseris	1B.2	None	None	Apr-Jun(Jul)	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland
Monardella viridis	green monardella	4.3	None	None	Jun-Sep	Broadleafed upland forest, Chaparral, Cismontane woodland
Navarretia cotulifolia	cotula navarretia	4.2	None	None	May-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools
Navarretia leucocephala ssp. plieantha	many-flowered navarretia	1B.2	Endangered	Endangered	May-Jun	Vernal pools
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	4.2	None	None	Jun-Oct	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools
Ranunculus lobbii	**Lobb's aquatic buttercup**	**4.2**	**None**	**None**	**Feb-May**	**Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools (occurs at the site)**

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	1B.2	None	None	May-Jul	Chaparral, Cismontane woodland
Trifolium amoenum	two-fork clover	1B.1	None	Endangered	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland
Trifolium buckwestiorum	Santa Cruz clover	1B.1	None	None	Apr-Oct	Broadleafed upland forest, Cismontane woodland, Coastal prairie
Trifolium hydrophilum	saline clover	1B.2	None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland, Vernal pools
Viburnum ellipticum	oval-leaved viburnum	2B.3	None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest

The following table (Table 2) is a list of special-status animal species that have the potential to occur at the site based on habitat types that exist at the site. A full list of special-status animal species is provided in Appendix B.

Table 2. Special-Status Animal Species with the Potential to Occur in the Study Area.

Scientific Name	Common Name	Federal List	State List	CDFW Status	Habitats
Accipiter cooperii	Cooper's hawk	None	None	Watch List	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	None	None	None	Vernal pool
Antrozous pallidus	pallid bat	None	None	Species of Special Concern	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland
Athene cunicularia	burrowing owl	None	None	Species of Special Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland
Bombus caliginosus	obscure bumble bee	None	None	None	Habitat types not provided
Bombus occidentalis	western bumble bee	None	Candidate Endangered	None	Habitat types not provided
Corynorhinus townsendii	Townsend's big-eared bat	None	None	Species of Special Concern	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojavean desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland
Elanus leucurus	white-tailed kite	None	None	Fully Protected	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland

Scientific Name	Common Name	Federal List	State List	CDFW Status	Habitats
Emys marmorata	western pond turtle	None	None	Species of Special Concern	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Lasiurus blossevillii	western red bat	None	None	Species of Special Concern	Cismontane woodland | Lower montane coniferous forest | Riparian forest | Riparian woodland
Lasiurus cinereus	hoary bat	None	None	None	Broadleaved upland forest | Cismontane woodland | Lower montane coniferous forest | North coast coniferous forest
Linderiella occidentalis	California linderiella	None	None	None	Vernal pool
Myotis thysanodes	fringed myotis	None	None	None	Habitat types not provided
Rana boylii	foothill yellow-legged frog	None	None	Species of Special Concern	Aquatic | Chaparral | Cismontane woodland | Coastal scrub | Klamath/North coast flowing waters | Lower montane coniferous forest | Meadow & seep | Riparian forest | Riparian woodland | Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Threatened	None	Species of Special Concern	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Taricha rivularis	red-bellied newt	None	None	Species of Special Concern	Broadleaved upland forest | North coast coniferous forest | Redwood | Riparian forest | Riparian woodland
Taxidea taxus	American badger	None	None	Species of Special Concern	Only regional habitat types: Bog & fen | Broadleaved upland forest | Chaparral | Cismontane woodland | Closed-cone coniferous forest | Freshwater marsh | Marsh & swamp | Meadow & seep | North coast coniferous forest | Redwood | Riparian forest | Riparian scrub | Riparian woodland | Upper montane coniferous forest | Valley & foothill grassland

5 STUDY METHODS

5.1 SPECIAL-STATUS PLANT SPECIES

Darren Wiemeyer, a qualified botanist, performed site visits on March 23, April 16 and May 11, 2022 to perform special-status plant species surveys, map habitat types, compile a plant inventory and assess habitat types for special-status plant species habitat suitability. Habitats were evaluated for their suitability to provide habitat for special-status plant species based on current conditions and past activities.

Protocol level special-status plant species surveys were performed in accordance with state and federal plant survey protocols (CDFW 2000; USFWS 1996a; USFWS 1996b). The surveys were conducted at the time of year when rare or endangered species are both "evident" and identifiable, i.e. they were scheduled (1) to coincide with known flowering periods, and/or (2) during periods of phenological development that are necessary to identify special status plant species. A meandering pattern was walked through each habitat to ensure that all areas were viewed.

A plant inventory list is included as Appendix C.

5.2 SPECIAL-STATUS ANIMAL SPECIES

Existing literature was reviewed for information regarding sensitive wildlife resources that have the potential to occur in the project area (CH2M Hill et al, 1995). A CNDDB printout for the Healdsburg quad and its eight surrounding quads were utilized to prepare a list of all animal species that could potentially occur in the project study area (Table 2). Only those species that are known to inhabit or forage within non-native annual grassland, oak woodland and seasonal wetlands have the potential to occur at the site. Because the seasonal wetland swale is not considered a seasonal stream or connected to a known seasonal stream to the east of the site, special-status animal species that are known to inhabit stream or riparian habitats are not being evaluated as part of this Preliminary Biological Assessment.

Darren Wiemeyer, a qualified biologist, performed a habitat assessment on August 3, 2021, March 23, April 16 and May 11, 2022 for special-status animal species, including a special-status bee species habitat assessment, a special-status bat species habitat assessment, a special-status raptor species habitat assessment and a raptor nest search. A comprehensive bird nesting survey was not performed at the site. Trees were searched for raptor nests and evaluated for suitable bat roosting habitat. The site was searched for the presence of burrows that could be utilized by burrowing owl or American badger and the grassland habitat was evaluated for special-status bee habitat. The seasonal wetland/seasonal drainage was evaluated for habitat suitability for western pond turtle, foothill yellow-legged frog, California red-legged frog, California newt, tri-colored blackbird.

5.3 WETLAND DELINEATION

Darren Wiemeyer, a qualified biologist, performed a wetland delineation at the site on April 16, 2022. Standard USACE wetland delineation procedures as described in the USACE Wetlands Delineation Manual (Environmental Laboratory, 1987) were used to determine whether wetlands were present at the site. The December 2006 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual Arid West Region procedures was also used to determine the extent of wetlands present at the site. A routine on-site investigation was conducted using the plant community assessment method. Each sample included detailed application of the three-parameter approach (vegetation, hydrology and soils).

Soil pits were dug where the soil was examined for evidence of reducing conditions (e.g. gleying, mottling, low chroma, etc.). Soil color was determined using a Munsell color chart (Munsell, 1975). Soil pits were dug up to 16 inches in depth at most locations. Visual

observations, either during the wetland delineation or during previous site observations of saturated or inundated soil, and observations of oxidized root channels and biotic crust (algal matting) were used as indicators of wetland hydrology.

Plant species quantities were visually estimated using a releve approach (Mueller-Dombois and Ellenberg, 1974). The National List of Plant Species That Occur in Wetlands: California (Region 0) (Reed, 1988) was used to assign wetland indicator status of species.

5.4 WILDLIFE

Due to the importance of habitat and its subsequent effect upon which wildlife species are present, a general picture of wildlife that is present can be made based upon habitat assessments gathered during the site survey. The term "wildlife" is being used to define all animal species (mammals, birds, fish, amphibians, reptiles, invertebrates). Daylight site visits greatly limits the amount and variety of wildlife species that could potentially utilize habitats at the site at any given time.

6 RESULTS OF SURVEYS

6.1 HABITATS

Habitat types at the site consist of non-native annual grassland, valley oak woodland, riparian woodland and seasonal wetland which changes into a seasonal drainage at the southern end of the site (Figure 4).

6.1.1 Non-Native Annual Grassland

Non-native annual grassland was the dominant plant community observed at the site and is associated with valley oak woodland habitat (Figure 4). Dominant plant species consist of wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), Italian rye-grass (*Festuca perennis*), bermuda grass (*Cynodon dactylon*), spring vetch (*Vicia sativa*) and field mustard (*Brassica rapa*). The proposed project will result in the loss of this habitat type.

6.1.2 Valley Oak Woodland

Valley oak woodland habitat occurs throughout the majority of the site, although there are some areas with canopy openings (Figure 4). The dominant oak species is valley oak (*Quercus lobata*) with coast live oak (*Quercus agrifolia*) being sub-dominant. Most of the valley oak and coast live oak trees are medium sized, but there are some larger trees on the site. Valley oak woodland is considered a State Sensitive Natural Plant Community (CDFW, 2022). The proposed project will result in the loss of this habitat type.

6.1.3 Riparian Woodland

Riparian woodland habitat occurs at the western end of the seasonal wetland swale/seasonal drainage at the site (Figure 4). Dominant plant species include coast live oak (*Quercus agrifolia*), arroyo willow (*Salix lasiolepis*) and Himalayan berry (*Rubus armeniacus*). Throughout the remainder of the seasonal wetland swale there are many valley oak (Quercus lobata) trees which provide shade and cover over the seasonal wetland swale, but this would not be considered true riparian woodland as it is associated with valley oak woodland habitat at the site. Riparian woodland is considered a State Sensitive Natural Plant Community (CDFW, 2022). The proposed project will result in the loss of this habitat type.

6.1.4 Seasonal Wetland

A total of six seasonal wetlands have been delineated at the site totaling 0.56-acres (Figure 4; Site Plan with Wetland Overlay). There are four small isolated seasonal wetlands on the western end of the site, a long, forked seasonal wetland swale in the center of the site and a large isolated seasonal wetland at the eastern end of the site (Figure 4; Site Plan with Wetland Overlay). The long, forked seasonal wetland swale appears to have been re-directed and channelized at the southern end of the site where the swale makes a sharp turn from south to west. It is assumed this modification was done with the surrounding development of the housing subdivisions.

The western end of this seasonal wetland changes into a seasonal drainage as it starts to exhibit a defined bed and bank. At the far western end of this feature, more typical seasonal drainage characteristics occur with a soil and gravel bed, then revetment rock just before a culvert.

Dominant plant species in the four isolated seasonal wetland depressions consist of perennial rye-grass, Mediterranean barley (*Hordeum marinum ssp. gussoneanum*), annual semaphoregrass (*Pleuropogon californicus*), pennyroyal (*Mentha pulegium*), toad rush (*Juncus bufonius*) and Hyssop loosestrife (*Lythrum lyssopifolia*). Dominant plant species in the long, forked seasonal wetland swale are mostly non-native species and consist of cattail (*Typha spp.),* curly dock (*Rumex crispus*), willow herb (*Epilobium ciliatum*), nutsedge (*Cyperus eragrostis*) and dallis grass (*Paspalum dilatatum*). The outer edge of the seasonal wetland swale is dominated by Himalayan berry (*Rubus discolor*).

The seasonal wetland on the eastern end of the site appears to have been modified on the eastern edge from the development of Robbins Park resulting in a deeper depression. Dominant plant species consist of perennial rye-grass, Mediterranean barley, pennyroyal, curly doc (*Rumex crispus*), annual semaphoregrass and common spikerush (*Eleocharis macrostachya*). Lobb's aquatic buttercup (*Ranunculus lobbii*), which is a CNPS 4.2 special-status plant species occurs in the seasonal wetland at the southeast corner of the site.

The seasonal wetlands would be considered "Waters of the State" and "Waters of the United States" and would be subject to Section 401 and 404 of the Clean Water Act and regulated by the NCRWQCB and the USACE. Seasonal wetland is considered a State Sensitive Natural Plant Community (CDFW, 2022). The proposed project will result in the loss of this habitat type.

A total of 0.192-acres of seasonal wetland habitat is proposed to be filled as a result of the project from development of the homes, the widening and improvements to Cornell Avenue, a storm drain outfall and the extension of County Meadow Drive. The remaining portion of the long, forked seasonal wetland swale and the seasonal wetland depression at the eastern end of the site is to be preserved. The proposed project will provide a development setback to the long seasonal wetland from 2 feet at the southwest corner of Lot 16 to 32 feet near the common line of Lots 21 and 22.

6.1.5 Seasonal Drainage

A seasonal drainage, which is part of the long, forked seasonal wetland occurs at the southern end of the site (Figure 4). The southern end of this seasonal wetland changes into a seasonal drainage as it starts to exhibit a defined bed and bank. Approximately 250 linear feet of this seasonal wetland swale exhibits a defined bed and bank, yet has wetland vegetation in the bottom of the drainage.

At the far southern end of this feature, more typical seasonal drainage characteristics occur with riparian woodland vegetation, a soil and gravel bed, then revetment rock just before a culvert. The bed ranges from 4 to 6 feet wide, the bankfull channel ranges from 14 to 20 feet wide and approximately 5 feet in depth.

The seasonal drainage portion of the seasonal wetland swale would be considered "Waters of the State" and "Waters of the United States" and would be subject to Section 401 and 404 of the Clean Water Act and regulated by the SWRCB and USACE. In addition, because the western end of the seasonal wetland swale exhibits a defined bed and bank with riparian woodland vegetation and could be considered a tributary to Pool Creek, this aquatic feature will be subject to Section 1600 of the Fish and Wildlife Code and regulated by the CDFW.

6.2 SPECIAL STATUS PLANT SPECIES

The only special-status plant species that was observed during the season of special-status plant species surveys was Lobb's aquatic buttercup (Ranunculus lobbii), which is a CNPS 4.2 special-status plant species occurs in the seasonal wetland at the southeast corner of the site (Figure 4). The non-native grassland and valley oak woodland habitat provides potentially suitable habitat for bent-flowered fiddleneck (Ams*incika lunaris*), narrow-anthered brodiaea (*Brodiaea leptandra)*, fragrant fritillary (*Fritillaria liliacea*), congested-headed hayfield tarplant (*Hemizonia congesta ssp. congesta*), but these species were not observed at the site.

The seasonal wetlands would be considered suitable habitat for federally endangered vernal pool plant species, including Burke's goldfields (*Lasthenia burkei*), Sonoma sunshine (*Blennosperma bakeri*) and to a much lesser extent Sebastopol meadowfoam (*Limnanthes vinculans*) although these species were not observed in 2006-2008 (Patterson, 2016) or during the special-status plant species surveys in 2022. The site is not listed as a historic or known site for these species according to the Seasonal Wetland Baseline Report for the Santa Rosa Plain, Sonoma County (Patterson, *et. al*., 1994).

The proposed project will result in the loss of 0.192-acres of seasonal wetlands at the site. The 0.192-acres of seasonal wetlands at the site provides suitable habitat for federally endangered vernal pool plant species. Federally endangered plant habitat mitigation will be required at a 1.5:1 habitat mitigation ratio in accordance with the PBO (USFWS, 2020).

Reference site surveys were conducted in 2022 for federally endangered vernal pool plant species on the Santa Rosa Plain. Reference site surveys were performed to determine the flowering status of federally endangered vernal pool plant species on the Santa Rosa Plain. Table 3 includes details regarding these reference site surveys and shows that all three plant species did bloom in 2022 and were identifiable during the reference site surveys.

Table 3. Federally Endangered Vernal Pool Plant Species - Santa Rosa Plain Reference Site Survey Documentation.

SPECIES	SURVEY DATE	REFERENCE SITE	PHENOLOGY – Percent: vegetative (v); blooming (b); seed set (ss)
Blennosperma bakeri	March 22, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 95%; ss: 5%
	April 9. 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 30%; ss: 20%
	April 18, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 5%; ss: 95%
	May 11, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 0%; ss: 100%
Lasthenia bakeri	March 22,2022	Alton Lane Conservation Bank, Santa Rosa	v: 100%; b: 0%; ss: 0%
	April 9, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 60%; b: 40%; ss: 0%
	April 18, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 80%; ss: 20%
	May 11, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 20%; ss: 80%
Limnanthes vinculans	March 22, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 100%; b: 0%; ss: 0%
	April 2, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 40%; b: 60%; ss: 0%
	April 18, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 20%; b: 60%; ss: 20%
	May 11, 2022	Alton Lane Conservation Bank, Santa Rosa	v: 0%; b: 0%; ss: 100%

6.3 WETLAND DELINEATION

A total of six seasonal wetlands have been delineated at the site totaling 0.56-acres (Figure 4; Site Plan with Wetland Overlay). There are four small isolated seasonal wetlands on the western end of the site, a long, forked seasonal wetland swale in the center of the site and a large isolated seasonal wetland at the eastern end of the site (Figure 4; Site Plan with Wetland Overlay). The long, forked seasonal wetland swale appears to have been re-directed and channelized at the southern end of the site where the swale makes a sharp turn from south to west. It is assumed this modification was done in conjunction with the surrounding development of the housing subdivisions.

The western end of this seasonal wetland changes into a seasonal drainage as it starts to exhibit a defined bed and bank. At the far western end of this feature, more typical seasonal drainage characteristics occur with a soil and gravel bed, then revetment rock just before a culvert. A jurisdictional confirmation site visit by the USACE will confirm the location and extent of seasonal wetland habitat at the site.

6.4 WILDLIFE

The non-native grassland, valley oak woodland and seasonal wetland habitats at the site provides moderate habitat suitability for wildlife. The habitat value is limited primarily because the site is surrounded by development and isolated from larger undeveloped properties and open spaces. Pocket gopher and California meadow vole burrows were observed, but they were low in density. Small urban mammals such as raccoon, opossum, jack rabbit and striped skunk may utilize the site at night for foraging and cover.

The trees at the site provides good nesting habitat for passerine birds and possibly raptor species. The larger trees at the site provides suitable bat roosting habitat in the form of cavities and exfoliating bark. The site most likely has some flowering forbs, which would provide a food base for insects and bees, but additional evaluation would be necessary to fully evaluate suitable habitat for special-status bumble bee species. The seasonal wetland swale appears to pond water and may provide suitable breeding habitat for pacific chorus frog and may provide suitable habitat for aquatic invertebrates.

Because the site is surrounded by development, it provides low quality as a wildlife corridor. Although wildlife will utilize the site, because there are not other undeveloped or open spaces near or adjacent to the site, it does not function as a wildlife corridor.

The proposed project will result in the loss of 315 trees, which provides suitable nesting habitat for raptors and native birds. Based on this evaluation, it has been determined that there may be a significant impact to raptors and native birds as a result of the proposed project without appropriate avoidance and mitigation measures.

6.5 SPECIAL STATUS ANIMAL SPECIES

6.5.1 Birds

6.5.1.1 ***Cooper's Hawk***

Conservation Status: CDFW – Watch List

Cooper's hawk (*Accipiter cooperii*) occurs in dense stands of live oak, riparian deciduous, or other forest habitats near water. It nests in deciduous trees and in conifers, but usually in second-growth conifer stands or in deciduous riparian areas, usually near streams. The site provides very limited, but potentially suitable nesting habitat for this species. However, the lack of coniferous forest habitat or habitat near riparian areas greatly limits the suitability of the site for nesting and foraging habitat. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable nesting habitat. Tree removal and construction activities may disturb this species if it initiates nesting at the site. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

*6.5.1.2 **Burrowing Owl***

Conservation Status: CDFW - Species of Special Concern

Burrowing owl (*Athene cunicularia*) occurs in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Burrowing owl is a subterranean nester which is dependent upon burrowing mammals, most notably, the California ground squirrel. The site provides very limited, but suitable habitat for this species. No medium or large burrows were observed at the site, which significantly limits the suitability of the site for nesting. Surrounding developments and the lack of open grasslands greatly limits the suitability of the site for nesting and foraging habitat. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable habitat, but the lack of medium to large burrows at the site and surrounding developments greatly limits the likelihood that burrowing owls will initiate nesting at the site prior to site development. Based on this evaluation, it has been determined that there will be no significant impact to this species as a result of the proposed project.

*6.5.1.3 **White-tailed Kite***

Conservation Status: CDFW - Fully Protected

White-tailed kite (*Elanus leucurus*) is generally found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodlands. They typically nest in oak trees with dense tops. The non-native annual grassland provides suitable foraging habitat for this species and the larger trees at the site provides potentially suitable nesting habitat. It is unlikely that species utilizes habitats at the site for foraging and nesting, mostly because of surrounding site developments and the lack of open foraging habitat. No large nests were observed at the site and this species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable nesting habitat. Tree removal and construction activities may disturb this species if it initiates nesting at the site. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

6.5.1.4 ***Tricolored Blackbird***

Conservation Status: State - Candidate Endangered; CDFW- Species of Special Concern

Tri-colored blackbird (*Agelaius tricolor*) is a highly colonial species and is largely endemic to California. It requires open water, protected nesting substrate and a foraging area with insect prey. It is known to nest in freshwater marshes with dense emergent vegetation. The long, forked seasonal wetland and seasonal drainage provides potentially suitable habitat for this species, as it does contain aquatic emergent vegetation, primarily as cattails. It is somewhat unlikely, but does have some potential that this species utilizes habitats at the site. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5 miles of the site (Figure 5). The proposed project will result in the loss of seasonal wetland and seasonal drainage habitat which does contain aquatic emergent vegetation. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

6.5.2 Mammals

6.5.2.1 **American Badger**

Conservation Status: CDFW - Species of Special Concern

American badger (*Taxidea taxus*) generally occur in open pasture and grassland habitats and are most abundant in drier open stages of most shrub, forest and herbaceous habitats with friable soils on uncultivated ground. They dig their own burrows and prey primarily on burrowing rodents. The non-native annual grassland at the site provides very limited, but potentially suitable habitat for this species. However, there were no large burrows observed at the site which would greatly limit the likelihood that this species occurs at the site. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable habitat, but the lack of large burrows at the site and surrounding developments greatly limits the likelihood that American badger utilize the site prior to site development. Based on this evaluation, it has been determined that there will be no significant impact to this species as a result of the proposed project.

6.5.2.2 ***Special-Status Bat Species***

All special-status bat species, including several bat species which do not have special status, but have potential to occur in habitats at the site, have been included in this evaluation of habitat suitability and discussion of potential impacts. All bat species have state protection during nesting and roosting seasons. The following bat species are included in this habitat assessment:

- **Pallid Bat** (*Antrozous pallidus*) - Conservation Status: CDFW – Species of Special Concern

  Day roost habitat requirements include caves, crevices, mines, tree/snag cavities, buildings and bridges.

- **Townsend's Big-Eared Bat** (*Corynorhinus townsendii*) - Conservation Status: State - Candidate Threatened; CDFW - Species of Special Concern

  Day roost habitat requirements include caves, mines, tunnels, buildings, rock crevices and large tree/snag cavities.

- **Big brown bat** (*Eptesicus fuscus*) - Conservation Status: None

  Day roost habitat requirements include buildings, bridges, caves, mines, rock crevices and large tree/snag cavities.

- **Western mastiff bat** (*Eumops perotis*) - Conservation Status: CDFW – Species of Special Concern

  Day roost habitat requirements include cliffs, rocky outcrops, rock crevices.

- **Western red bat** (*Lasiurus blossevillii*) – Conservation Status: CDFW – Species of Special Concern

  Day roost habitat requirements include foliage of trees and large shrubs, commonly in riparian corridors.

- **Hoary Bat** (*Lasiurus cinereus*) – Conservation Status: None

  Day roost habitat requirements include foliage of trees and tree/snag cavities.

- **Silver-haired bat** (*Lasionycteris noctivagans*) - Conservation Status: None

  Day roost habitat requirements include tree/snag cavities, buildings, rock crevices, caves, exfoliating bark of large diameter trees.

- **California myotis** (*Myotis californicus*) - Conservation Status: None

  Day roost habitat requirements include crevices of buildings, caves, mines, and exfoliating bark.

- **Western small-footed myotis** (*Myotis ciliolabrum*) - Conservation Status: None

  Day roost habitat requirements include crevices of buildings, caves, mines, and exfoliating bark.

- **Long-eared myotis** (*Myotis evotis*) - Conservation Status: None

  Day roost habitat requirements include exfoliating bark, tree/snag cavities, caves, mines, cliffs, and rocky outcrops.

- **Little brown bat** (*Myotis lucifugus*) - Conservation Status: None

  Day roost habitat requirements include buildings, trees/snag cavities, caves and rock crevices.

- **Fringed Myotis** (*Myotis thysanodes*) – Conservation Status: None

  Day roost habitat requirements include crevices in buildings, caves, mines, cliffs, rocks, bridges, exfoliating bark, and tree/snag cavities.

- **Long-legged myotis** (*Myotis volans*) – Conservation Status: None

  Day roost habitat requirements include rock crevices, buildings, caves, exfoliating bark, tree/snag cavities, mines and caves.

- **Yuma myotis** (*Myotis yumanensis*) – Conservation Status: None

  Day roost habitat requirements include rock crevices in buildings, caves, mines, cliffs, rocks, bridges, and tree/snag cavities.

- **Western canyon bat** (*Parastrellus hesperus*) - Conservation Status: None

  Day roost habitat requirements include rock crevices, rocky outcrops, cliffs, mines and caves.

- **Mexican free-tailed bat** (*Tadarida brasiliensis*) - Conservation Status: None

  Day roost habitat requirements include crevices in buildings, caves, mines and bridges.

Bats are known to utilize a vast variety of habitat types for foraging and several types of structures for nesting and roosting including trees and snags, cliffs, rock outcrops, foliage, buildings, bridges, caves and mines. The larger trees at the site provides suitable roosting habitat for bats as some of the trees exhibit cavities, fissures or exfoliating bark, foliage and/or snag cavities suitable to bat species. Those species which have more likelihood of occurring at the site include those species which utilize these microhabitats commonly associated with woodland habitat.

The bat species most likely to roost at the site include most of those listed above. However, the spotted bat, Western mastiff bat, Western canyon bat and Mexican free-tailed bat tend to be more associated with rocky outcrops, buildings, caves, mines, cliffs, and/or bridges and are therefore less likely to roost in the larger trees at the site. No bat species were observed at the site.

There are two CNDDB occurrences of Townsend's big eared bat within 5-miles of the site (Figure 5). The proposed project is expected to result in the loss of several larger trees at the site that provides suitable roosting habitat for bat species. Based on this evaluation, it has been determined that there may be a significant impact to special-status bat species as a result of the proposed project without appropriate avoidance and mitigation measures.

6.5.3 Amphibians

6.5.3.1 ***Western Pond Turtle***

Conservation Status: CDFW - Species of Special Concern

Western pond turtle *(Emys marmorata*) occurs in reservoirs, ponds, vernal pools, brackish estuaries, sloughs, drainage ditches, and perennial streams. They require basking sites and suitable upland habitat adjacent to aquatic habitats for egg-laying. Basking sites are typically logs, small islands and docks. The upland areas typically used by this species include sandy banks or grassy open fields. The long, forked seasonal wetland swale at the site provides potentially suitable habitat suitability for this species as it contains ponded areas with emergent vegetation. However, it lacks deep, perennial pools and basking sites and is not adjacent to any suitable aquatic habitat that this species prefer. Although, it is unlikely that this species utilizes the long, forked seasonal wetland swale at the site, there is a small chance it could occur at the site. This species was not observed at the site.

The two nearest CNDDB occurrences of this species is approximately 0.6-miles to the northwest and 0.7-acres to the southwest of the site on the west side of Highway 101 (Figure 5). The proposed project will result in the loss of seasonal wetland and seasonal drainage habitat which does contain aquatic emergent vegetation and does provide suitable habitat for this species. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

6.5.3.2 ***Foothill Yellow-Legged Frog***

Conservation Status: CDFW - Species of Special Concern

Foothill yellow-legged frog (*Rana boylii*) occurs in shallow streams with a rocky substrate, undercut banks and exposed roots. They need at least some cobble-sized substrate for egg-laying. This species typical stays within the confines of a stream channel and its riparian corridor. The long, forked seasonal wetland swale and seasonal drainage provides very limited, yet potentially suitable habitat for this species. However, this species is found in foothill regions to the west and east of the Santa Rosa Plain, so it is highly unlikely that this species would utilize this seasonal wetland swale and seasonal drainage as it is isolated from more intact streams, it does not contain a cobble-sized substrate and the surrounding development greatly limits the likelihood that this species occurs on the site. This species was not observed at the site.

There are several CNDDB occurrences of this species within 5-miles of the site with the nearest occurrence located approximately 2.3-miles to the south of the site in the Mark West Creek watershed (Figure 5). The proposed project will result in the loss of seasonal wetland and seasonal drainage habitat which does contain aquatic emergent vegetation. However, based on this evaluation, it has been determined that there would not be a significant impact to this species as a result of the proposed project.

6.5.3.3 ***California Red-Legged Frog***

Conservation Status: Federal – Threatened; CDFW - Species of Special Concern

California red-legged frog (*Rana draytonii*) occurs in low-gradient stream reaches, ponds, reservoirs, vernal pools, and brackish lagoons. Breeding occurs from November through April, and eggs are laid in standing or slow-moving shallow water in floating masses attached to vegetation. The larvae require 3.5 to 7 months to reach metamorphosis, which usually occurs between July and September (Jennings and Hayes 1994). Adults prefer deep (>2ft. depth), standing or slow-moving water with dense, shrubby riparian vegetation, especially Arroyo willow (*Salix lasiolepis*) or dense emergent vegetation such as bulrush (*Scirpus* spp.) and cattail (*Typha sp*.). Both adults and juveniles routinely leave the water to forage in riparian areas, and some are known to move long distances (up to 2 miles) overland during the rainy season, and can be found within streams up to 2 miles from breeding sites (USFWS 2000).

The primary constituent elements for California red-legged frogs are aquatic and upland areas where suitable breeding and non-breeding habitat is interspersed throughout the landscape and is interconnected by un-fragmented dispersal habitat. Specifically, to be considered to have the primary constituent elements an area must include two (or more) suitable breeding locations, a permanent water source, associated uplands surrounding these water bodies up to 91 meters (300 feet) from the water's edge, all within 2 kilometers (1.25 miles) of one another and connected by barrier-free dispersal habitat that is at least 91 meters (300 feet) in width.

The site is located within the potential range, but is not within any listed critical habitat areas for California red-legged frog. There are no CNDDB occurrences within 5-miles of the site (Figure 5). The long, forked seasonal wetland provides very limited breeding habitat for this species in as this species prefers stock ponds, marshes and ponds with emergent vegetation. The seasonal drainage and the riparian woodland habitat do provide suitable foraging, refuge and dispersal habitat. The non-native annual grassland and valley oak woodland habitats at the site provide limited habitat suitability for foraging and refuge habitat. This species was not observed at the site. However, this species is found in foothill regions to the west and east of the Santa Rosa Plain, so it is highly unlikely that this species would utilize this seasonal wetland swale and seasonal drainage as it is isolated from more intact streams and the surrounding development greatly limits the likelihood that this species occurs on the site.

The proposed project will result in the loss of seasonal wetland and seasonal drainage habitat which does contain aquatic emergent vegetation. However, based on this evaluation, it has been determined that there would not be a significant impact to this species as a result of the proposed project.

6.5.3.4 ***Red-bellied Newt***

Conservation Status: CDFW - Species of Special Concern

Red-bellied newt (*Taricha rivularis*) occurs in coastal woodlands and especially redwood forests in northern California. They are terrestrial for most of their life but during their aquatic stage, they are found in fast flowing streams and rocky rivers. The long, forked seasonal wetland swale and seasonal drainage provides very limited, yet potentially suitable habitat for this species.

However, this species is found in foothill regions to the west and east of the Santa Rosa Plain, so it is highly unlikely that this species would utilize this seasonal wetland swale and seasonal drainage as it is isolated from more intact streams and the surrounding development greatly limits the likelihood that this species occurs on the site. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). Based on this evaluation, it has been determined that there will be no significant impact to this species as a result of the proposed project.

6.5.4 Insects

*6.5.4.1 **Special-Status Bees***

The following habitat assessment has been performed for the following special-status bees:

- **Blennosperma vernal pool andrenid bee** (*Andrena blennospermatis*); Conservation Status: None
- **Obscure bumble bee** (*Bombus caliginosus*); Conservation Status: None
- **Crotch bumble bee** (Bom*bus crotchii*); Conservation Status: State Candidate Endangered
- **Western bumble bee** (*Bombus ocidentalis*); Conservation Status: State Candidate Endangered

These special-status bee species all have similar habitat requirements. These species generally inhabit undisturbed prairies and meadows and requires floral resources and undisturbed underground nest sites, primarily in the form of small burrows. In general, bumble bees have three basic habitat requirements: suitable nesting sites for the colonies, nectar and pollen from floral resources available throughout the duration of the colony period (spring, summer and fall), and suitable overwintering sites for the queens. Nests occur primarily in underground cavities such as old squirrel or other animal nests. (Jepson et al. 2014). Threats facing bumblebees include habitat loss, pesticides, disease, invasive insects, and climate change, which influences the timing of when the flowers they depend on are available.

The blennosperma vernal pool andrenid bee specifically requires *Blennosperma* plant species as their food sources. Sonoma sunshine and other *Blennosperma* plant species have not been previously reported to occur at the site (Patterson, 2016) or during the 2022 special-status plant species surveys.

The site is does have flowering species, such as *Lupinus, Daucus, Anthemis, Cichorum, Layia, Sonchus, Trifolium, Triphysaria,* and *Ranunculus*, and does have some limited small mammal burrows which could be used by bees as nesting sites. The habitat suitability for these special-status bee species is somewhat limited because the site is isolated from larger undeveloped grasslands with more diverse floral resources. These special-status bee species were not observed at the site.

There are no CNDDB occurrences of these special-status bee species within 5-miles of the site (Figure 5). The proposed project will result in the loss of potentially suitable habitat for obscure bumble bee, crotch bumble bee and western bumble bee from the loss of non-native annual grassland and valley oak woodland habitats at the site.

Based on this evaluation, it has been determined that there may be a significant impact to these special-status bee species as a result of the proposed project without appropriate avoidance and mitigation measures.

7 IMPACTS TO BIOLOGICAL RESOURCES

The Hembree Lane Oaks project will result in the loss of non-native annual grassland, valley oak woodland, riparian woodland, seasonal wetland and seasonal drainage habitats at the site. The project will have significant impacts to biological resources without appropriate mitigation measures decrease the loss to a less than significant level. The following is a list of impacts to biological resources as part of the Hembree Lane Oaks project.

- The project will result in the loss of valley oak woodland habitat, which is a State Sensitive Natural Plant Community. The removal of 315 trees has the potential to impact suitable habitat for roosting bats, special-status bee species, Cooper's hawk, white-tailed hawk, native raptors and native nesting birds.

- The project will result in the loss of riparian woodland habitat, which is a State Sensitive Natural Plant Community and protected under Fish and Wildlife Code. The loss of this habitat type has the potential to impact suitable habitat for Cooper's hawk, white-tailed kite, native raptors, native nesting birds and western pond turtle.

- The project will result in the loss of non-native annual grassland habitat at the site which may have the potential to impact suitable habitat for special-status bee species and native nesting birds.

- The project will result in the loss of seasonal wetland habitat, which is a State Sensitive Natural Plant Community and protected under the Clean Water Act. The project will result in the loss of seasonal drainage habitat which is protected under the Clean Water Act and Fish and Wildlife Code. The loss of this habitat type has the potential to impact suitable habitat for native nesting birds, western pond turtle, foothill yellow-legged frog, tri-colored blackbird and California red-legged frog.

8 TOWN OF WINDSOR CEQA INITIAL STUDY QUESTIONNAIRE

1. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

Yes. The project would have a substantial adverse effect, either directly or through habitat modifications, or any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

The project will result in the loss of valley oak woodland habitat, which is a State Sensitive Natural Plant Community. The removal of 315 trees has the potential to impact suitable habitat for roosting bats, Cooper's hawk, white-tailed hawk, native raptors and native nesting birds.

The project will result in the loss of riparian woodland habitat, which is a State Sensitive Natural Plant Community and protected under Fish and Wildlife Code. The loss of this habitat type has the potential to impact suitable habitat for Cooper's hawk, white-tailed kite, native raptors, native nesting birds and western pond turtle.

The project will result in the loss of non-native annual grassland habitat at the site which has the potential to impact suitable habitat for special-status bee species and native nesting birds.

The project will result in the loss of seasonal wetland habitat, which is a State Sensitive Natural Plant Community and protected under the Clean Water Act. The project will result in the loss of seasonal drainage habitat which is protected under the Clean Water Act and Fish and Wildlife Code. The loss of this habitat type has the potential to impact suitable habitat for native nesting birds, western pond turtle and tri-colored blackbird.

2. *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S, Fish and Wildlife Service?*

Yes. The project will have a substantial adverse effect on valley oak woodland habitat and riparian woodland habitat which are State Sensitive Natural Plant Communities.

3. *Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, wetlands, etc.) through direct removal, filling hydrological interruption, or other means?*

Yes. The project will result in the loss of seasonal wetland habitat, which is a State Sensitive Natural Plant Community and protected under the Clean Water Act. The project will result in the loss of seasonal drainage habitat which is protected under the Clean Water Act and Fish and Wildlife Code.

4. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

No. The project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

The site would not be considered a migratory wildlife corridor because of substantial developments surrounding the site and the lack of significant undeveloped areas surrounding the site. No nursery sites (heron or egret rookery, etc.) were observed at the site.

5. *If the answers to questions 1-4 above identify potentially significant effects on biological resources, identify mitigation measures and monitoring actions to ensure compliance with CEQA and state and federal regulations. If the mitigation measures identified are typically required conditions of state and federal permits, then evidence of permit issuance by that agency may be identified as a measure of compliance. In the professional judgment of the biologist, will these mitigation measures reduce these identified impacts to less than significant levels?*

Mitigation measures, monitoring actions and regulatory permit agency authorizations should consist of the following and would result in reducing identified impacts to biological resources to less than significant levels.

MITIGATION MEASURE 1: SEASONAL WETLAND AND SUITABLE ENDANGERED PLANT MITIGATION

Site developments will result in the loss of 0.192-acres of seasonal wetland habitat at the site. In addition, the 0.192-acres of seasonal wetland habitat is considered suitable habitat for federally endangered vernal pool plant habitat. The following mitigation measures will be required.

Mitigation 1.1. *Obtain permit authorization from the USACE under the 404 Nationwide Permit Program for the loss of 0.192-acres of seasonal wetland habitat. Implement all agency permit conditions.*

Mitigation 1.2. *Obtain permit authorization from the SWRCB under the 401 Water Quality Certification Program for the loss of 0.192-acres of seasonal wetland habitat. Implement all agency permit conditions.*

Mitigation 1.3. *Request the USACE to append the project to the USFWS Programmatic Biological Opinion -Reinitiation of Formal Consultation of Issuance of Clean Water Act, Section 404 Permits by the U.S. Army Corps of Engineers (Corps) on the Santa Rosa Plain, Sonoma County, California dated June 11, 2020. Implement all conditions required by the USFWS under the Programmatic Biological Opinion.*

Mitigation 1.4. Mitigate for the loss of 0.192-acres of seasonal wetland habitat through the purchase of seasonal wetland habitat credits at a 1:1 ratio at an agency approved wetland mitigation bank.

Mitigation 1.5. Mitigate for the loss of 0.192-acres of suitable federally endangered vernal pool plant habitat through the purchase of federally endangered vernal pool plant species credits at a 1.5:1 mitigation ratio at an agency approved plant preservation bank.

MITIGATION MEASURE 2: RIPARIAN HABITAT AND SEASONAL DRAINAGE MITIGATION

Site developments from the extension of Country Meadow Lane will result in the loss of 0.06-acres of riparian woodland habitat and 75-linear feet of seasonal drainage. The following mitigation measures will be required.

Mitigation 2.1. Obtain permit authorization from the CDFW under 1600 Lake or Streambed Alteration Agreement for the loss of 0.06-acres of riparian woodland habitat and 75-linear feet of seasonal drainage. Implement all agency permit conditions.

Mitigation 2.2. Prepare and implement a Riparian Restoration Plan for the loss of 0.06-acres of riparian woodland habitat and 75-linear feet of seasonal drainage. Implement all agency permit conditions.

MITIGATION MEASURE 3: TREE PROTECTION FENCING

Tree protection fencing shall be installed around any tree that is proposed to be preserved within the project area to avoid disturbance or impacts to these trees during construction activities.

MITIGATION MEASURE 4: SEASONAL WETLAND PROTECTION FENCING

Seasonal wetland protection fencing shall be installed around the seasonal wetland habitat that is proposed to be preserved to avoid disturbance or impacts to seasonal wetland habitat during construction activities.

MITIGATION MEASURE 5: TREE MITIGATION

Habitat mitigation for the loss of trees, valley oak woodland habitat, and suitable habitat for special-status bat species at the site will consist of the dedication of 2.07-acres of valley oak woodland habitat to the Town of Windsor to be preserved in perpetuity.

A development agreement with the Town of Windsor is proposed which will allow the developer to dedicate the open space area to the Town of Windsor, thereby allowing the long-term preservation of trees and other habitats in exchange for not requiring the developer to pay tree mitigation in-leu fees for the portion of the site that will be developed. Furthermore, the Town of Windsor has expressed support for a "Development Agreement" to pursue a "net-zero" tree mitigation fee.

MITIGATION MEASURE 6: PRE-CONSTRUCTION NESTING BIRD SURVEYS AND PROTECTIONS

In the event that construction activities are initiated (including land clearing, demolition, and/or tree removal) within the avian nesting season (February 1 – August 31), a preconstruction survey shall be performed by a qualified biologist on the site to locate any active nests on or immediately adjacent to the site. The preconstruction survey shall be performed within 5 days before initiation of site activities. If active nests are identified, protective measures shall be implemented. An appropriate non-disturbance buffer zone shall be established – typically up to 300 feet for raptors and 50 feet for passerines, or as otherwise recommended by the biologist.

These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active, as determined by the biologist. If land-clearing activities (including all vegetation removal) can be performed outside of the nesting season (August 31 - January 31), no preconstruction surveys for nesting birds are warranted.

MITIGATION MEASURE 7: PRE-CONSTRUCTION TRI-COLORED BLACKBIRD SURVEY AND PROTECTIONS

In the event that construction activities are initiated (including land clearing, demolition, and/or tree removal) within the avian nesting season (February 1 – August 31), a preconstruction survey shall be performed by a qualified biologist on the site to locate any tri-colored blackbirds or their active nests at the site. The preconstruction survey shall be performed within 5 days before initiation of site activities. If tri-colored blackbirds or their active nests are identified, protective measures shall be implemented. An appropriate non-disturbance buffer zone shall be established by the biologist.

These protection measures shall remain in effect until the young tri-colored blackbirds have left the nest and are foraging independently or the nest is no longer active, as determined by the biologist. If land-clearing activities (including all vegetation removal) can be performed outside of the nesting season (August 31 - January 31), no preconstruction surveys for tri-colored blackbirds are warranted.

MITIGATION MEASURE 8: SPECIAL-STATUS BAT HABITAT PROTECTIONS

To ensure that actively roosting bats are not disturbed as a result of tree trimming and tree removal, it is recommended that specific mitigation measures be implemented to avoid impacts to bat species. These measures should only be required for trees at the site that a biologist has determined to provide suitable bat roosting habitat.

1. The pruning or removal of living trees or snags must not occur during the maternity season between April 1 and September 1 to minimize the disturbance of young that may be present and unable to fly.

2. The pruning or removal of living trees or snags that provides suitable habitat for bats must occur between the hours of 12 pm and sunset on days after nights when low temperatures were 50° or warmer to minimize impacting bats that may be present in deep torpor.

3. When it is necessary to perform crown reduction on trees over 12 inches in diameter breast height or remove entire trees or branches over six inches in diameter there shall be preliminary pruning of small branches less than 2 inches in diameter performed the day before. The purpose of this is to minimize the probability that bats would choose to roost in those trees the night before the work is performed. A qualified biologist shall be present to oversee all tree trimming and tree removal activities.

4. Install a minimum of 6 bat boxes throughout the site in large trees that are to be preserved to provide compensation for the loss of potentially suitable bat roosting habitat as a result of tree removal.

If it is not possible to implement Measures 2 and/or 3, then a qualified bat biologist will be required in order to conduct tree cavity surveys and humanely evict roosting bats within 24 hours of vegetation management activities. Measure 1 (avoidance of maternity season is critical as young bats that are not able to fly cannot be humanely evicted.

MITIGATION MEASURE 9: SPECIAL-STATUS BEE SPECIES HABITAT MITIGATION

The loss of non-native annual grassland and valley oak woodland habitat at the site has the potential to impact bee nesting burrow habitat and foraging resources. To mitigate for these habitat losses, a Special-Status Bee Species Habitat Mitigation Plan will be prepared and implemented at the site, in conjunction with the Riparian Restoration Plan. The mitigation plan will include proposed improvements to nesting burrowing habitat and propose a floral resource planting plan to provide a diversity of native flowering plant species that can be utilized by a diversity of bee species as well as insects. The mitigation area will be within the open space preserve area at the site.

MITIGATION MEASURE 10: PRE-CONSTRUCTION WESTERN POND TURTLE SURVEY AND PROTECTIONS

A pre-construction survey for western pond turtle shall be performed at the site by a qualified biologist to determine if western pond turtles occur in the seasonal wetland swale or adjacent areas at the site. If a western pond turtle is observed, it should be allowed to leave the construction area on its own. Construction activities will not commences until the western pond turtle has left the construction area.

6. *Demonstrate how analysis and recommended mitigation measures comply with the requirements of the Santa Rosa Plain Conservation Strategy, and any subsequent Programmatic Opinion issued by the US Fish and Wildlife Service?*

The proposed project will result in the loss of 0.192-acres of seasonal wetland habitat at the site. The 0.192-acres of seasonal wetland habitat provides suitable habitat for Burke's goldfields and Sonoma sunshine, which are federal and state listed endangered plant species. The project proponent will be required to purchase 0.288-acres of Burke's goldfields/Sonoma sunshine from an USFWS approved endangered plant conservation bank in accordance with the Programmatic Biological Opinion. The USACE will initiate formal consultation with the USFWS for impacts to suitable habitat for Burke's goldfields and Sonoma sunshine.

7. *Is it recommended by the professional biologist that the property owner apply for permits from the following regulatory agencies (specify permit type and description) in order to comply with State and Federal law:*

    - *California Department of Fish and Wildlife (CDFW)*
    - *California Water Quality Control Board: North Coast Region (NCRWQCB)*
    - *U.S. Army Corps of Engineers (USACE)*
    - *U.S. Fish and Wildlife Service (USFWS)*

Yes. The proposed project will result in the loss of 0.192-acres of seasonal wetland habitat, approximately 75-linear feet of a seasonal drainage and 0.06-acres of riparian woodland habitat. In addition, the proposed project will result in the loss of 0.192-acres of potentially suitable habitat for Burke's goldfields and Sonoma sunshine, which are federal and state listed endangered plant species.

Therefore, the permit authorization from the CDFW, NCRWQCB, USACE and USFWS will be required. These permits include the following:

- CDFW 1600 Lake or Streambed Alteration Agreement
- NCRWQCB 401 Water Quality Certification
- USACE 404 Nationwide Permit
- USFWS Programmatic Biological Opinion Appendage Letter

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FIGURES

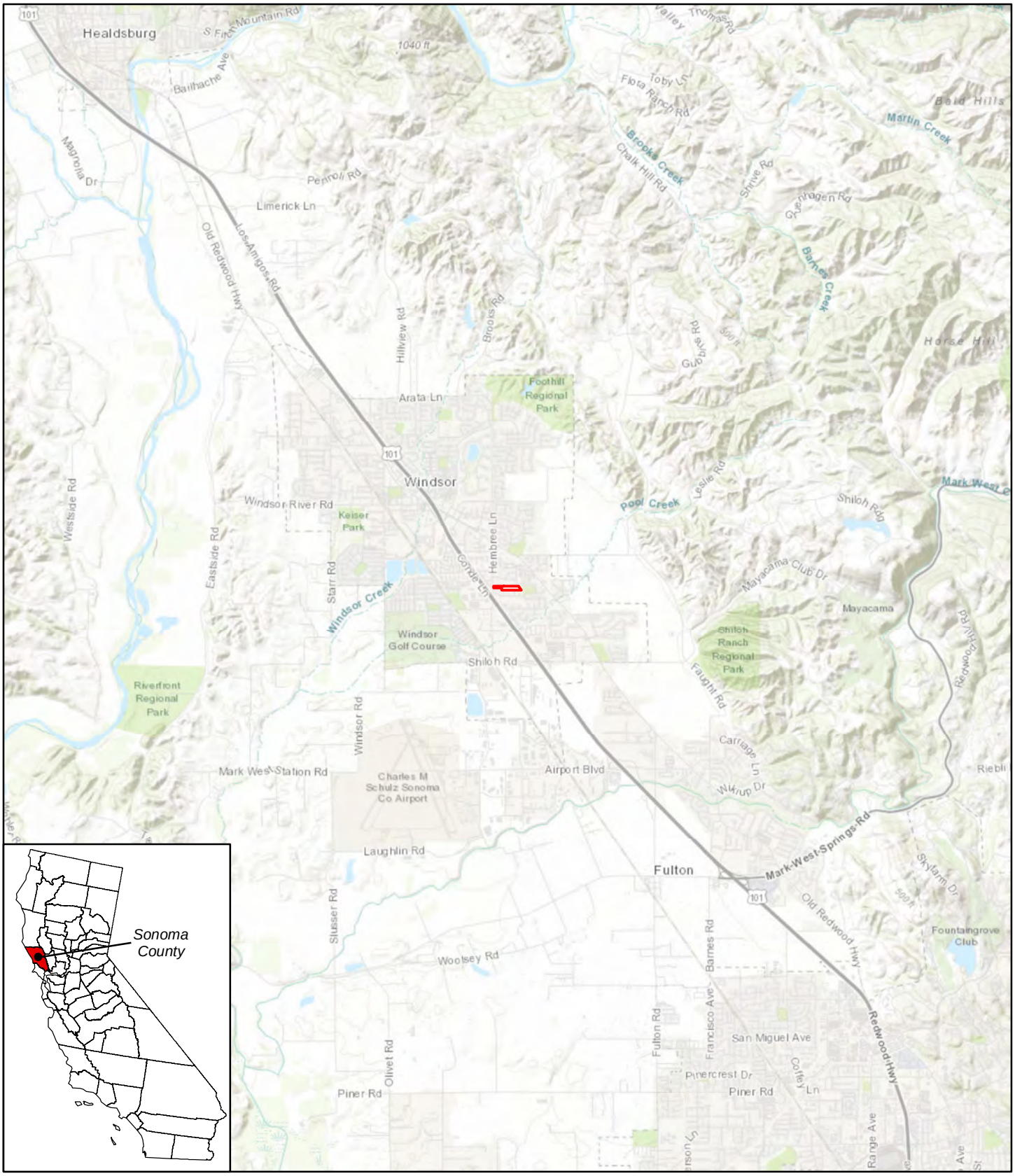
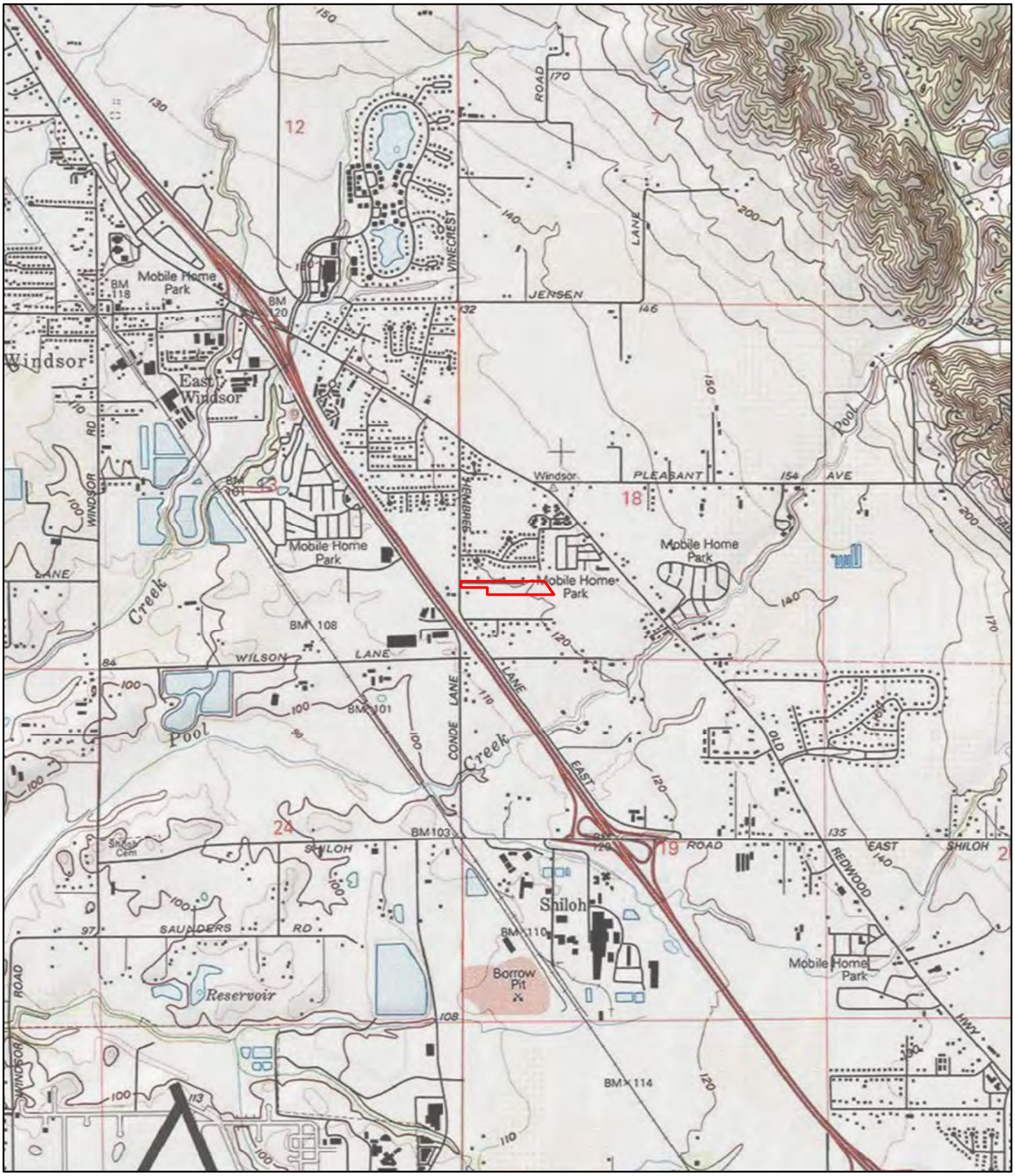


Figure 1 - Site Vicinity Map

4872 Hembree Ln
Windsor, CA
APN: 163-080-047

Wiemeyer Ecological Sciences
4527 Montgomery Drive, Suite J
Santa Rosa, CA 95409

Parcel boundary provided by Sonoma County
Map date: 8/2021



Site Boundary

0 0.5 1 2 Miles

Figure 2 - USGS Map	
4872 Hembree Ln Windsor, CA APN: 163-080-047	N Wiemeyer Ecological Sciences 4527 Montgomery Drive, Suite J Santa Rosa, CA 95409 Parcel boundary provided by Sonoma County Map date: 8/2021

Site Boundary

HwB - Huichica loam, shallow, ponded, 0 to 5 percent slopes (covers entire site)

Figure 3 - Soils Map	0 25 50 100 150 200 Feet
4872 Hembree Ln Windsor, CA APN: 163-080-047	N Wiemeyer Ecological Sciences 4527 Montgomery Drive, Suite J Santa Rosa, CA 95409
	Parcel boundary provided by Sonoma County Soils provided by NRCS Map date: 8/2021

Figure 4 - HABITAT MAP 4872 Hembree Ln Windsor, CA APN: 163-080-047	N Wiemeyer Ecological Sciences 4000 Montgomery Drive, Suite L-5 Santa Rosa, CA 95405	Parcel boundary provided by Sonoma County Map date: 8/2022 Aerial: Pictometry (2021)	Site Boundary Riparian woodland (0.06 ac.) Seasonal wetlands (0.56 ac.)	NAG - Non-native Annual Grassland VOW - Valley Oak Woodland 0 50 100 200 Feet

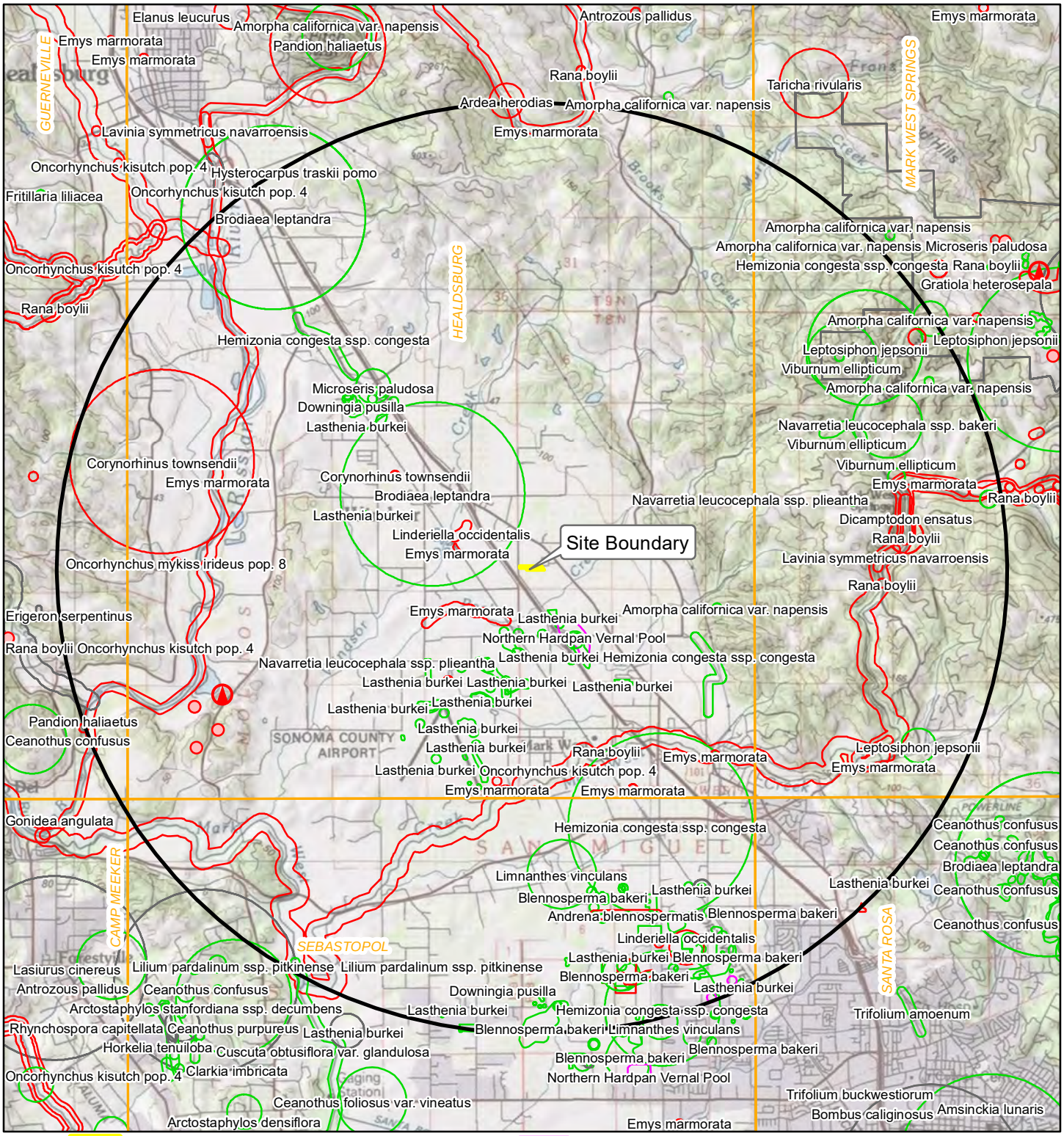


Figure 5 - CNDDB Occurrences

4872 Hembree Ln
Windsor, CA
APN: 163-080-047

N

Wiemeyer Ecological Sciences
4000 Montgomery Drive, Suite L-5
Santa Rosa, CA 95405

Parcel boundary provided by Sonoma County
CNDDB provided by CDFW (v. 6/2021)
Map date: 8/2021

A-1: West end of site showing base of eucalyptus tree.

A-2: Typical valley oak woodland habitat in center of site.

A-3: View of seasonal wetland at west end of site.

A-4: View of seasonal wetland in western portion of site.

A-5: View of seasonal wetland in western portion of site.

A-6: View of seasonal wetland at eastern end of site.

Photo Plate A
Hembree Lane Oaks
7842 Hembree Lane
Windsor, CA

WIEMEYER ECOLOGICAL SCIENCES
4000 MONTGOMERY DRIVE, SUITE L-5
SANTA ROSA, CA 95405
(707) 573-1770

B-1: West end of seasonal wetland swale/seasonal drainage.

B-2: Riparian woodland habitat at west end of seasonal drainage.

B-3: View of seasonal wetland swale at southern end of site.

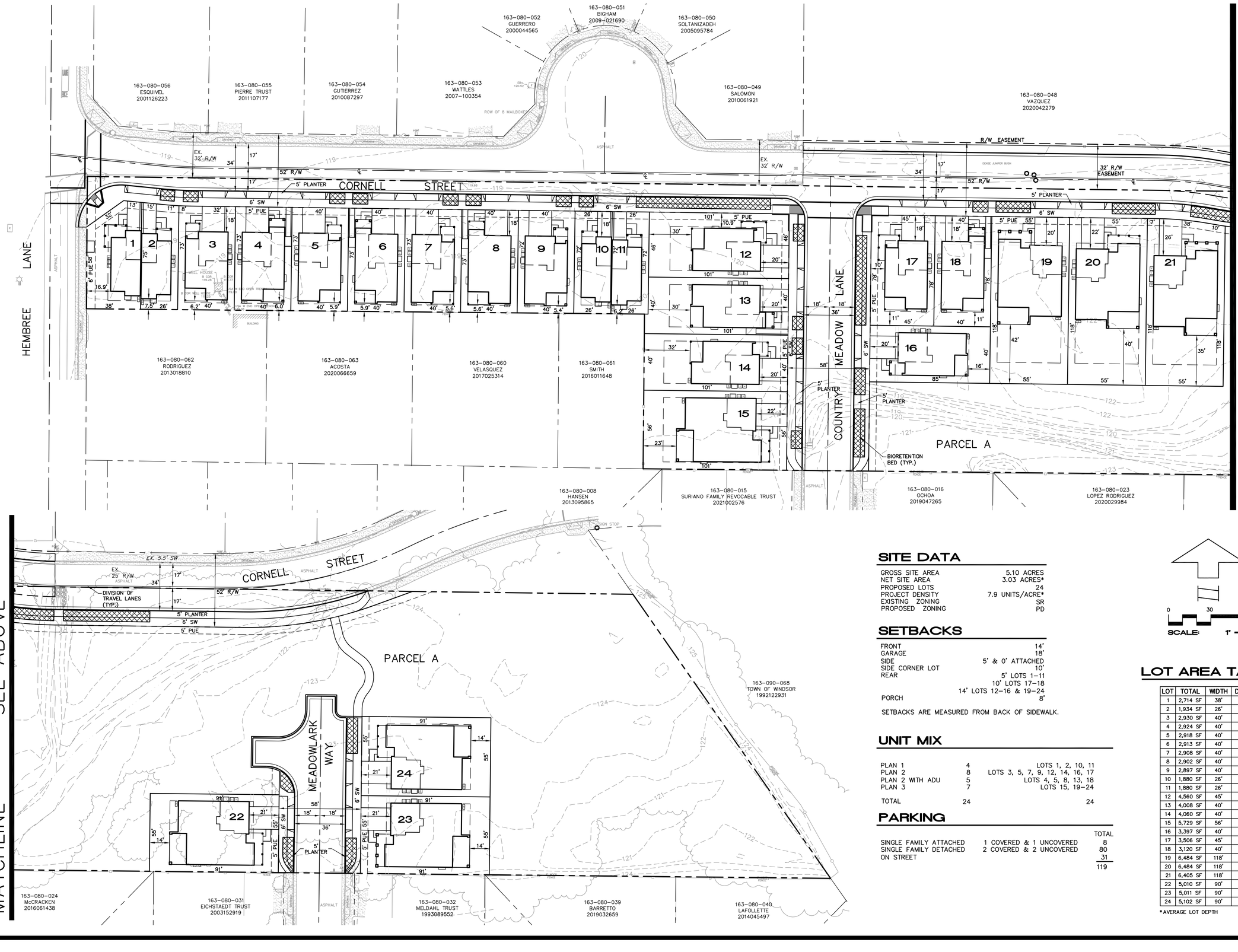
B-4: View of seasonal wetland swale in center of site.

B-5: View of northern end of seasonal wetland swale.

B-6: View of seasonal wetland tributary at north end of site.

Photo Plate B
Hembree Lane Oaks
7842 Hembree Lane
Windsor, CA

WIEMEYER ECOLOGICAL SCIENCES
4000 MONTGOMERY DRIVE, SUITE L-5
SANTA ROSA, CA 95405
(707) 573-1770



SITE DATA

GROSS SITE AREA	5.10 ACRES
NET SITE AREA	3.03 ACRES*
PROPOSED LOTS	24
PROJECT DENSITY	7.9 UNITS/ACRE*
EXISTING ZONING	SR
PROPOSED ZONING	PD

SETBACKS

FRONT	14'
GARAGE	18'
SIDE	5' & 0' ATTACHED
SIDE CORNER LOT	10'
REAR	5' LOTS 1–11
	10' LOTS 17–18
	14' LOTS 12–16 & 19–24
PORCH	8'

SETBACKS ARE MEASURED FROM BACK OF SIDEWALK.

UNIT MIX

PLAN 1	4	LOTS 1, 2, 10, 11
PLAN 2	8	LOTS 3, 5, 7, 9, 12, 14, 16, 17
PLAN 2 WITH ADU	5	LOTS 4, 5, 8, 13, 18
PLAN 3	7	LOTS 15, 19–24
TOTAL	24	24

PARKING

		TOTAL
SINGLE FAMILY ATTACHED	1 COVERED & 1 UNCOVERED	8
SINGLE FAMILY DETACHED	2 COVERED & 2 UNCOVERED	80
ON STREET		31
		119

0 30 60
SCALE: 1" = 30'

LOT AREA TABLE

LOT	TOTAL	WIDTH	DEPTH
1	2,714 SF	38'	71'*
2	1,934 SF	26'	73'
3	2,930 SF	40'	73'
4	2,924 SF	40'	73'
5	2,918 SF	40'	73'
6	2,913 SF	40'	73'
7	2,908 SF	40'	73'
8	2,902 SF	40'	73'
9	2,897 SF	40'	72'
10	1,880 SF	26'	72'
11	1,880 SF	26'	72'
12	4,560 SF	45'	101'
13	4,008 SF	40'	101'
14	4,060 SF	40'	101'
15	5,729 SF	56'	101'
16	3,397 SF	40'	85'
17	3,506 SF	45'	78'
18	3,120 SF	40'	78'
19	6,484 SF	118'	55'
20	6,484 SF	118'	55'
21	6,405 SF	118'	55'
22	5,010 SF	90'	55'
23	5,011 SF	90'	55'
24	5,102 SF	90'	55'

*AVERAGE LOT DEPTH

CIVIL DESIGN CONSULTANTS, INC.
2200 Range Avenue Suite 204
Santa Rosa, CA 95403
(707) 542-4820

PROFESSIONAL ENGINEER * REGISTERED * ANDREW BORDESSA No. 34368 CIVIL STATE OF CALIFORNIA

ANDREW BORDESSA
RCE 34368

DATE

DEVELOPMENT PLAN

HEMBREE LANE

7842 HEMBREE LANE
WINDSOR, CALIFORNIA

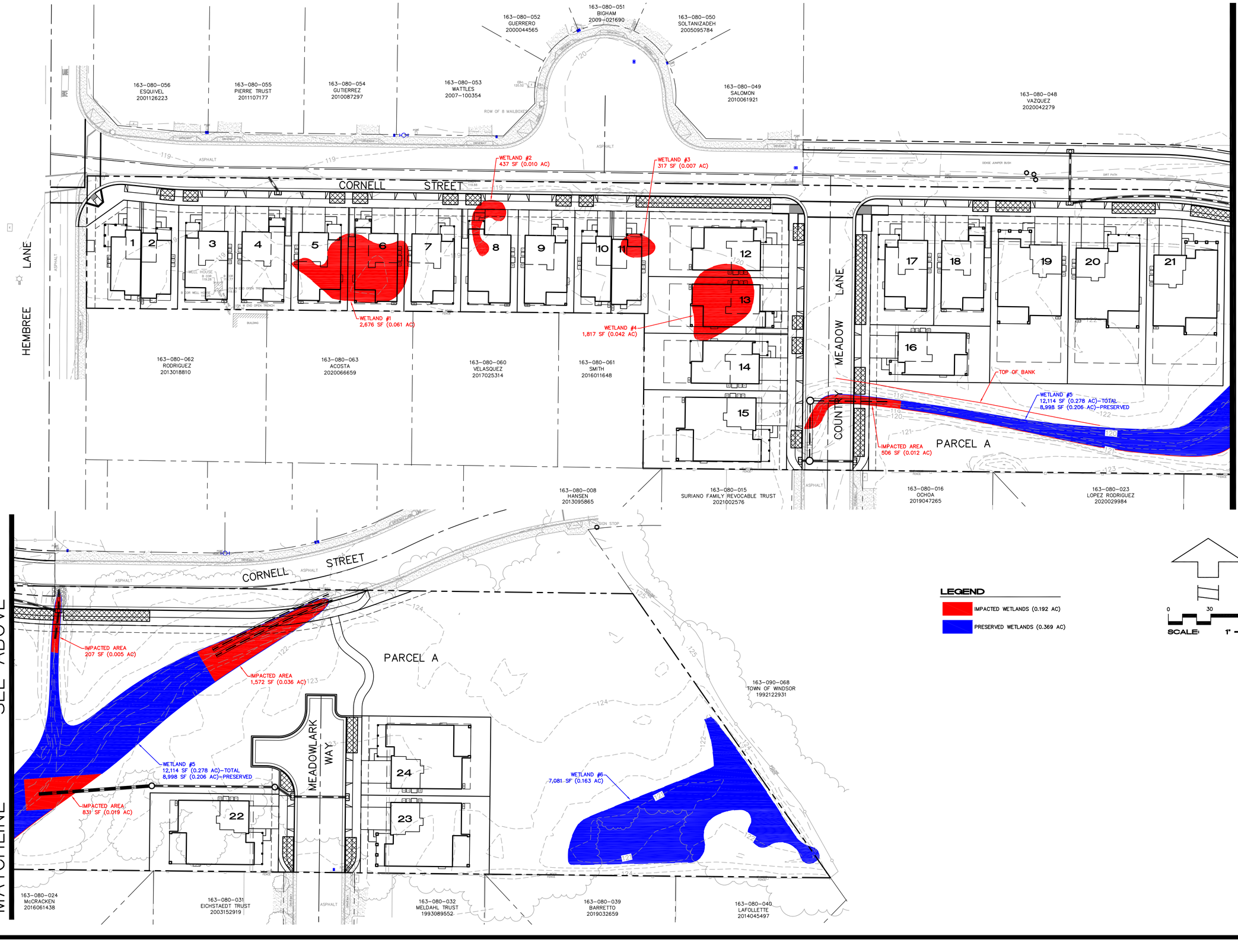
DOC.NO. 2012067749
APN 163-080-047

5.10 ACRES
24 LOTS
1 PARCEL
APRIL 2022

JOB NO.
21-107

SHEET NO.
1
OF 1 SHEETS

S:\JOBS\PROJ\21-107\PROV\TENTATIVE MAP\21-107LMAP.dwg, 4/13/2022 3:01:00 PM



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ANDREW BORDESSA
No. 34368
CIVIL
DATE
ANDREW BORDESSA
RCE 34368

WETLAND EXHIBIT

HEMBREE LANE

7842 HEMBREE LANE
WINDSOR, CALIFORNIA

DOC.NO. 201206774
APN 163-080-04

510 ACRES
24 LOTS
1 PARCEL
SEPTEMBER 2022

JOB NO.
21-107

SHEET NO.
1
OF 1 SHEETS

APPENDIX A

SPECIAL STATUS PLANT SPECIES

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	1B.1	G5T1	S1	None	FE	May-Jul	Marshes and swamps, Riparian scrub
Amorpha californica var. napensis	Napa false indigo	1B.2	G4T2	S2	None	None	Apr-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	G3	S3	None	None	Mar-Jun	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland
Anomobryum julaceum	slender silver moss	4.2	G5?	S2	None	None		Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest
Arctostaphylos bakeri ssp. bakeri	Baker's manzanita	1B.1	G2T1	S1	CR	None	Feb-Apr	Broadleafed upland forest, Chaparral
Arctostaphylos bakeri ssp. sublaevis	The Cedars manzanita	1B.2	G2T2	S2	CR	None	Feb-May	Chaparral, Closed-cone coniferous forest
Arctostaphylos densiflora	Vine Hill manzanita	1B.1	G1	S1	CE	None	Feb-Apr	Chaparral
Arctostaphylos hispidula	Howell's manzanita	4.2	G4	S3	None	None	Mar-Apr	Chaparral
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	1B.3	G5T3	S3	None	None	(Jan)Mar-May(Jul)	Chaparral, Cismontane woodland, Lower montane coniferous forest
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	1B.1	G3T1	S1	None	None	Feb-Apr(May)	Chaparral, Cismontane woodland
Asclepias solanoana	serpentine milkweed	4.2	G3	S3	None	None	May-Jul(Aug)	Chaparral, Cismontane woodland, Lower montane coniferous forest

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Astragalus breweri	Brewer's milk-vetch	4.2	G3	S3	None	None	Apr-Jun	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland
Astragalus claranus	Clara Hunt's milk-vetch	1B.1	G1	S1	CT	FE	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Astragalus clevelandii	Cleveland's milk-vetch	4.3	G4	S4	None	None	Jun-Sep	Chaparral, Cismontane woodland, Riparian forest
rattanii var. jepsonianus	Jepson's milk-vetch	1B.2	G4T3	S3	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	G2	S2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Blennosperma bakeri	Sonoma sunshine	1B.1	G1	S1	CE	FE	Mar-May	Valley and foothill grassland, Vernal pools
Brodiaea leptandra	anthered brodiaea	1B.2	G3?	S3?	None	None	May-Jul	woodland, Lower montane coniferous forest, Valley and foothill grassland
Calamagrostis bolanderi	Bolander's reed grass	4.2	G4	S4	None	None	May-Aug	Bogs and fens, Broadleafed upland forest, Closed-cone coniferous forest, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest
Calamagrostis crassiglumis	Thurber's reed grass	2B.1	G3Q	S2	None	None	May-Aug	Coastal scrub, Marshes and swamps
Calamagrostis ophitidis	serpentine reed grass	4.3	G3	S3	None	None	Apr-Jul	Chaparral, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland
Calandrinia breweri	Brewer's calandrinia	4.2	G4	S4	None	None	(Jan)Mar-Jun	Chaparral, Coastal scrub
Calochortus raichei	The Cedars fairy-lantern	1B.2	G2	S2	None	None	May-Aug	Chaparral, Closed-cone coniferous forest
Calochortus uniflorus	pink star-tulip	4.2	G4	S4	None	None	Apr-Jun	Coastal prairie, Coastal scrub, Meadows and seeps, North Coast coniferous forest
Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	4.2	G4T3	S3	None	None	Apr-Jun	Chaparral, Lower montane coniferous forest, Valley and foothill grassland

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Campanula californica	swamp harebell	1B.2	G3	S3	None	None	Jun-Oct	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Marshes and swamps, Meadows and seeps, North Coast coniferous forest
Carex comosa	bristly sedge	2B.1	G5	S2	None	None	May-Sep	Coastal prairie, Marshes and swamps, Valley and foothill grassland
Castilleja ambigua var. ambigua	johnny-nip	4.2	G4T4	S3S4	None	None	Mar-Aug	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools
Castilleja uliginosa	Pitkin Marsh paintbrush	1A	GXQ	SX	CE	None	Jun-Jul	Marshes and swamps
Ceanothus confusus	Rincon Ridge ceanothus	1B.1	G1	S1	None	None	Feb-Jun	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Ceanothus divergens	Calistoga ceanothus	1B.2	G2	S2	None	None	Feb-Apr	Chaparral
Ceanothus foliosus var. vineatus	Vine Hill ceanothus	1B.1	G3T1	S1	None	None	Mar-May	Chaparral
Ceanothus gloriosus var. exaltatus	glory brush	4.3	G4T4	S4	None	None	Mar-Jun(Aug)	Chaparral
Ceanothus purpureus	holly-leaved ceanothus	1B.2	G2	S2	None	None	Feb-Jun	Chaparral, Cismontane woodland
Ceanothus sonomensis	Sonoma ceanothus	1B.2	G2	S2	None	None	Feb-Apr	Chaparral
Centromadia parryi ssp. parryi	pappose tarplant	1B.2	G3T2	S2	None	None	May-Nov	Chaparral, Coastal prairie, Marshes and swamps, Meadows and seeps, Valley and foothill grassland
Chorizanthe valida	Sonoma spineflower	1B.1	G1	S1	CE	FE	Jun-Aug	Coastal prairie

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Clarkia imbricata	Vine Hill clarkia	1B.1	G1	S1	CE	FE	Jun-Aug	Chaparral, Valley and foothill grassland
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	4.3	G4G5T3	S3	None	None	Jul-Aug	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Cordylanthus tenuis ssp. capillaris	Pennell's bird's-beak	1B.2	G4G5T1	S1	CR	FE	Jun-Sep	Chaparral, Closed-cone coniferous forest
Cryptantha dissita	serpentine cryptantha	1B.2	G3	S3	None	None	Apr-Jun	Chaparral
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	2B.2	G5T4?	SH	None	None	Jul-Oct	Marshes and swamps
Cypripedium montanum	mountain lady's-slipper	4.2	G4	S4	None	None	Mar-Aug	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest
Delphinium bakeri	Baker's larkspur	1B.1	G1	S1	CE	FE	Mar-May	Broadleafed upland forest, Coastal scrub, Valley and foothill grassland
Delphinium luteum	golden larkspur	1B.1	G1	S1	CR	FE	Mar-May	Chaparral, Coastal prairie, Coastal scrub
Delphinium uliginosum	swamp larkspur	4.2	G3	S3	None	None	May-Jun	Chaparral, Valley and foothill grassland
Downingia pusilla	dwarf downingia	2B.2	GU	S2	None	None	Mar-May	Valley and foothill grassland, Vernal pools
Elymus californicus	California bottle-brush grass	4.3	G4	S4	None	None	May-Aug(Nov)	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland
Erigeron biolettii	streamside daisy	3	G3?	S3?	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest
Erigeron greenei	Greene's narrow-leaved daisy	1B.2	G3	S3	None	None	May-Sep	Chaparral

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Erigeron serpentinus	serpentine daisy	1B.3	G2	S2	None	None	May-Aug	Chaparral
Eriogonum nervulosum	Snow Mountain buckwheat	1B.2	G2	S2	None	None	Jun-Sep	Chaparral
Eriogonum umbellatum var. bahiiforme	bay buckwheat	4.2	G5T3	S3	None	None	Jul-Sep	Cismontane woodland, Lower montane coniferous forest
Eriophorum gracile	slender cottongrass	4.3	G5	S4	None	None	May-Sep	Bogs and fens, Meadows and seeps, Upper montane coniferous forest
Erythronium helenae	St. Helena fawn lily	4.2	G3	S3	None	None	Mar-May	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
Fritillaria liliacea	fragrant fritillary	1B.2	G2	S2	None	None	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland
Fritillaria purdyi	Purdy's fritillary	4.3	G4	S4	None	None	Mar-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest
Gilia capitata ssp. tomentosa	woolly-headed gilia	1B.1	G5T2	S2	None	None	May-Jul	Coastal bluff scrub, Valley and foothill grassland
Gratiola heterosepala	Boggs Lake hedge-hyssop	1B.2	G2	S2	CE	None	Apr-Aug	Marshes and swamps, Vernal pools
Harmonia nutans	nodding harmonia	4.3	G3	S3	None	None	Mar-May	Chaparral, Cismontane woodland
Helianthus exilis	serpentine sunflower	4.2	G3	S3	None	None	Jun-Nov	Chaparral, Cismontane woodland
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	1B.2	G5T2	S2	None	None	Apr-Nov	Valley and foothill grassland
Hesperevax caulescens	hogwallow starfish	4.2	G3	S3	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools

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CNPS: HEALDSBURG 9-QUADS

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Hesperolinon bicarpellatum	two-carpellate western flax	1B.2	G2	S2	None	None	(Apr)May-Jul	Chaparral
Horkelia parryi	Parry's horkelia	1B.2	G2	S2	None	None	Apr-Sep	Chaparral, Cismontane woodland
Horkelia tenuiloba	thin-lobed horkelia	1B.2	G2	S2	None	None	May-Jul(Aug)	Broadleafed upland forest, Chaparral, Valley and foothill grassland
Hosackia gracilis	harlequin lotus	4.2	G3G4	S3	None	None	Mar-Jul	Broadleafed upland forest, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest, Valley and foothill grassland
Iris longipetala	coast iris	4.2	G3	S3	None	None	Mar-May(Jun)	Coastal prairie, Lower montane coniferous forest, Meadows and seeps
Kopsiopsis hookeri	small groundcone	2B.3	G4?	S1S2	None	None	Apr-Aug	North Coast coniferous forest
Lasthenia burkei	Burke's goldfields	1B.1	G1	S1	CE	FE	Apr-Jun	Meadows and seeps, Vernal pools
Lasthenia californica ssp. bakeri	Baker's goldfields	1B.2	G3T1	S1	None	None	Apr-Oct	Closed-cone coniferous forest, Coastal scrub, Marshes and swamps, Meadows and seeps
Layia septentrionalis	Colusa layia	1B.2	G2	S2	None	None	Apr-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Legenere limosa	legenere	1B.1	G2	S2	None	None	Apr-Jun	Vernal pools
Leptosiphon acicularis	bristly leptosiphon	4.2	G4?	S4?	None	None	Apr-Jul	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland
Leptosiphon jepsonii	Jepson's leptosiphon	1B.2	G2G3	S2S3	None	None	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Leptosiphon latisectus	broad-lobed leptosiphon	4.3	G4	S4	None	None	Apr-Jun	Broadleafed upland forest, Cismontane woodland
Lessingia arachnoidea	Crystal Springs lessingia	1B.2	G2	S2	None	None	Jul-Oct	Cismontane woodland, Coastal scrub, Valley and foothill grassland

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CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Lessingia hololeuca	woolly-headed lessingia	3	G2G3	S2S3	None	None	Jun-Oct	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland
Lilium pardalinum ssp. pitkinense	Pitkin Marsh lily	1B.1	G5T1	S1	CE	FE	Jun-Jul	Cismontane woodland, Marshes and swamps, Meadows and seeps
Lilium rubescens	redwood lily	4.2	G3	S3	None	None	Apr-Aug(Sep)	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest
Limnanthes vinculans	Sebastopol meadowfoam	1B.1	G1	S1	CE	FE	Apr-May	Meadows and seeps, Valley and foothill grassland, Vernal pools
Lomatium repostum	Napa lomatium	1B.2	G3	S3	None	None	Mar-Jun	Chaparral, Cismontane woodland
Lupinus sericatus	Cobb Mountain lupine	1B.2	G2?	S2?	None	None	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest
Microseris paludosa	marsh microseris	1B.2	G2	S2	None	None	Apr-Jun(Jul)	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland
Monardella viridis	green monardella	4.3	G3	S3	None	None	Jun-Sep	Broadleafed upland forest, Chaparral, Cismontane woodland
Navarretia cotulifolia	cotula navarretia	4.2	G4	S4	None	None	May-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	G4T2	S2	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools
Navarretia leucocephala ssp. plieantha	many-flowered navarretia	1B.2	G4T1	S1	CE	FE	May-Jun	Vernal pools
Penstemon newberryi var. sonomensis	Sonoma beardtongue	1B.3	G4T3	S3	None	None	Apr-Aug	Chaparral

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	4.2	G5T3T4	S3S4	None	None	Jun-Oct	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools
Piperia candida	white-flowered rein orchid	1B.2	G3	S3	None	None	(Mar)May-Sep	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest
Pleuropogon hooverianus	North Coast semaphore grass	1B.1	G2	S2	CT	None	Apr-Jun	Broadleafed upland forest, Meadows and seeps, North Coast coniferous forest
Ranunculus lobbii	Lobb's aquatic buttercup	4.2	G4	S3	None	None	Feb-May	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools
Rhynchospora alba	white beaked-rush	2B.2	G5	S2	None	None	Jun-Aug	Bogs and fens, Marshes and swamps, Meadows and seeps
Rhynchospora californica	California beaked-rush	1B.1	G1	S1	None	None	May-Jul	Bogs and fens, Lower montane coniferous forest, Marshes and swamps, Meadows and seeps
Rhynchospora capitellata	brownish beaked-rush	2B.2	G5	S1	None	None	Jul-Aug	Lower montane coniferous forest, Marshes and swamps, Meadows and seeps, Upper montane coniferous forest
Rhynchospora globularis	round-headed beaked-rush	2B.1	G4	S1	None	None	Jul-Aug	Marshes and swamps
Sidalcea oregana ssp. valida	Kenwood Marsh checkerbloom	1B.1	G5T1	S1	CE	FE	Jun-Sep	Marshes and swamps
Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	1B.2	G2T2	S2	None	None	May-Jul	Chaparral, Cismontane woodland
Stuckenia filiformis ssp. alpina	northern slender pondweed	2B.2	G5T5	S2S3	None	None	May-Jul	Marshes and swamps
Trifolium amoenum	two-fork clover	1B.1	G1	S1	None	FE	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland
Trifolium buckwestiorum	Santa Cruz clover	1B.1	G2	S2	None	None	Apr-Oct	Broadleafed upland forest, Cismontane woodland, Coastal prairie

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Trifolium hydrophilum	saline clover	1B.2	G2	S2	None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland, Vernal pools
Triquetrella californica	coastal triquetrella	1B.2	G2	S2	None	None		Coastal bluff scrub, Coastal scrub
Triteleia lugens	dark-mouthed triteleia	4.3	G4?	S4?	None	None	Apr-Jun	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest
Usnea longissima	Methuselah's beard lichen	4.2	G4	S4	None	None		Broadleafed upland forest, North Coast coniferous forest
Viburnum ellipticum	oval-leaved viburnum	2B.3	G4G5	S3?	None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest

APPENDIX B

SPECIAL STATUS ANIMAL SPECIES

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Accipiter cooperii	Cooper's hawk	None	None	G5	S4	Watch List	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest
Agelaius tricolor	tricolored blackbird	None	Threatened	G1G2	S1S2	Species of Special Concern	Freshwater marsh | Marsh & swamp | Swamp | Wetland
Ambystoma californiense pop. 3	California tiger salamander - Sonoma County DPS	Endangered	Threatened	G2G3	S2S3	Watch List	Cismontane woodland | Meadow & seep | Riparian woodland | Valley & foothill grassland | Vernal pool | Wetland
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	None	None	G2	S2	None	Vernal pool
Antrozous pallidus	pallid bat	None	None	G4	S3	Species of Special Concern	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland
Arborimus pomo	Sonoma tree vole	None	None	G3	S3	Species of Special Concern	North coast coniferous forest | Oldgrowth | Redwood
Ardea herodias	great blue heron	None	None	G5	S4	None	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland
Athene cunicularia	burrowing owl	None	None	G4	S3	Species of Special Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland
Bombus caliginosus	obscure bumble bee	None	None	G4?	S1S2	None	Habitat types not provided
Bombus occidentalis	western bumble bee	None	Candidate Endangered	G2G3	S1	None	Habitat types not provided

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Corynorhinus townsendii	Townsend's big-eared bat	None	None	G4	S2	Species of Special Concern	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojavean desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland
Coturnicops noveboracensis	yellow rail	None	None	G4	S1S2	Species of Special Concern	Freshwater marsh | Meadow & seep
Dicamptodon ensatus	California giant salamander	None	None	G3	S2S3	Species of Special Concern	Aquatic | Meadow & seep | North coast coniferous forest | Riparian forest
Dubiraphia giulianii	Giuliani's dubiraphian riffle beetle	None	None	G1G3	S1S3	None	Aquatic
Elanus leucurus	white-tailed kite	None	None	G5	S3S4	Fully Protected	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland
Emys marmorata	western pond turtle	None	None	G3G4	S3	Species of Special Concern	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Erethizon dorsatum	North American porcupine	None	None	G5	S3	None	Broadleaved upland forest | Cismontane woodland | Closed-cone coniferous forest | Lower montane coniferous forest | North coast coniferous forest | Upper montane coniferous forest
Gonidea angulata	western ridged mussel	None	None	G3	S1S2	None	Aquatic

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Hysterocarpus traskii pomo	Russian River tule perch	None	None	G5T4	S4	Species of Special Concern	Aquatic | Klamath/North coast flowing waters
Lasiurus blossevillii	western red bat	None	None	G4	S3	Species of Special Concern	Cismontane woodland | Lower montane coniferous forest | Riparian forest | Riparian woodland
Lasiurus cinereus	hoary bat	None	None	G3G4	S4	None	Broadleaved upland forest | Cismontane woodland | Lower montane coniferous forest | North coast coniferous forest
Lavinia symmetricus navarroensis	Navarro roach	None	None	G4T1T2	S2S3	Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters
Linderiella occidentalis	California linderiella	None	None	G2G3	S2S3	None	Vernal pool
Mylopharodon conocephalus	hardhead	None	None	G3	S3	Species of Special Concern	Klamath/North coast flowing waters | Sacramento/San Joaquin flowing waters
Myotis thysanodes	fringed myotis	None	None	G4	S3	None	Habitat types not provided
Oncorhynchus kisutch pop. 4	coho salmon - central California coast ESU	Endangered	Endangered	G5T2T3Q	S2	None	Aquatic
Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threatened	None	G5T2T3Q	S2S3	None	Aquatic | Sacramento/San Joaquin flowing waters
Pandion haliaetus	osprey	None	None	G5	S4	Watch List	Riparian forest
Pekania pennanti	Fisher	None	None	G5	S2S3	Species of Special Concern	North coast coniferous forest | Oldgrowth | Riparian forest

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Rana boylii	foothill yellow-legged frog	None	Endangered	G3	S3	Species of Special Concern	Aquatic | Chaparral | Cismontane woodland | Coastal scrub | Klamath/North coast flowing waters | Lower montane coniferous forest | Meadow & seep | Riparian forest | Riparian woodland | Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Threatened	None	G2G3	S2S3	Species of Special Concern	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Stygobromus cherylae	Barr's amphipod	None	None	G1	S1	None	Aquatic
Syncaris pacifica	California freshwater shrimp	Endangered	Endangered	G2	S2	None	Aquatic | Sacramento/San Joaquin flowing waters
Taricha rivularis	red-bellied newt	None	None	G2	S2	Species of Special Concern	Broadleaved upland forest | North coast coniferous forest | Redwood | Riparian forest | Riparian woodland
Taxidea taxus	American badger	None	None	G5	S3	Species of Special Concern	Only regional habitat types: Bog & fen | Broadleaved upland forest | Chaparral | Cismontane woodland | Closed-cone coniferous forest | Freshwater marsh | Marsh & swamp | Meadow & seep | North coast coniferous forest | Redwood | Riparian forest | Riparian scrub | Riparian woodland | Upper montane coniferous forest | Valley & foothill grassland
Trachykele hartmani	serpentine cypress wood-boring beetle	None	None	G1	S1	None	Habitat types not provided

APPENDIX C

PLANT INVENTORY LIST

Appendix C: Plant Inventory List
7842 Hembree Lane, Windsor CA

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Alismataceae			
	Alisma aquatica-plantago	water plantain	N
Anacardiaceae			
	Toxicodendron diversilobum	poison oak	N
Apiaceae			
	Conium maculatum	poison hemlock	I
	Daucus carota	wild carrot	I
	Eryngium aristulatum	Cal. coyote thistle	N
	Foeniculum vulgare	fennel	I
	Scandix pectin-veneris	shepherds needle	I
	Torilis nodosa	knotted hedge-parsley	I
Apocynaceae			
	Vinca major	periwinckle	I

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Asteraceae			
	Achellia millefolium	yarrow	N
	Achyranchaena mollis	blow wives	N
	Anaphalis margaritacea	pearly everlasting	N
	Anthemis cotula	dog fennel	I
	Baccharis pilularis	coyote brush	N
	Bellis perennis	English daisy	I
	Calendula arvensis	field marigold	I
	Carduus pycnocephalus	Italian thistle	I
	Centaurea melitensis	tocalote	I
	Centaurea solstitianus	yellow star thistle	I
	Chicorum intybus	chicory	I
	Cirsium vulgare	bull thistle	I
	Cotula coronopifolia	brass buttons	I
	Erigeron canadensis	horseweed	I
	Gnaphalium stramineum	cudweed	N
	Helminthotheca echioides	bristly ox-tongue	I
	Hypocharis glabra	smooth cat's ear	I
	Lactuca serriola	prickly lettuce	I
	Lasthenia glaberrima	smooth lasthenia	N
	Layia chrysanthemoides	smooth layia	N
	Madia sativa	chile tarweed	I
	Matricaria matricarioides	pineapple weed	I
	Picris echioides	bristly ox tongue	I
	Senecio vulgaris	common groundsel	I
	Silybum marianum	milk thistle	I
	Soliva pterosperma	lawn burweed	I
	Sonchus oleraceus	sow thistle	I
	Taraxacum officianale	dandelion	I
	Tragopogon porriforlius	salsify	I
	Xanthium spinosum	spanish thistle	I
	Xanthium strumarium	cocklebur	I

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Boraginaceae			
	Amsinkia intermedia	fiddle neck	N
	Plagiobothrys bracteatus	bracted popcorn flower	N
	Plagiobothrys stipitatus	popcorn flower	N
Brassicaceae			
	Athysanus pusillus	drawf athysanus	N
Callitrichaceae			
	Callatriche marginata	winged water starwort	N
Campanulaceae			
	Downingia concolor	fringed downingia	N
	Downingia pusilla	dwarf downingia	N
Caprifoliaceae			
	Lonicera hispidula	honeysuckle	N
Caryophyllaceae			
	Cerastrium viscosum	chickweed	I
	Spergula arvense	corn spurry	I
	Stellaria media	chickweed	I
Chenopodiaceae			
	Atriplex patula	fat hen	I
	Chenopodium album	lambs quarters	I
Convolvulaceae			
	Convolvulus arvensis	bindweed	I
Cruciferae			
	Brassica nigra	wild mustard	I
	Brassica rapa	field mustard	I
	Lepidium nitidum	pepper grass	N
	Raphanus sativus	wild radish	I
	Rorippa palustris var. hispida	bog yellow-cress	N
Cyperaceae			
	Carex densa	dense sedge	N
	Cyperus eragrostis	nut-sedge	I
	Eleocharis macrostachya	creeping spiked sedge	N

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Fabaceae			
	Cytisus scoparius	Scotch broom	I
	Genitsa monspessulana	French broom	I
	Lotus corniculatus	birdsfoot trefoil	I
	Lotus micranthus	trefoil	N
	Lupinus bicolor	miniature lupine	N
	Lupinus nanus	Douglas's lupine	N
	Medicago polymorpha	bur-clover	I
	Melilotus albus	white sweetclover	I
	Trifolium depauperatum	balloon clover	N
	Trifolium hirtum	rose clover	I
	Trifolium repens	white clover	I
	Trifolium spp.	clover	?
	Trifolium subterraneum	subterranean clover	I
	Trifolium variegatum	white-tip clover	N
	Trifolium wildenovii	tomcat clover	N
	Vicia sativa	spring vetch	I
	Vicia villosa	winter vetch	I
Fagaceae			
	Quercus agrifolia	coast live oak	N
	Quercus kelloggii	black oak	N
	Quercus lobata	valley oak	N
Geraniaceae			
	Erodium cicutarium	redstem filaree	I
	Erodium moschatum	whitestem filaree	I
	Geranium dissectum	wild geranium	I
	Geranium molle	dove's foot geranium	I
Juncaceae			
	Juncus bufonius	toadrush	N
	Juncus patens	spreading rush	N
	Juncus phaeocephalus v. paniculatus	brown head rush	N
	Juncus tenuis	slender rush	N
	Luzula comosa	wood rush	N

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Juncaginaceae			
	Lilaea scilloides	flowering quillwort	N
Lamiaceae			
	Marrubium vulgare	Horehound	I
	Mentha pelugium	pennyroyal	I
	Prunella vulgaris	self-heal	N
	Stachys rigida	hedge nettle	N
Liliaceae			
	Brodiaea terrestris	ground brodiaea	N
	Dichlostemma capitatum	blue dicks	N
	Triteleia hyacinthina	white brodiaea	N
Limnanthaceae			
	Limnanthes douglasii v. douglasii	meadow foam	N
Linaceae			
	Linum bienne	flax	I
Lythraceae			
	Lythrum hyssopifolia	hyssop loosestrife	I
Malvaceae			
	Malva rotundifolia	mallow	I
Montiaceae			
	Montia fontana	water chickweed	N
Myrtaceae			
	Eucalyptus globulus	blue gum	I
Onagaraceae			
	Camissonia ovatum	sun cup	N
	Clarkia affinis	willow herb	N
	Epilobium brachycarpum	panicled willow herb	N
	Epilobium ciliatum	willow herb	N
	Epilobium spp.	willow herb	
	Ludwigia peploides	yellow water weed	N
Orobanchaceae			
	Bellardia trixago	bellardia	I

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Papaveraceae			
	Eschscholzia californica	California poppy	N
Plantaginaceae			
	Plantago lanceolata	English plantain	I

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Poaceae			
	Agrostis exerta	bent grass	N
	Agrostis stolonifera	creeping bentgrass	N
	Aira caryophyllea	hairgrass	I
	Alopecurus saccatus	annual foxtail	N
	Avena barbata	slender wild oat	I
	Avena fatua	wild oat	I
	Briza maxima	large quaking grass	I
	Briza minor	small quaking grass	I
	Bromus hordeaceus	soft chess	I
	Crypsis schoenoides	swamp grass	I
	Cynodon dactylon	bermuda grass	I
	Danthonia californicus	California oatgrass	N
	Deschampsia danthonoides	hairgrass	N
	Distichlis spicata	saltgrass	N
	Elymus caput-medusae	medusa-head	I
	Elymus glaucus	blue wild rye	N
	Elymus triticoides	creeping wildrye	N
	Festuca arundinacea	tall fescue	I
	Festuca perennis	perennial rye grass	I
	Glyceria occidentalis	manna grass	N
	Holcus lanatus	velvet grass	I
	Hordeum brachyantherum	meadow barley	N
	Hordeum marinum spp. gussoneanum	Mediterranean barley	I
	Hordeum murinum ssp. leporinum	foxtail barley	I
	Nassella pulchra	purple needlegrass	N
	Paspalum dilatum	dallis grass	I
	Phalaris aquatica	Harding grass	I
	Pleuropogon californicus	semaphore grass	N
	Poa annua	annual bluegrass	I
	Polypogon monspeliensis	rabbitsfoot grass	I

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Polygonaceae			
	Polygonum aviculare	common knotweed	I
	Rumex acetosella	sheep sorrel	I
	Rumex conglomeratus	dock	I
	Rumex crispus	curly dock	I
	Rumex pulcher	fiddle dock	I
Portulaceae			
	Calandria ciliata	red maids	N
	Claytonia perfoliata	miners lettuce	N
Primulaceae			
	Anagallis arvensis	scarlet pimpernel	I
Ranunculaceae			
	Rannunculus pusillus	low spearwort	I
	Ranunculus californicus	California buttercup	N
	Ranunculus lobbii	aquatic buttercup	N
	Ranunculus muricatus	spiny buttercup	I
Rosaceae			
	Heteromeles arbutifolia	toyon	N
	Prunus domestica	common plum	I
	Rubus armeniacus	Himalayan blackberry	I
	Rubus ursinus	California blackberry	N
Rubiaceae			
	Galium aparine	cleavers	I
	Sherardia arvensis	field madder	I
Salicaceae			
	Salix lasiolepis	arroyo willow	N
Scrophulariaceae			
	Gratiola ebracteata	Hedge-Hyssop	N
	Kixia elatine	fluellin	I
	Parentucellia viscosa	parentucella	I
	Triphysaria versicolor	owl's clover	N
	Veronica anagallis-aquatica	water speedwell	I
	Veronica perigrina	speedwell	N

FAMILY	SPECIES NAME	COMMON NAME	NATIVE=N INTRODUCED=I
Typhaceae			
	Typha latifolia	cattail	N
Verbenaceae			
	Phyla nodiflora	fog fruit	I

APPENDIX D

PRELIMINARY ANALYSIS OF EXISTING DRAINAGE DITCHES

PRELIMINARY ANALYSIS OF EXISTING DRAINAGE DITCHES

FOR

HEMBREE LANE SUBDIVISION

Located at
7842 Hembree Lane
Windsor, CA

APN 163-080-047

Prepared for

Falcon Point Associates and DRG Builders
3496 Buskirk Ave, Suite 204
Pleasamt Hill, CA 94523

OCTOBER 2022

10-18-22

Prepared by

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21-107

INTRODUCTION

The Hembree Lane Subdivision site is located at 7842 Hembree Lane in the Town of Windsor. The project consists of 5.1 acres and is contained within a single assessor's parcel, APN 163-080-047. The site is currently undeveloped, containing approximately 400 trees that vary in size and consist mostly of Oaks. The existing topography is relatively flat, with the western half of the project sloping slightly west towards Hembree Lane, and the eastern half draining to an existing inlet constructed with the Country Meadows Subdivision.

The project is proposed by Falcon Point Associates and DRG Builders as a single-phased project. The improvements will see the construction of 24 single-family residential lots, public streets to support them, and 2.1-acres of open space offered to the Town of Windsor.

The existing storm drain systems within Cornell Street, Country Meadow Lane, and Hembree Lane will be extended to serve the development. Analysis of these storm drain extensions will be provided in a final drainage report that will be developed with the construction drawings. This will be discussed further in the overall site drainage report. The purpose of this report is analysis of the existing on-site drainage ditches in the Southeast, rural portion of the development. The analysis includes existing runoff from offsite developments conveyed through a dual 30-inch storm drain system, which this project will extend, and additional runoff from portions of the Hembree Lane Subdivision proposed to outfall to the drainage ditches via extension of the existing underground storm drain system. There are two separate channels that collect runoff from the existing and proposed developments as well as undeveloped land surrounding the drainage ditches.

BRIEF SUMMARY

The following hydrology and hydraulic calculations show that the existing drainage ditches have the capacity to accept runoff from the proposed development. For more information, see the conclusions section at the end of this report.

HYDROLOGY

The following hydrology calculations were calculated using variables of the Incremental Rational Method (IRM). The variables used in the analysis were obtained from Sonoma Water's March 2020 Flood Management Design Manual (FMDM). Runoff coefficients (C) were based on FMDM Appendix C, Table C-1, and reflect the existing and ultimate land use of the property and the surrounding areas. Precipitation data was taken from NOAA Atlas 14, which provides site specific rainfall depths and intensities for various storm events. The initial time of concentration for the conveyance of off-site runoff was developed using record plans from Sonoma Water while the time of concentration for the on-site developments are set at 10 minutes per the proposed land use. Due to the size of the project, the analysis will consider a 10-year event per Table 3-2 of the FMDM. Runoff from the 100-year storm event will need to be routed overland across the site and over the public streets. A final drainage report will be prepared with the construction permit drawings to show the 100-year water surface in the streets will not threaten the finish floors of adjacent buildings.

Referring to record plans from Sonoma Water and the Town of Windsor, it was determined that there are several off-site residential developments that are tributary to the existing drainage ditches on the proposed Hembree Lane Subdivision project site. When referring to the "Master Hydrology Map for Offsite Areas Park Place Subdivision" and the "Cross Creek Phase 2 Downstream Offsites" in the attachments section of this report, tributary area 1B includes a portion of the proposed Hembree Lane Subdivision. Our analysis began with the flow and time of concentration entering tributary 1B. This information was used to determine the initial runoff coefficient, C, initial time of concentration, and the initial total area coming from offsite. Using values for area 1B from the "Cross Creek Phase 2 Downstream Offsites" and the equation Q = KCIA we were able to calculate an initial runoff coefficient of 0.52 and took an initial time of concentration of 30.2 minutes with an initial tributary area of 33.85 acres. As shown on the Hembree Lane Subdivision hydro map attached, there are several other more recent residential development off-site tributaries and the proposed on-site tributaries in addition to the initial tributaries found in record plans. The runoff coefficient for these tributaries were determined, from Table C-1, to be 0.74 for residential developments and 0.38 for undeveloped areas. A weighted runoff coefficient was calculated for each incremental tributary area. From record plans MNS 89-282 attached, an additional runoff from 0.22 acres of residential development with runoff coefficient of 0.74 is considered in the initial flow outfall into the existing channel 1 as shown on the attached hydrology map.

To demonstrate adequate capacity to the Town of Windsor, an analysis of the existing drainage ditches within the project site has been prepared. The analysis seeks to show that the existing drainage ditches have the capacity to accept portions of the runoff from the proposed development. See the following runoff calculations for a summary of area and runoff coefficient calculations.

A hydrology map has been prepared and submitted with this package to delineate the proposed hydrologic conditions. The hydrology map defines the limits of the tributary to the point of concentration within the existing drainage ditches. This map is used as the basis for determining the runoff quantity discharged into the system at multiple points of

concentration within the channels, as determined by existing and proposed land uses. Treatment facilities associated with the Storm Water Low Impact Development Submittal are assumed to be full during the design storm, and any beneficial effects from these features have been ignored to be conservative.

Table C-1. Runoff Coefficients (*Cs*) (Incremental Rational Method)

Land Use	Lot Size (acres)	Impervious Fraction	Average Slope (%)			
			0-2	>2-6	>6-12	>12
Soil Type A						
Residential[1]						
Rural		0.03	0.24	0.28	0.34	0.38
Very low density	2	0.11	0.29	0.34	0.38	0.42
	1	0.24	0.38	0.42	0.46	0.49
Low density	1/2	0.32	0.43	0.47	0.50	0.53
	1/3	0.41	0.50	0.53	0.56	0.58
Medium-low density	1/4	0.49	0.55	0.58	0.60	0.62
Medium density	1/8	0.70	0.70	0.71	0.73	0.74
Medium-high density	1/18	1	0.90	0.90	0.90	0.90
Business, commercial, etc.		1	0.90	0.90	0.90	0.90
General industrial		1	0.90	0.90	0.90	0.90
Parks and recreation		0.05	0.25	0.25	0.30	0.35
Ag and open space		0.02	0.23	0.23	0.28	0.33
Soil Type B						
Residential[1]						
Rural		0.03	0.28	0.33	0.39	0.43
Very low density	2	0.11	0.34	0.38	0.43	0.47
	1	0.24	0.42	0.45	0.50	0.53
Low density	1/2	0.32	0.47	0.50	0.54	0.57
	1/3	0.41	0.53	0.56	0.59	0.61
Medium-low density	1/4	0.49	0.58	0.60	0.63	0.65
Medium density	1/8	0.70	0.71	0.73	0.74	0.76
Medium-high density	1/18	1	0.90	0.90	0.90	0.90
Business, commercial, etc.		1	0.90	0.90	0.90	0.90
General industrial		1	0.90	0.90	0.90	0.90
Parks and recreation		0.05	0.25	0.30	0.34	0.40
Ag and open space		0.02	0.23	0.28	0.33	0.38
Soil Type C						
Residential[1]						
Rural		0.03	0.33	0.38	0.43	0.47
Very low density	2	0.11	0.38	0.42	0.47	0.51
	1	0.24	0.45	0.49	0.53	0.57
Low density	1/2	0.32	0.50	0.53	0.57	0.60

Land Use	Lot Size (acres)	Impervious Fraction	Average Slope (%)			
			0-2	>2-6	>6-12	>12
	1/3	0.41	0.56	0.59	0.62	0.64
Medium-low density	1/4	0.49	0.60	0.63	0.65	0.68
Medium density	1/8	0.70	0.73	0.74	0.76	0.77
Medium-high density	1/18	1	0.90	0.90	0.90	0.90
Business, commercial, etc.		1	0.90	0.90	0.90	0.90
General industrial		1	0.90	0.90	0.90	0.90
Parks and recreation		0.05	0.34	0.39	0.44	0.48
Ag and open space		0.02	0.33	0.38	0.43	0.47
Soil Type D						
Residential[1]						
Rural		0.03	0.38	0.43	0.48	0.52
Very low density	2	0.11	0.42	0.47	0.52	0.55
	1	0.24	0.49	0.53	0.57	0.60
Low density	1/2	0.32	0.54	0.57	0.61	0.63
	1/3	0.41	0.59	0.62	0.65	0.67
Medium-low density	1/4	0.49	0.63	0.65	0.68	0.70
Medium density	1/8	0.70	0.74	0.76	0.77	0.78
Medium-high density	1/18	1	0.90	0.90	0.90	0.90
Business, commercial		1	0.90	0.90	0.90	0.90
General industrial		1	0.90	0.90	0.90	0.90
Parks and recreation		0.05	0.39	0.44	0.49	0.53
Ag and open space		0.02	0.38	0.42	0.48	0.52

[1] *Percent impervious values are based on analysis conducted by ESA for Sonoma County Water Agency (Sonoma Water) in 2014, using a sample of existing developed areas.*

[2] *For residential areas, composite* C *values were developed as follows:* C *values for soil type from Los Angeles County Hydrology Manual (1991) were modified for slope using the vegetated areas curve from Plate B-1 of SCWA (1983) for pervious areas within a given slope range and a* C *of 0.90 for all impervious areas.*

Source: Approach adapted from McCuen 1989

Soil Map—Sonoma County, California
(7842 Hembree Lane)

Map Scale: 1:2,310 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Sonoma County, California
Survey Area Data: Version 15, Sep 10, 2021

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

Date(s) aerial images were photographed: Jun 1, 2020—Oct 30, 2020

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HuB	Huichica loam, ponded, 0 to 5 percent slopes	0.0	0.2%
HwB	Huichica loam, shallow, ponded, 0 to 5 percent slopes	5.2	99.8%
Totals for Area of Interest		**5.2**	**100.0%**

HYDROLOGIC CLASS D SOILS

CIVIL DESIGN CONSULTANTS, INC.

HEMBREE LANE SUBDIVISION

Runoff Calculations - Existing On-site Drainage Ditches

Channel 2

Point of Concentration	Incremental Area (Acres)	Total Area (Acres)	C (Incremental)	C (Total)	Flow Velocity, V	Length, L	Travel Time (Minutes)	Time of Concentration (Minutes)	I	Q (A*C*I)
1B (Cross Creek)	33.85	33.85	0.52	0.52						
2A	0.22	34.07	0.74	0.52				30.20	1.38	24.53
2B	0.57	34.64	0.38	0.52	3.75	354	1.57	31.77	1.35	24.19
2C	0.15	34.79	0.38	0.52	1.23	50	0.68	32.45	1.33	24.01
2D	0.16	34.95	0.38	0.52	1.31	50	0.64	33.09	1.32	23.85

Channel 3

Point of Concentration	Incremental Area, A_{INC} (Acres)	Total Area, A (Acres)	C_{INC} (Incremental)	C (Total)	Flow Velocity, V	Length, L	Travel Time (Minutes)	Time of Concentration (Minutes)	I	Q (A*C*I)
3A	1.12	1.12	0.74	0.74				10.00	2.43	2.01
3B	0.59	1.71	0.74	0.74				10.00	2.43	3.07
3C	0.96	2.67	0.74	0.74	2.5	34	0.23	10.23	2.40	4.74
3D	0.2	2.87	0.9	0.75	2.5	146	0.97	11.20	2.29	4.94
3E	0.04	2.91	0.38	0.75	2.5	18.33	0.12	11.32	2.28	4.94
3F	0.05	2.96	0.38	0.74	1.29	50	0.65	11.97	2.21	4.85

Totals for Tributary Area and Runoff Coefficent Including Channel 3

Channel 2 and 3 Confluence	2.96	37.91	0.74	0.54

CIVIL DESIGN CONSULTANTS, INC.

HEMBREE LANE SUBDIVISION

Runoff Calculations - Existing On-site Drainage Ditches

Channel 4

Point of Concentration	Incremental Area, A_{INC} (Acres)	Total Area, A (Acres)	C_{INC} (Incremental)	C (Total)	Flow Velocity, V	Length, L	Travel Time (Minutes)	Time of Concentration (Minutes)	I	Q (A*C*I)
4A	0.11	38.02	0.38	0.53	1.30	50	0.64	33.73	1.30	26.53
4B	0.10	38.12	0.38	0.53	1.17	50	0.71	34.44	1.29	26.30
4C	0.09	38.21	0.38	0.53	1.38	50	0.60	35.04	1.28	26.11
4D	0.07	38.28	0.38	0.53	1.80	50	0.46	35.51	1.27	25.97
4E	0.07	38.35	0.38	0.53	1.77	50	0.47	35.98	1.26	25.83
4F	0.05	38.40	0.38	0.53	1.83	50	0.46	36.43	1.25	25.69

NOAA Atlas 14, Volume 6, Version 2
Location name: Windsor, California, USA*
Latitude: 38.5359°, Longitude: -122.7953°
Elevation: 122.18 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.98** (1.76-2.24)	**2.42** (2.15-2.76)	**3.00** (2.65-3.42)	**3.44** (3.02-3.97)	**4.06** (3.41-4.86)	**4.50** (3.71-5.53)	**4.96** (3.96-6.26)	**5.41** (4.19-7.07)	**6.01** (4.43-8.23)	**6.46** (4.57-9.22)
10-min	**1.42** (1.26-1.61)	**1.74** (1.54-1.97)	**2.15** (1.90-2.45)	**2.47** (2.17-2.85)	**2.90** (2.45-3.48)	**3.23** (2.65-3.97)	**3.55** (2.84-4.49)	**3.88** (3.00-5.06)	**4.31** (3.17-5.90)	**4.63** (3.28-6.61)
15-min	**1.14** (1.02-1.30)	**1.40** (1.24-1.59)	**1.73** (1.53-1.98)	**1.99** (1.75-2.30)	**2.34** (1.97-2.80)	**2.60** (2.14-3.20)	**2.86** (2.29-3.62)	**3.12** (2.42-4.08)	**3.47** (2.56-4.76)	**3.73** (2.64-5.33)
30-min	**0.802** (0.714-0.910)	**0.982** (0.872-1.12)	**1.21** (1.07-1.38)	**1.40** (1.22-1.61)	**1.64** (1.38-1.97)	**1.82** (1.50-2.24)	**2.01** (1.60-2.54)	**2.19** (1.69-2.86)	**2.43** (1.79-3.34)	**2.62** (1.85-3.73)
60-min	**0.563** (0.501-0.640)	**0.690** (0.613-0.785)	**0.852** (0.754-0.972)	**0.981** (0.860-1.13)	**1.15** (0.971-1.38)	**1.28** (1.05-1.57)	**1.41** (1.13-1.78)	**1.54** (1.19-2.01)	**1.71** (1.26-2.34)	**1.84** (1.30-2.62)
2-hr	**0.426** (0.380-0.484)	**0.518** (0.460-0.589)	**0.632** (0.560-0.722)	**0.722** (0.634-0.832)	**0.839** (0.708-1.01)	**0.926** (0.761-1.14)	**1.01** (0.806-1.28)	**1.09** (0.845-1.43)	**1.20** (0.884-1.65)	**1.28** (0.906-1.83)
3-hr	**0.363** (0.323-0.412)	**0.439** (0.390-0.499)	**0.533** (0.473-0.609)	**0.607** (0.532-0.700)	**0.703** (0.592-0.842)	**0.772** (0.635-0.948)	**0.839** (0.671-1.06)	**0.906** (0.701-1.18)	**0.991** (0.730-1.36)	**1.05** (0.745-1.50)
6-hr	**0.275** (0.244-0.312)	**0.332** (0.295-0.378)	**0.403** (0.357-0.460)	**0.457** (0.401-0.527)	**0.526** (0.444-0.631)	**0.576** (0.474-0.708)	**0.624** (0.499-0.789)	**0.671** (0.519-0.876)	**0.730** (0.538-1.00)	**0.773** (0.547-1.10)
12-hr	**0.194** (0.172-0.220)	**0.238** (0.212-0.271)	**0.292** (0.259-0.333)	**0.333** (0.292-0.384)	**0.385** (0.325-0.461)	**0.422** (0.347-0.518)	**0.457** (0.365-0.578)	**0.491** (0.380-0.641)	**0.533** (0.393-0.731)	**0.564** (0.399-0.804)
24-hr	**0.134** (0.120-0.152)	**0.168** (0.151-0.191)	**0.209** (0.187-0.238)	**0.240** (0.214-0.276)	**0.279** (0.241-0.330)	**0.307** (0.260-0.369)	**0.333** (0.276-0.409)	**0.358** (0.290-0.451)	**0.389** (0.304-0.509)	**0.411** (0.311-0.555)
2-day	**0.088** (0.079-0.100)	**0.112** (0.100-0.127)	**0.140** (0.125-0.160)	**0.161** (0.144-0.185)	**0.188** (0.162-0.222)	**0.207** (0.175-0.249)	**0.225** (0.186-0.276)	**0.242** (0.196-0.304)	**0.263** (0.205-0.344)	**0.278** (0.210-0.375)
3-day	**0.068** (0.061-0.077)	**0.086** (0.077-0.098)	**0.108** (0.097-0.124)	**0.125** (0.111-0.144)	**0.146** (0.126-0.173)	**0.161** (0.136-0.193)	**0.175** (0.145-0.215)	**0.188** (0.152-0.237)	**0.205** (0.160-0.268)	**0.216** (0.164-0.292)
4-day	**0.057** (0.051-0.064)	**0.072** (0.065-0.082)	**0.091** (0.081-0.103)	**0.105** (0.093-0.120)	**0.122** (0.106-0.144)	**0.135** (0.114-0.162)	**0.146** (0.121-0.180)	**0.158** (0.128-0.199)	**0.172** (0.134-0.224)	**0.182** (0.137-0.245)
7-day	**0.040** (0.036-0.045)	**0.051** (0.046-0.058)	**0.064** (0.057-0.073)	**0.074** (0.066-0.085)	**0.086** (0.075-0.102)	**0.095** (0.081-0.115)	**0.103** (0.086-0.127)	**0.111** (0.090-0.141)	**0.121** (0.095-0.159)	**0.129** (0.097-0.173)
10-day	**0.032** (0.029-0.036)	**0.041** (0.036-0.046)	**0.051** (0.046-0.058)	**0.059** (0.052-0.068)	**0.069** (0.059-0.081)	**0.076** (0.064-0.091)	**0.082** (0.068-0.101)	**0.089** (0.072-0.112)	**0.097** (0.075-0.126)	**0.102** (0.077-0.138)
20-day	**0.021** (0.019-0.024)	**0.027** (0.024-0.031)	**0.034** (0.030-0.039)	**0.039** (0.035-0.045)	**0.046** (0.039-0.054)	**0.050** (0.042-0.060)	**0.054** (0.045-0.067)	**0.058** (0.047-0.073)	**0.063** (0.049-0.083)	**0.067** (0.050-0.090)
30-day	**0.017** (0.015-0.019)	**0.022** (0.019-0.025)	**0.027** (0.024-0.031)	**0.031** (0.028-0.036)	**0.036** (0.031-0.043)	**0.040** (0.034-0.048)	**0.043** (0.036-0.053)	**0.046** (0.037-0.058)	**0.050** (0.039-0.065)	**0.053** (0.040-0.071)
45-day	**0.014** (0.012-0.016)	**0.018** (0.016-0.020)	**0.022** (0.020-0.025)	**0.025** (0.023-0.029)	**0.029** (0.025-0.035)	**0.032** (0.027-0.039)	**0.035** (0.029-0.043)	**0.037** (0.030-0.047)	**0.040** (0.031-0.052)	**0.042** (0.032-0.057)
60-day	**0.012** (0.011-0.014)	**0.016** (0.014-0.018)	**0.019** (0.017-0.022)	**0.022** (0.020-0.026)	**0.026** (0.022-0.030)	**0.028** (0.024-0.034)	**0.030** (0.025-0.037)	**0.032** (0.026-0.041)	**0.035** (0.027-0.046)	**0.037** (0.028-0.049)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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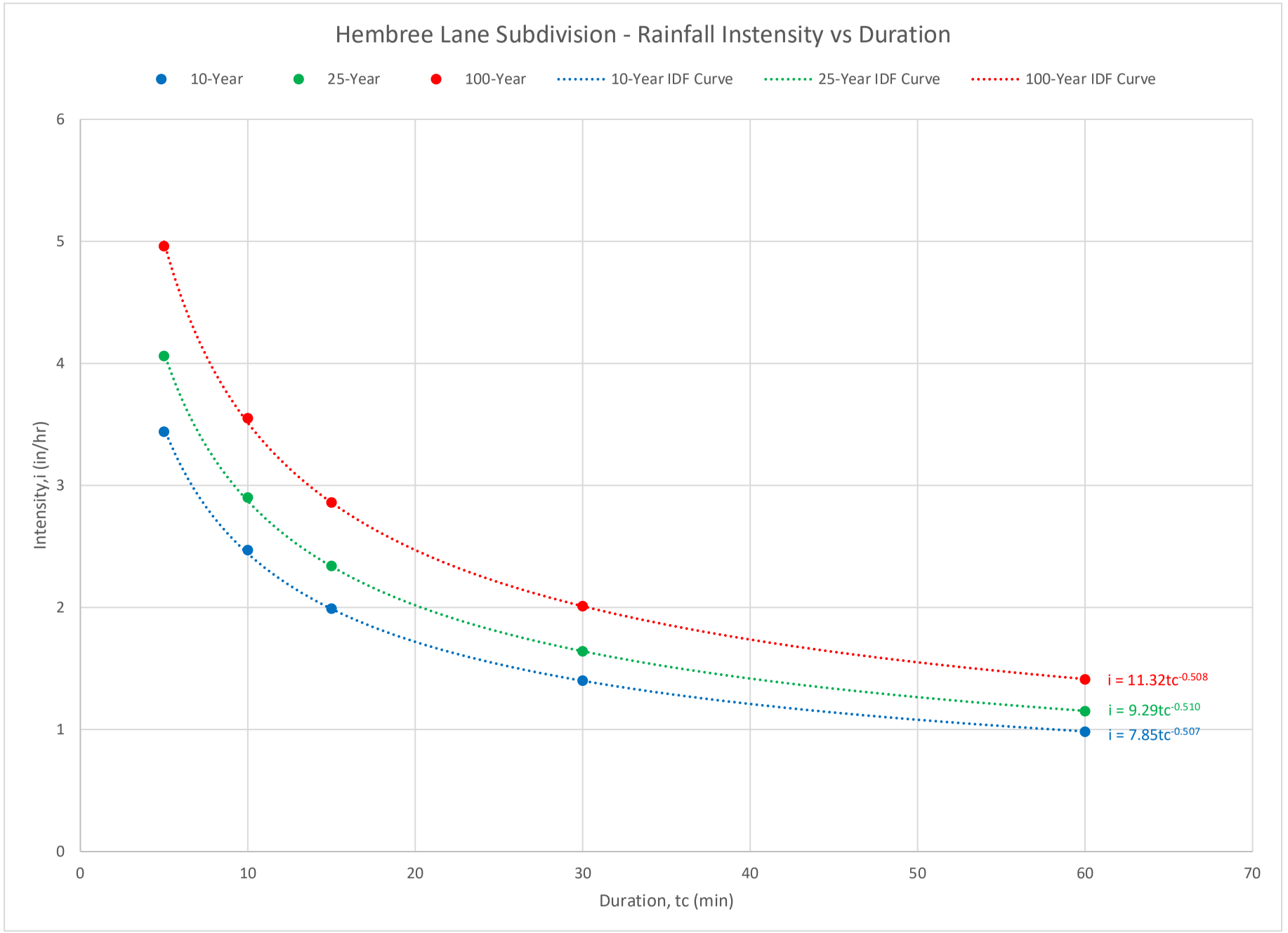
PF graphical


Hembree Lane Subdivision - Rainfall Instensity vs Duration
10-Year
25-Year
100-Year
10-Year IDF Curve
25-Year IDF Curve
100-Year IDF Curve
Intensity,i (in/hr)
Duration, tc (min)
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
i = 11.32tc-0.508
i = 9.29tc-0.510
i = 7.85tc-0.507

HYDRAULICS

The hydrology calculations were performed using the Hydraflow Express Extension for Civil 3D developed and marketed by Autodesk. This software analyzes a given channel by calculating the normal depth profile from a known flow. Analysis of the existing drainage ditches within the project site was accomplished by performing a normal depth calculation at incremental cross-sections of the existing channels. There are two separate channels, that merge into one, that were analyzed in the calculations.

Existing underground storm drain systems currently outfall into each channel. The storm drain systems collect overland flow from existing and proposed developments and covey the flow to outfall into the existing channels. With the proposed development both storm drain systems are to be extended, which was considered in the hydrology calculations. The Manning's n for concrete pipe has been set at 0.014 per FMDM Table D.2-4 and the additional time of concentration for flow through the storm drain systems has been considered. Peak flows were modeled to determine outfall flows at each channel and can be seen below in this report.

Per Table D.2-1 of the FMDM, a Manning's Roughness Coefficient, n, was determined for each channel using the "Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains" from the United States Geological Survey Water-Supply Paper 2339 by George J Arcement Jr and Verne R Schneider. Equation (3) was used to calculate the n value for each channel:

$$n = (n_b + n_1 + n_2 + n_3 + n_4)m$$

where,

n_b = a base value of n for a straight, uniform, smooth channel in natural materials
n_1 = a correction factor for the effect of surface irregularities
n_2 = a value for variations in shape and size of the channel cross section
n_3 = a value for obstructions
n_4 = a value for vegetation and flow conditions
m = a correction factor for meandering of the channel

See the guide for further explanation of these factors. A site visit was needed to develop the values for each of these factors.

Incremental tributaries were developed to determine flow at multiple points of concentration within the channels. Maximum flow and normal depth occur where the two channels merge into one. It is determined that the exiting drainage ditches have the capacity to accept and convey the runoff from the proposed development. See the following channel report for a graphic representation of the results.

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

Flow in Double 30" Pipes - Outfalls to Channel 2

Circular

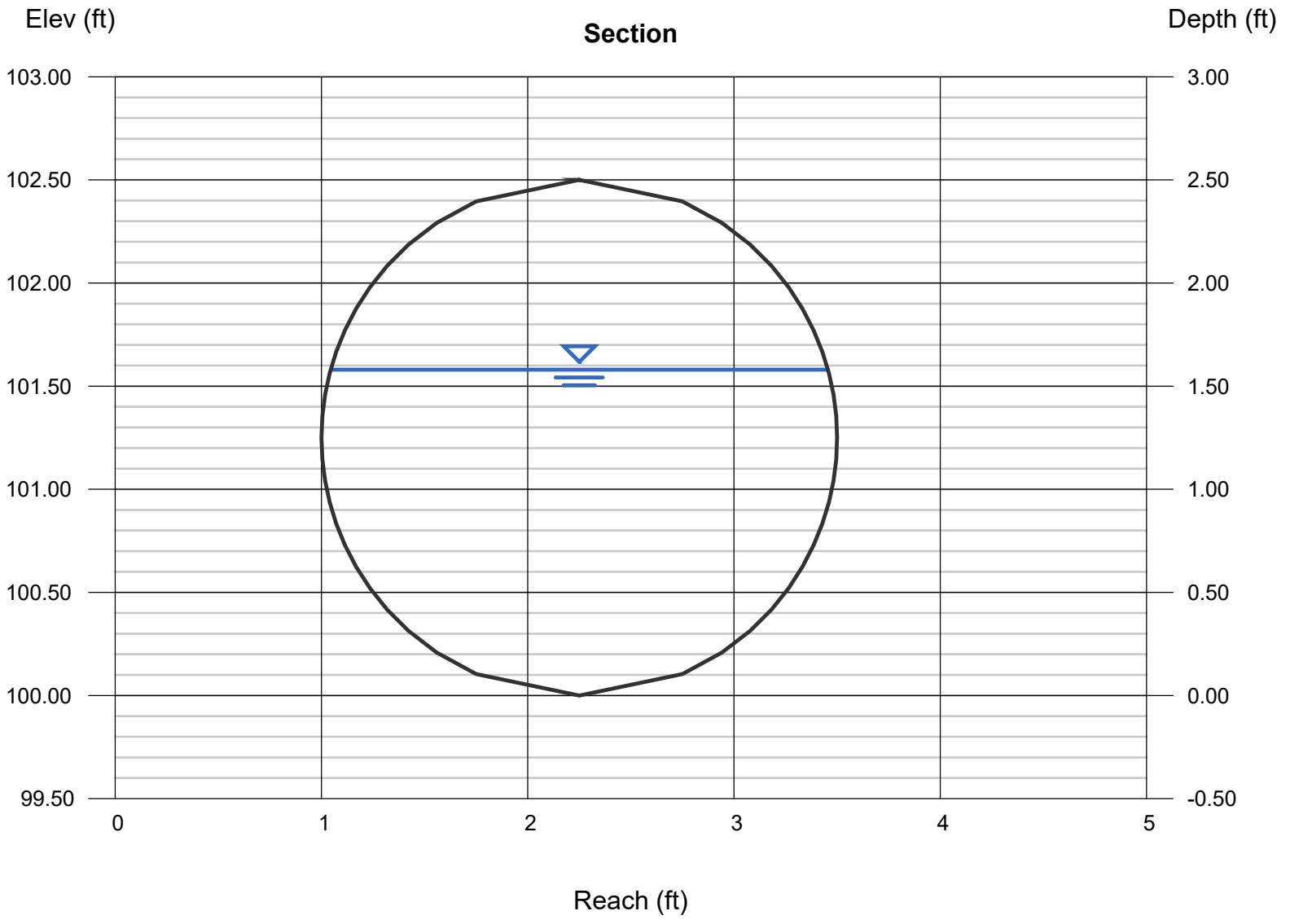
Diameter (ft)	= 2.50
Invert Elev (ft)	= 100.00
Slope (%)	= 0.20
N-Value	= 0.014

Calculations

Compute by:	Known Q
Known Q (cfs)	= 12.27

Highlighted

Depth (ft)	= 1.58
Q (cfs)	= 12.27
Area (sqft)	= 3.28
Velocity (ft/s)	= 3.75
Wetted Perim (ft)	= 4.60
Crit Depth, Yc (ft)	= 1.18
Top Width (ft)	= 2.41
EGL (ft)	= 1.80



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 2B - Flow at Outfall to Channel 2

User-defined

Invert Elev (ft)	= 119.83
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

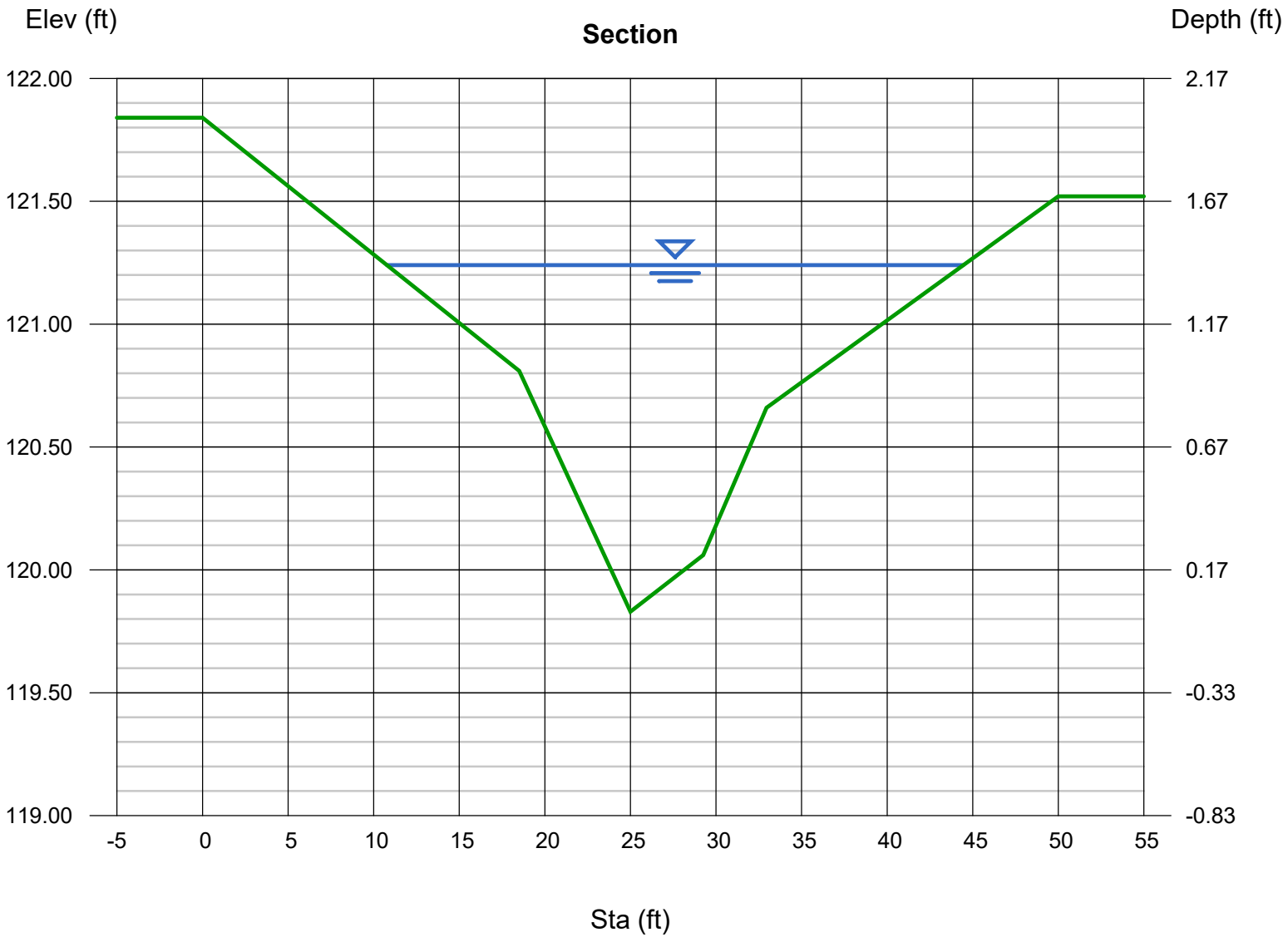
Compute by:	Known Q
Known Q (cfs)	= 24.19

Highlighted

Depth (ft)	= 1.41
Q (cfs)	= 24.19
Area (sqft)	= 19.74
Velocity (ft/s)	= 1.23
Wetted Perim (ft)	= 33.83
Crit Depth, Yc (ft)	= 0.82
Top Width (ft)	= 33.67
EGL (ft)	= 1.43

(Sta, El, n)-(Sta, El, n)...

(0.00, 121.84)-(18.50, 120.81, 0.065)-(22.34, 120.23, 0.065)-(25.00, 119.83, 0.065)-(29.25, 120.06, 0.065)-(32.95, 120.66, 0.065)-(50.00, 121.52, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 2C

User-defined

Invert Elev (ft)	= 119.31
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

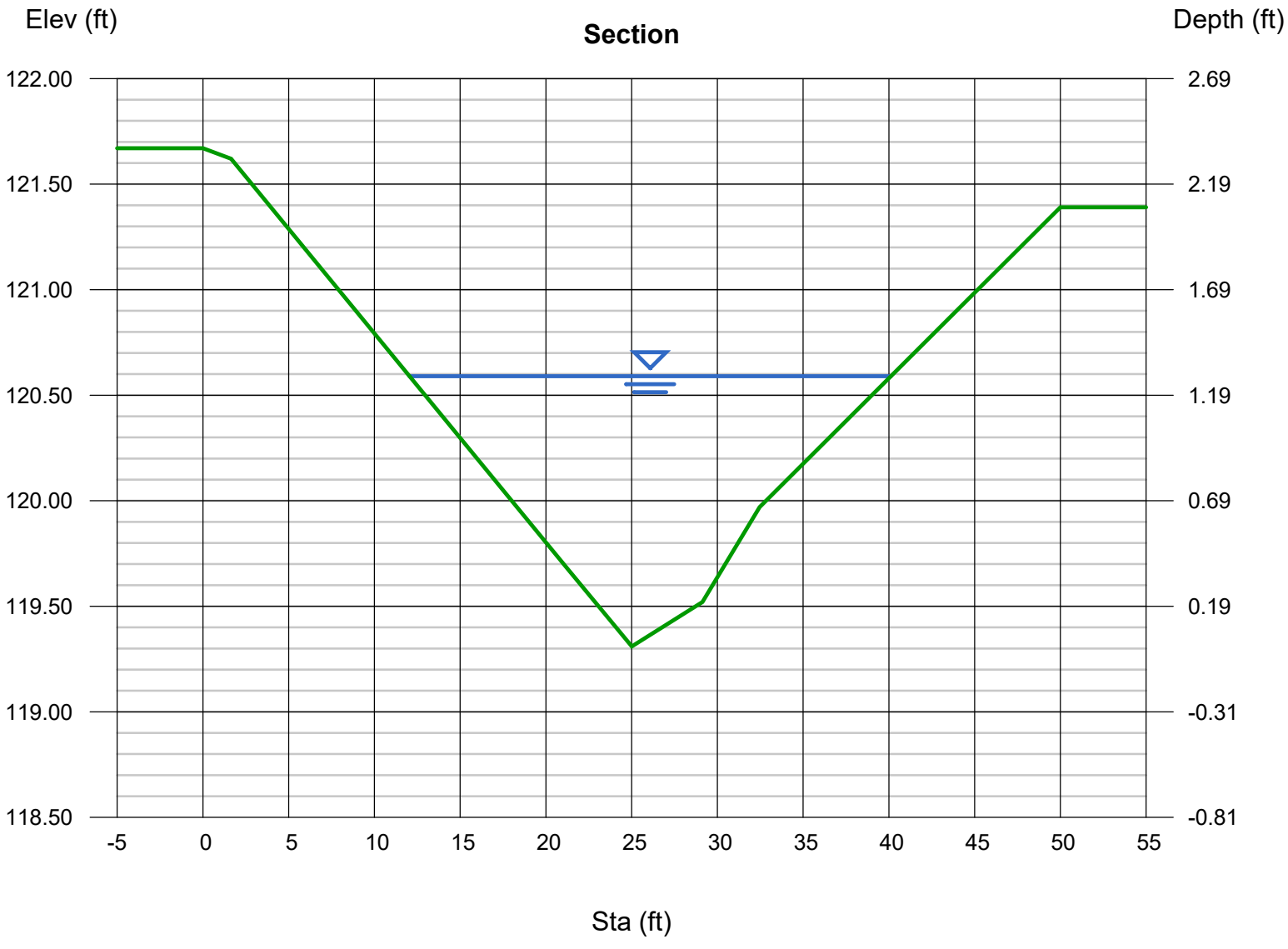
Compute by:	Known Q
Known Q (cfs)	= 24.01

Highlighted

Depth (ft)	= 1.28
Q (cfs)	= 24.01
Area (sqft)	= 18.34
Velocity (ft/s)	= 1.31
Wetted Perim (ft)	= 28.20
Crit Depth, Yc (ft)	= 0.76
Top Width (ft)	= 28.07
EGL (ft)	= 1.31

(Sta, El, n)-(Sta, El, n)...

(0.00, 121.67)-(1.64, 121.62, 0.065)-(21.24, 119.68, 0.065)-(25.01, 119.31, 0.065)-(29.13, 119.52, 0.065)-(32.46, 119.97, 0.065)-(50.00, 121.39, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 2D

User-defined

Invert Elev (ft)	= 119.10
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

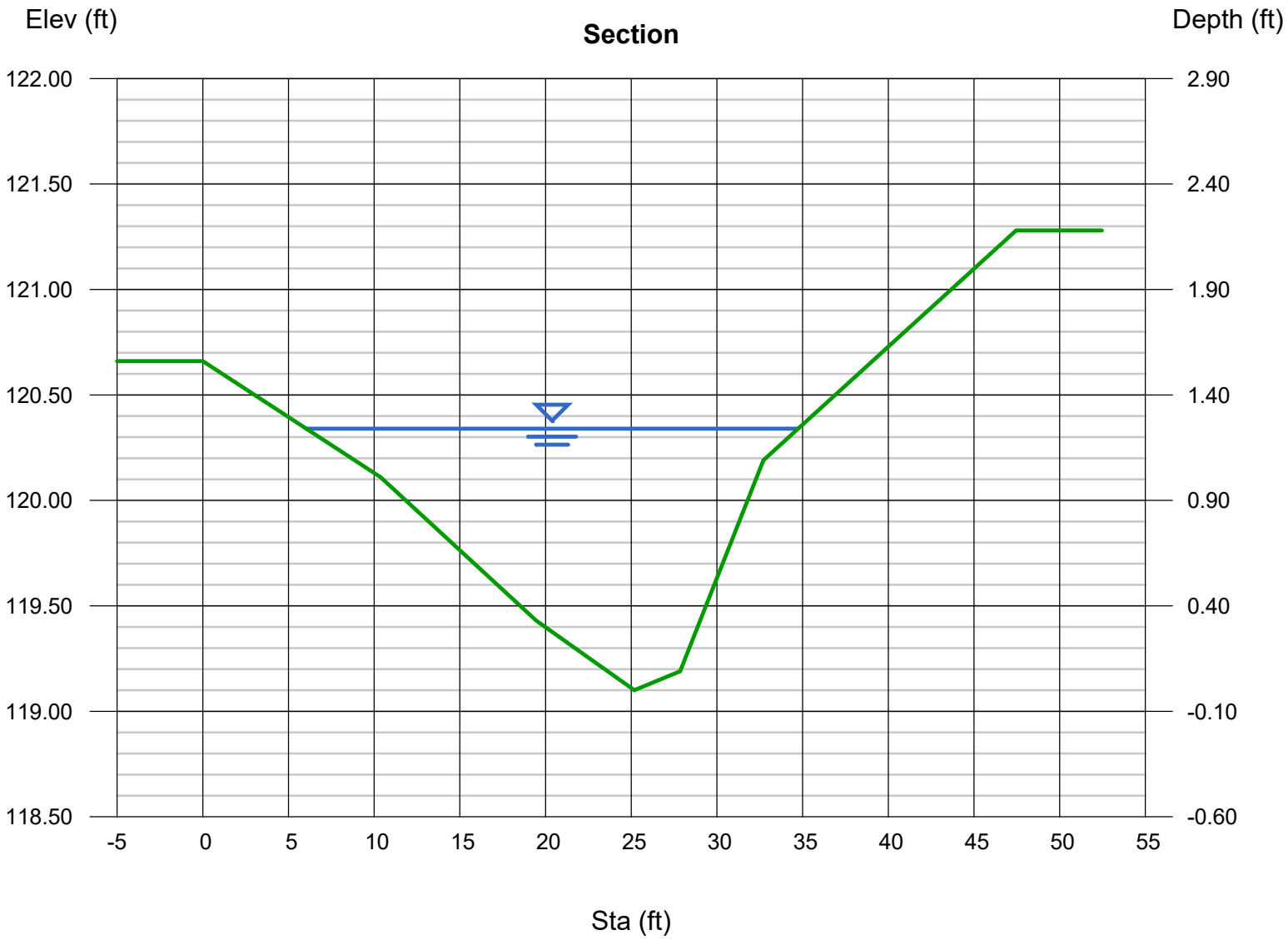
Compute by:	Known Q
Known Q (cfs)	= 23.85

Highlighted

Depth (ft)	= 1.24
Q (cfs)	= 23.85
Area (sqft)	= 18.33
Velocity (ft/s)	= 1.30
Wetted Perim (ft)	= 28.86
Crit Depth, Yc (ft)	= 0.70
Top Width (ft)	= 28.71
EGL (ft)	= 1.27

(Sta, El, n)-(Sta, El, n)...

(0.00, 120.66)-(10.37, 120.11, 0.065)-(19.46, 119.43, 0.065)-(25.18, 119.10, 0.065)-(27.85, 119.19, 0.065)-(32.71, 120.19, 0.065)-(47.46, 121.28, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Oct 14 2022

Flow in 18" Storm Drain Pipe - Outfalls to Channel 3

Circular

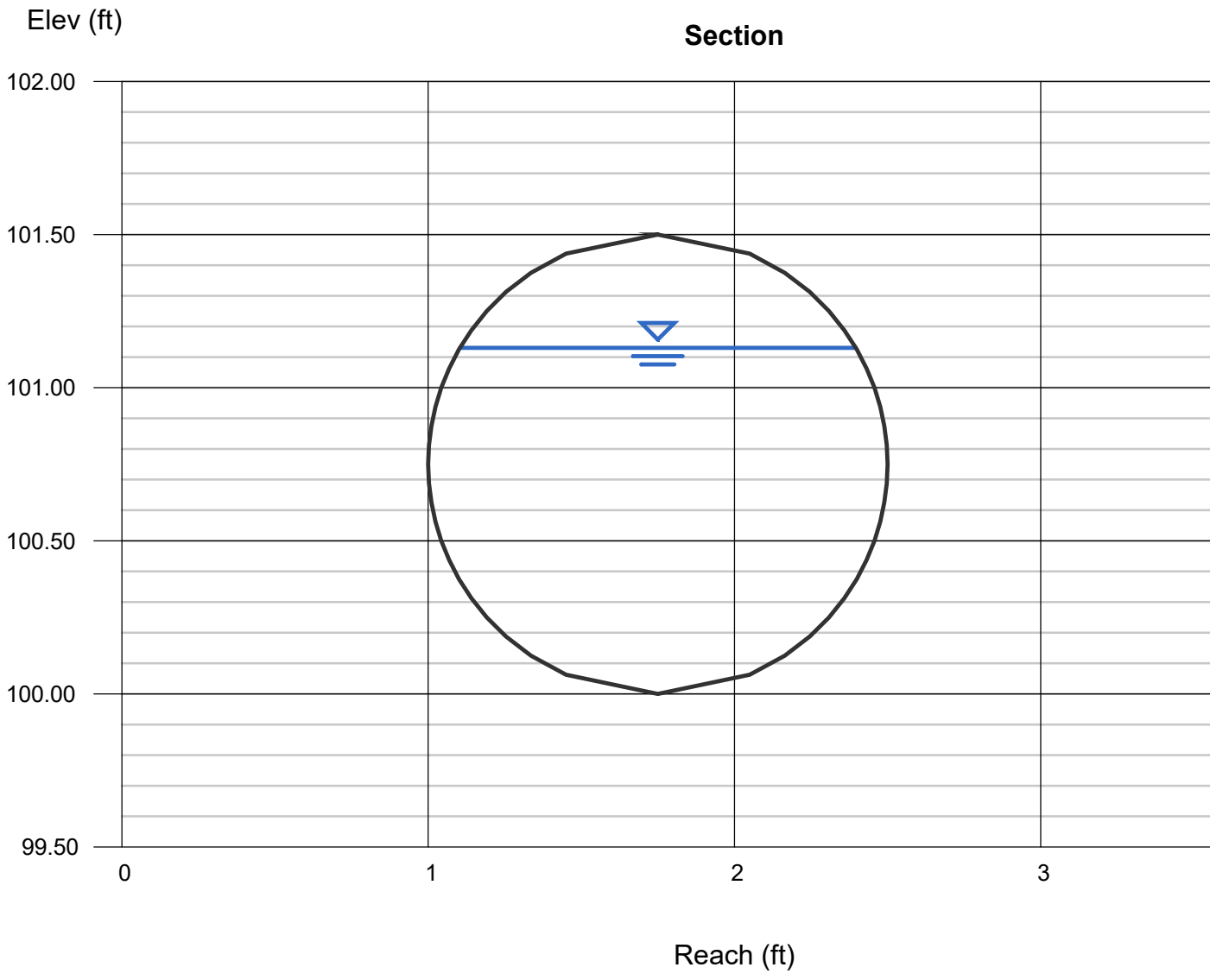
Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 0.30
N-Value	= 0.014

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.89

Highlighted

Depth (ft)	= 1.13
Q (cfs)	= 4.890
Area (sqft)	= 1.43
Velocity (ft/s)	= 3.42
Wetted Perim (ft)	= 3.16
Crit Depth, Yc (ft)	= 0.86
Top Width (ft)	= 1.29
EGL (ft)	= 1.31



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 3E - Flow at Outfall to Channel 3

User-defined

Invert Elev (ft)	= 119.95
Slope (%)	= 0.33
N-Value	= 0.040

Calculations

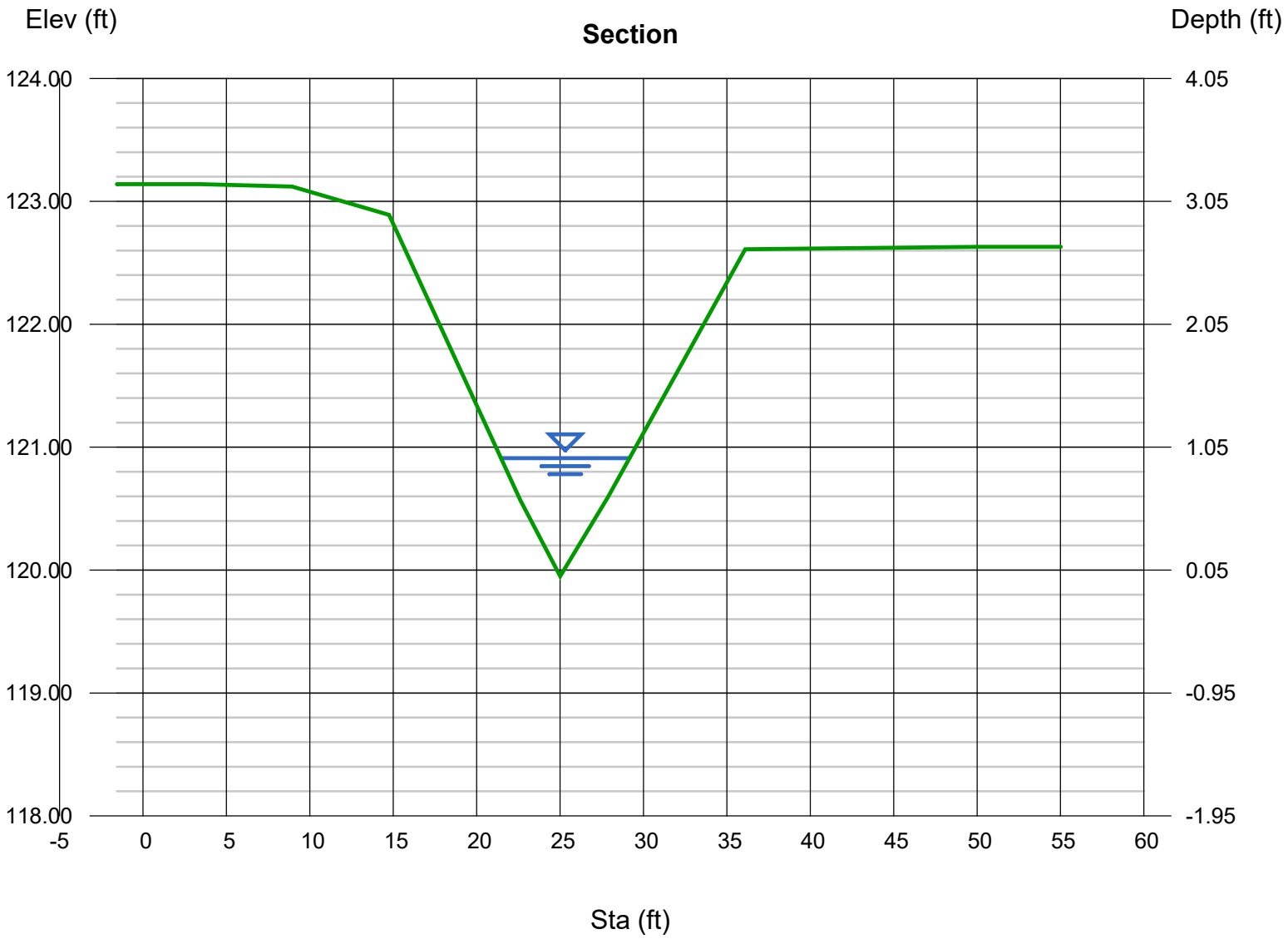
Compute by:	Known Q
Known Q (cfs)	= 4.89

Highlighted

Depth (ft)	= 0.96
Q (cfs)	= 4.890
Area (sqft)	= 3.78
Velocity (ft/s)	= 1.29
Wetted Perim (ft)	= 7.94
Crit Depth, Yc (ft)	= 0.62
Top Width (ft)	= 7.70
EGL (ft)	= 0.99

(Sta, El, n)-(Sta, El, n)...

(3.44, 123.14)-(8.94, 123.12, 0.040)-(14.75, 122.89, 0.040)-(22.62, 120.57, 0.040)-(25.01, 119.95, 0.040)-(27.86, 120.59, 0.040)-(36.10, 122.61, 0.040)-(50.02, 122.63, 0.040)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 3F - Flow Entering Channel 2 From Channel 3

User-defined

Invert Elev (ft)	= 119.79
Slope (%)	= 0.33
N-Value	= 0.040

Calculations

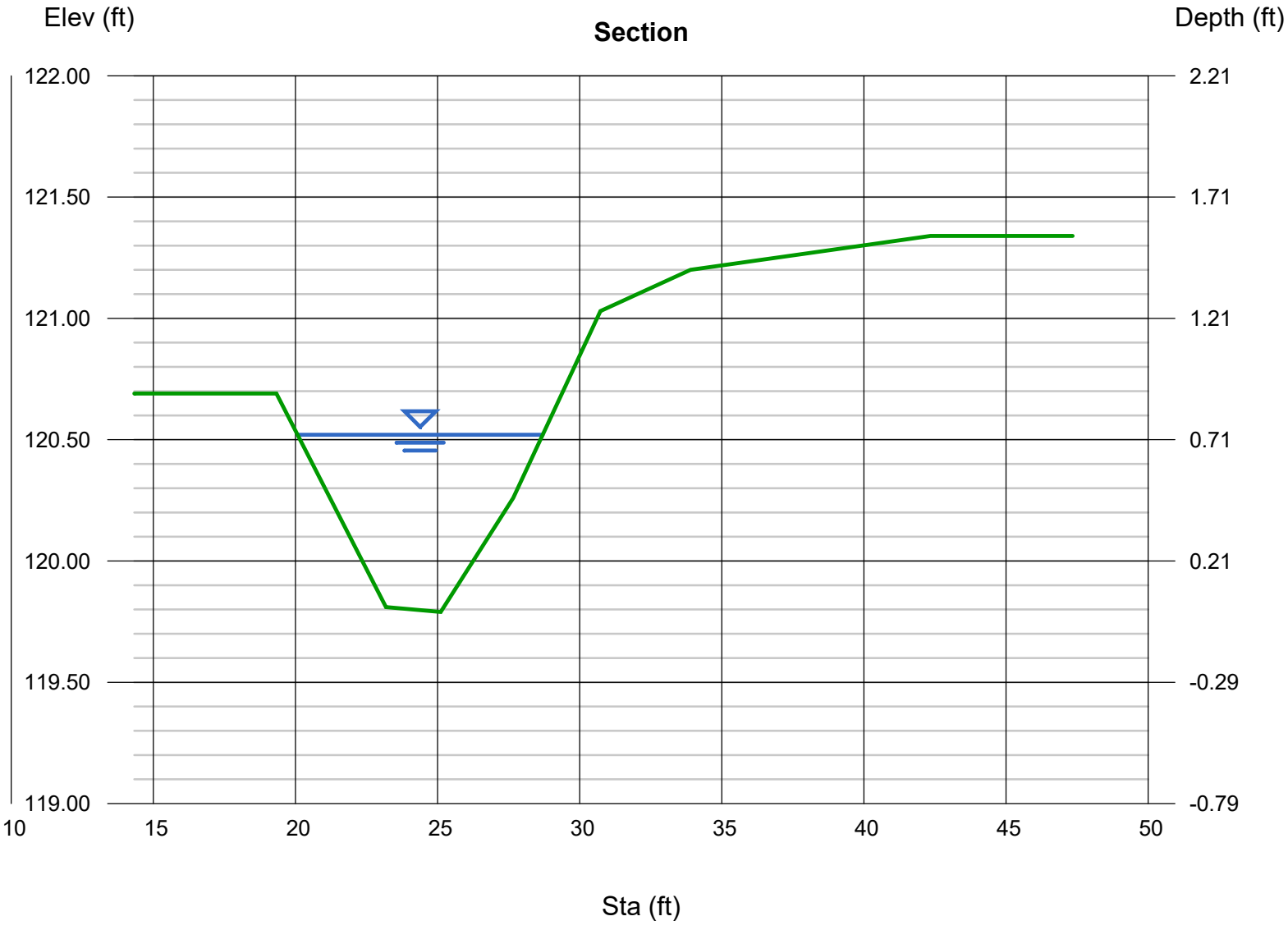
Compute by:	Known Q
Known Q (cfs)	= 4.80

Highlighted

Depth (ft)	= 0.73
Q (cfs)	= 4.800
Area (sqft)	= 3.89
Velocity (ft/s)	= 1.23
Wetted Perim (ft)	= 8.78
Crit Depth, Yc (ft)	= 0.43
Top Width (ft)	= 8.62
EGL (ft)	= 0.75

(Sta, El, n)-(Sta, El, n)...

(19.33, 120.69)-(23.18, 119.81, 0.040)-(25.11, 119.79, 0.040)-(27.66, 120.26, 0.040)-(30.73, 121.03, 0.040)-(33.90, 121.20, 0.040)-(42.34, 121.34, 0.040)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 4A - Maximum Flow at Channel 2 and 3 Confluence

User-defined

Invert Elev (ft)	= 118.72
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

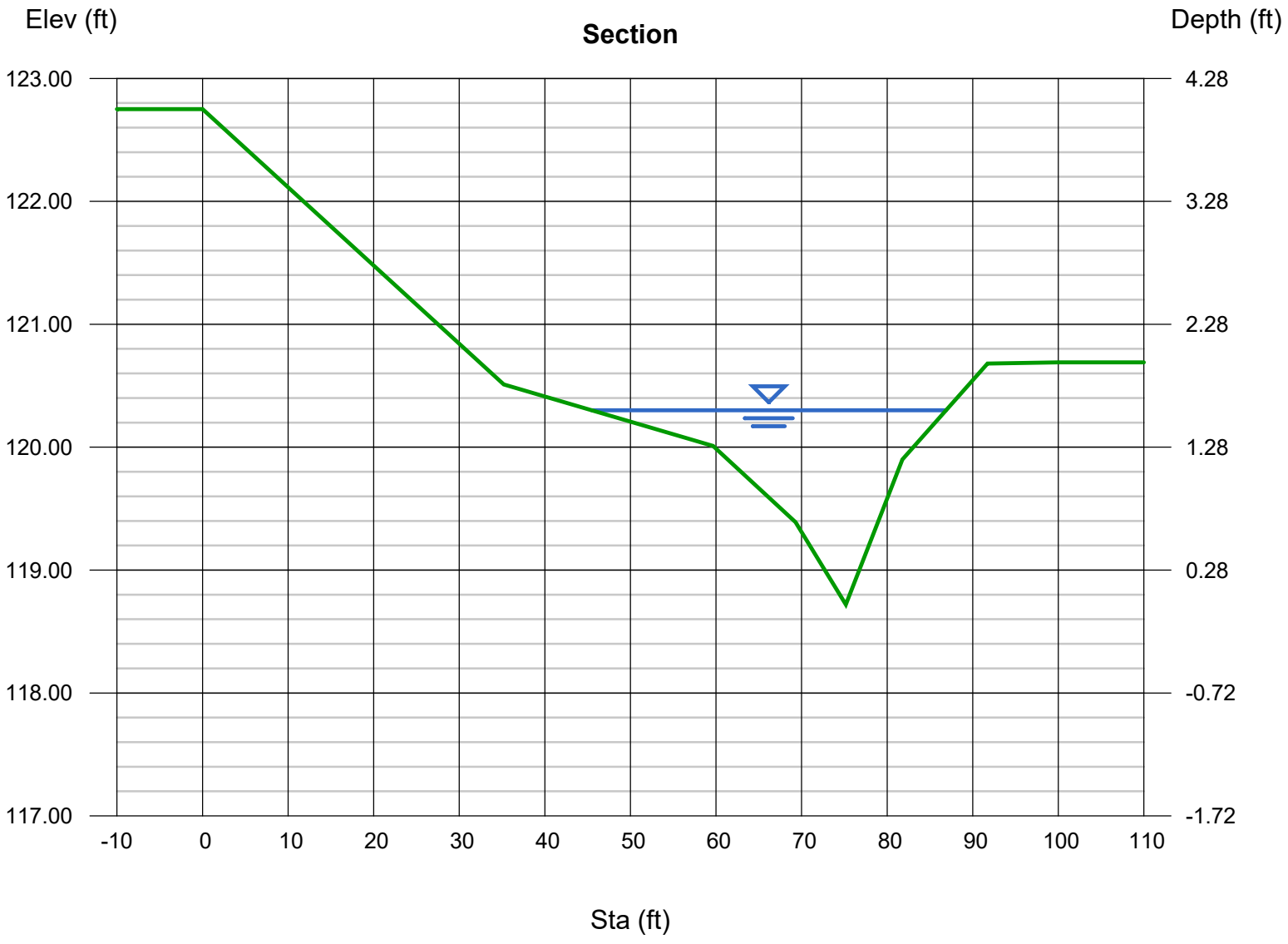
Compute by:	Known Q
Known Q (cfs)	= 26.53

Highlighted

Depth (ft)	= 1.58
Q (cfs)	= 26.53
Area (sqft)	= 22.71
Velocity (ft/s)	= 1.17
Wetted Perim (ft)	= 41.59
Crit Depth, Yc (ft)	= 0.97
Top Width (ft)	= 41.41
EGL (ft)	= 1.60

(Sta, El, n)-(Sta, El, n)...

(0.00, 122.75)-(35.20, 120.51, 0.065)-(59.65, 120.01, 0.065)-(69.30, 119.39, 0.065)-(75.17, 118.72, 0.065)-(81.77, 119.90, 0.065)-(91.73, 120.68, 0.065)-(100.00, 120.69, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 4B

User-defined

Invert Elev (ft)	= 118.91
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

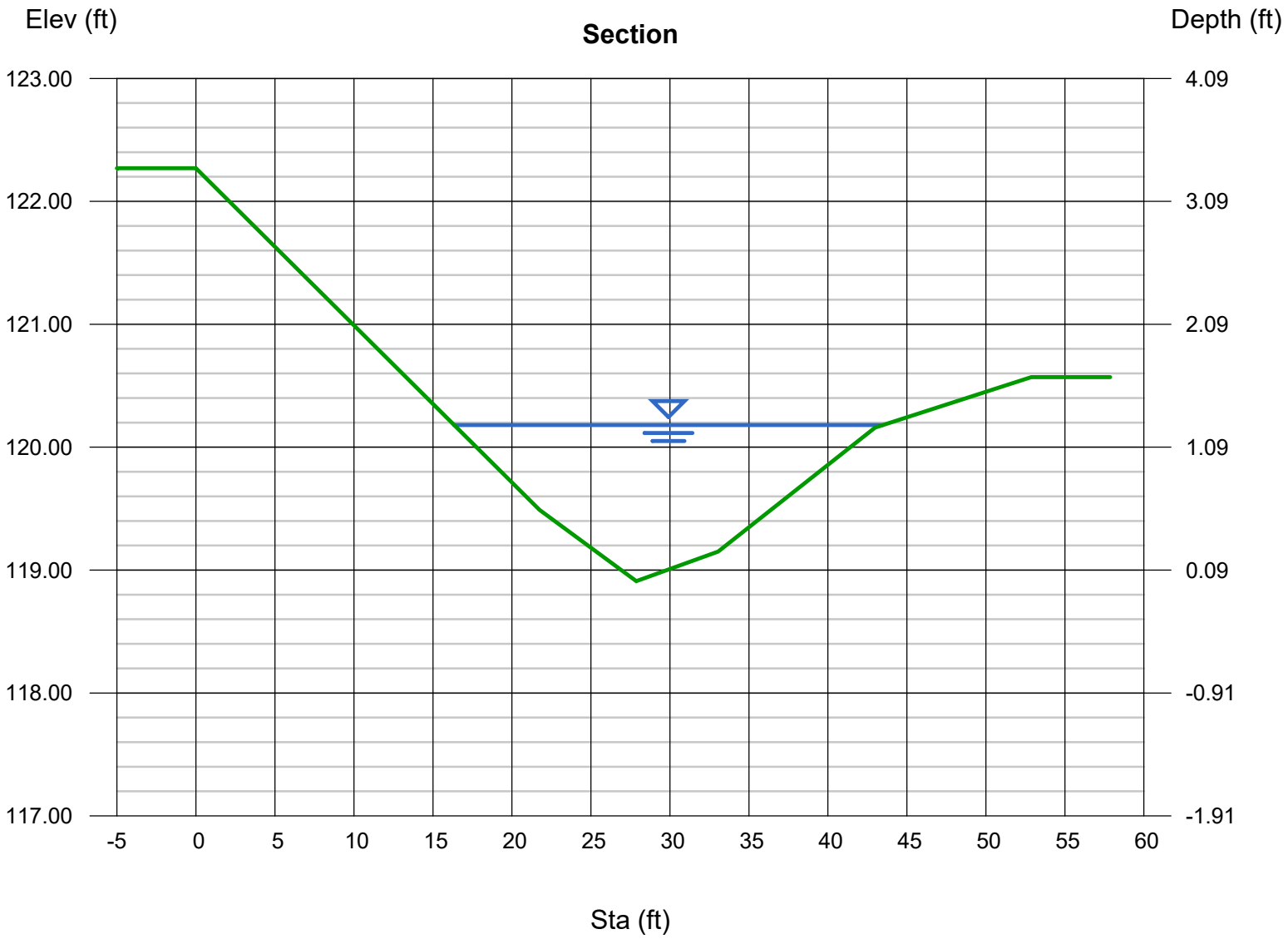
Compute by:	Known Q
Known Q (cfs)	= 26.30

Highlighted

Depth (ft)	= 1.27
Q (cfs)	= 26.30
Area (sqft)	= 19.05
Velocity (ft/s)	= 1.38
Wetted Perim (ft)	= 27.26
Crit Depth, Yc (ft)	= 0.74
Top Width (ft)	= 27.13
EGL (ft)	= 1.30

(Sta, El, n)-(Sta, El, n)...

(0.00, 122.27)-(21.74, 119.49, 0.065)-(27.87, 118.91, 0.065)-(33.05, 119.15, 0.065)-(42.99, 120.16, 0.065)-(52.87, 120.57, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Oct 14 2022

POC 4C

User-defined

Invert Elev (ft)	= 118.51
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

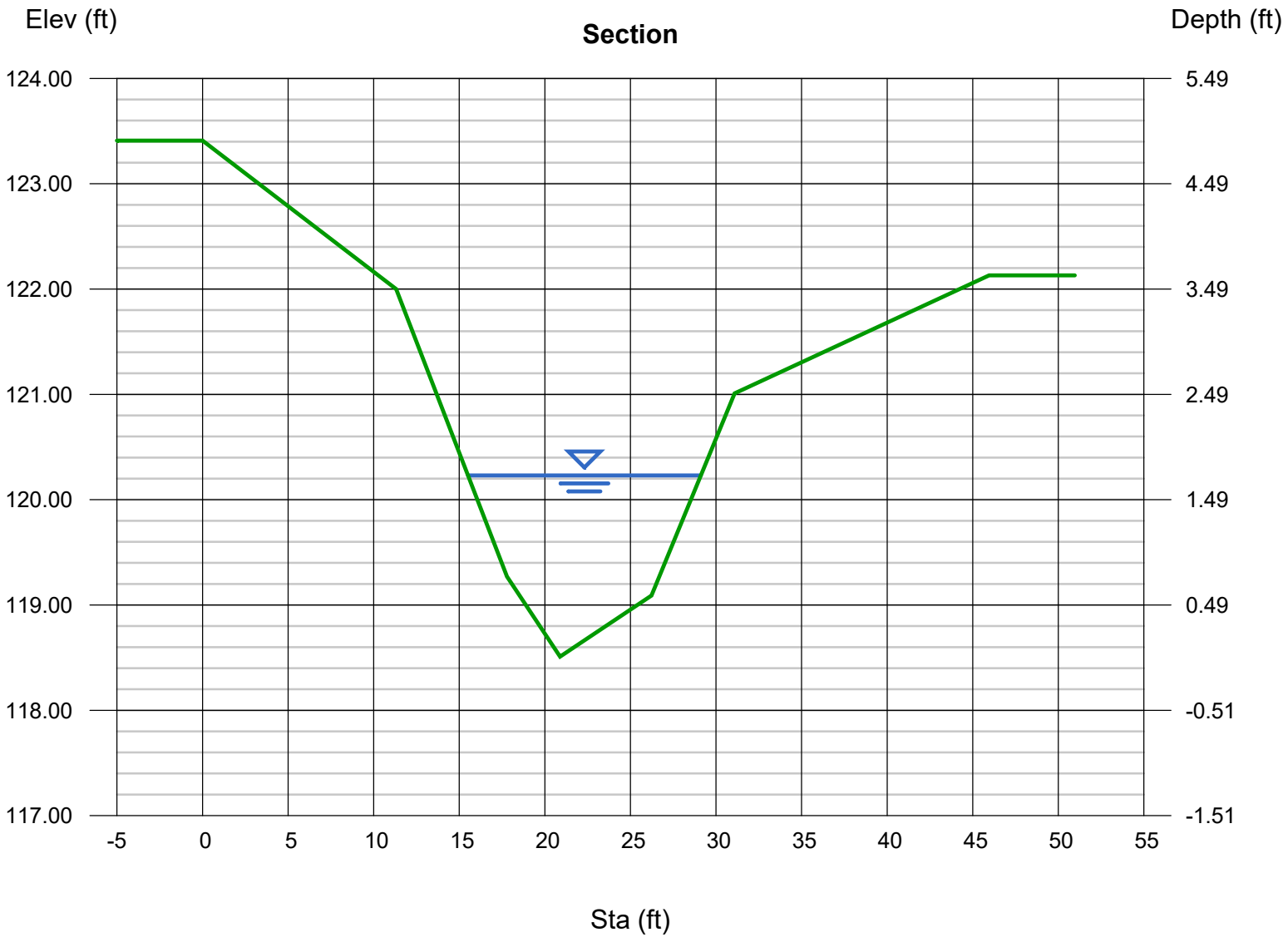
Compute by:	Known Q
Known Q (cfs)	= 26.11

Highlighted

Depth (ft)	= 1.72
Q (cfs)	= 26.11
Area (sqft)	= 14.53
Velocity (ft/s)	= 1.80
Wetted Perim (ft)	= 14.14
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 13.60
EGL (ft)	= 1.77

(Sta, El, n)-(Sta, El, n)...

(0.00, 123.41)-(11.31, 122.00, 0.065)-(17.79, 119.27, 0.065)-(20.89, 118.51, 0.065)-(26.23, 119.09, 0.065)-(31.09, 121.01, 0.065)-(45.96, 122.13, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 4D

User-defined

Invert Elev (ft)	= 118.80
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

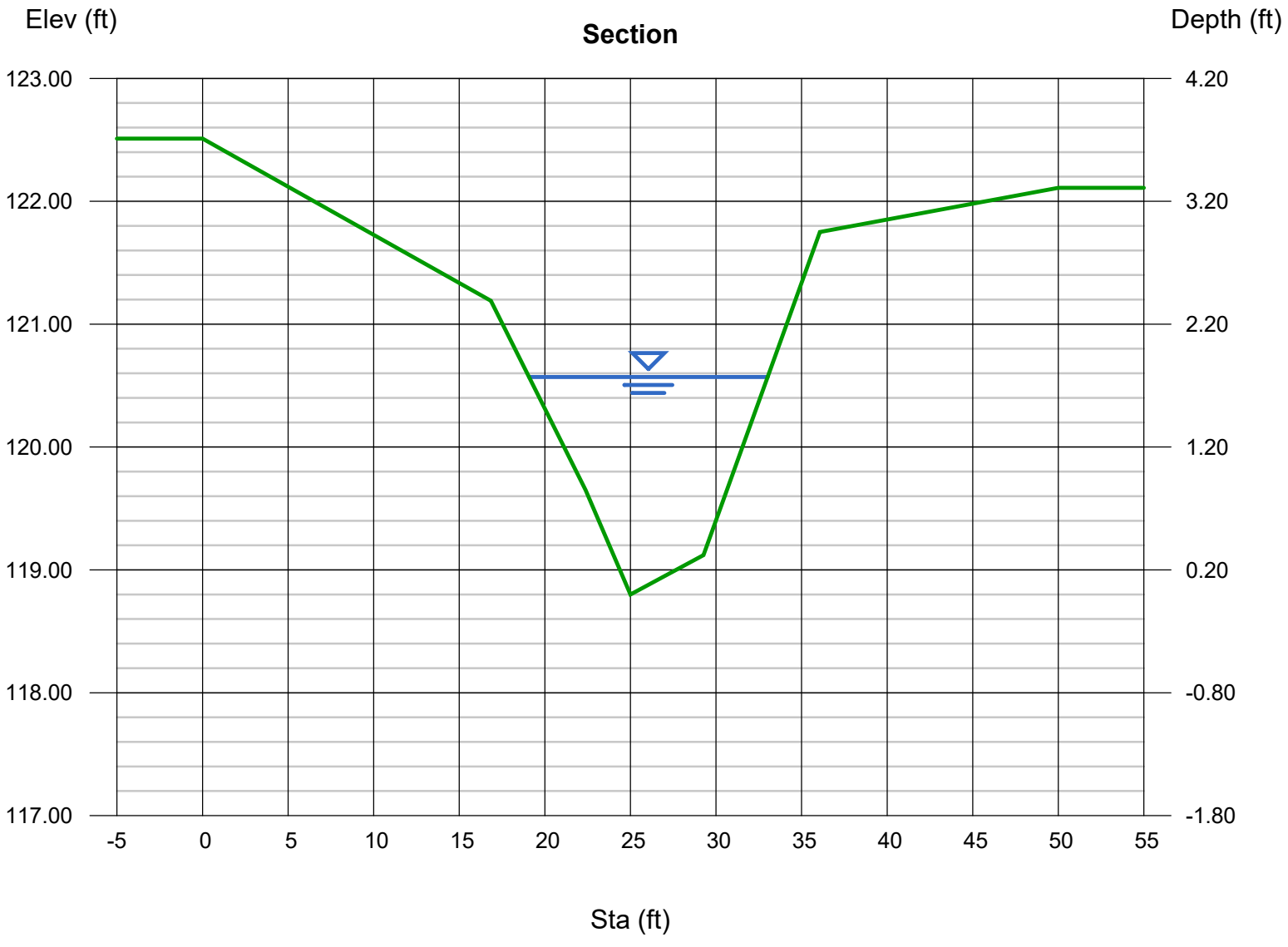
Compute by:	Known Q
Known Q (cfs)	= 25.97

Highlighted

Depth (ft)	= 1.77
Q (cfs)	= 25.97
Area (sqft)	= 14.64
Velocity (ft/s)	= 1.77
Wetted Perim (ft)	= 14.49
Crit Depth, Yc (ft)	= 1.01
Top Width (ft)	= 13.94
EGL (ft)	= 1.82

(Sta, El, n)-(Sta, El, n)...

(0.00, 122.51)-(16.85, 121.19, 0.065)-(22.38, 119.65, 0.065)-(25.00, 118.80, 0.065)-(29.27, 119.12, 0.065)-(36.07, 121.75, 0.065)-(50.00, 122.11, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 4E

User-defined

Invert Elev (ft)	= 118.23
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

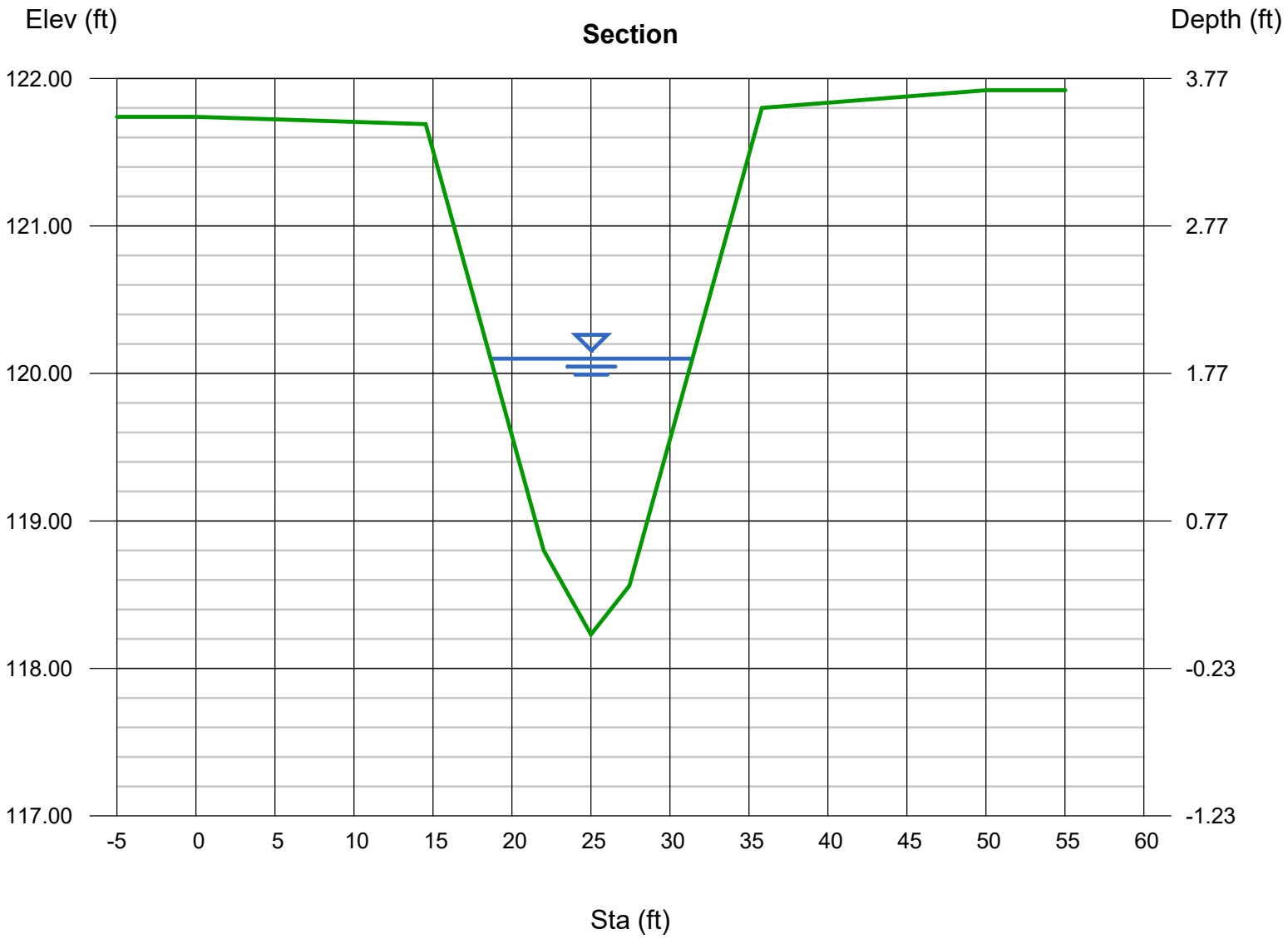
Compute by:	Known Q
Known Q (cfs)	= 25.83

Highlighted

Depth (ft)	= 1.87
Q (cfs)	= 25.83
Area (sqft)	= 14.14
Velocity (ft/s)	= 1.83
Wetted Perim (ft)	= 13.37
Crit Depth, Yc (ft)	= 1.08
Top Width (ft)	= 12.77
EGL (ft)	= 1.92

(Sta, El, n)-(Sta, El, n)...

(0.00, 121.74)-(14.54, 121.69, 0.065)-(22.01, 118.80, 0.065)-(25.00, 118.23, 0.065)-(27.43, 118.56, 0.065)-(35.82, 121.80, 0.065)-(50.03, 121.92, 0.065)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 12 2022

POC 4F - End of Channel

User-defined

Invert Elev (ft)	= 117.89
Slope (%)	= 0.60
N-Value	= 0.065

Calculations

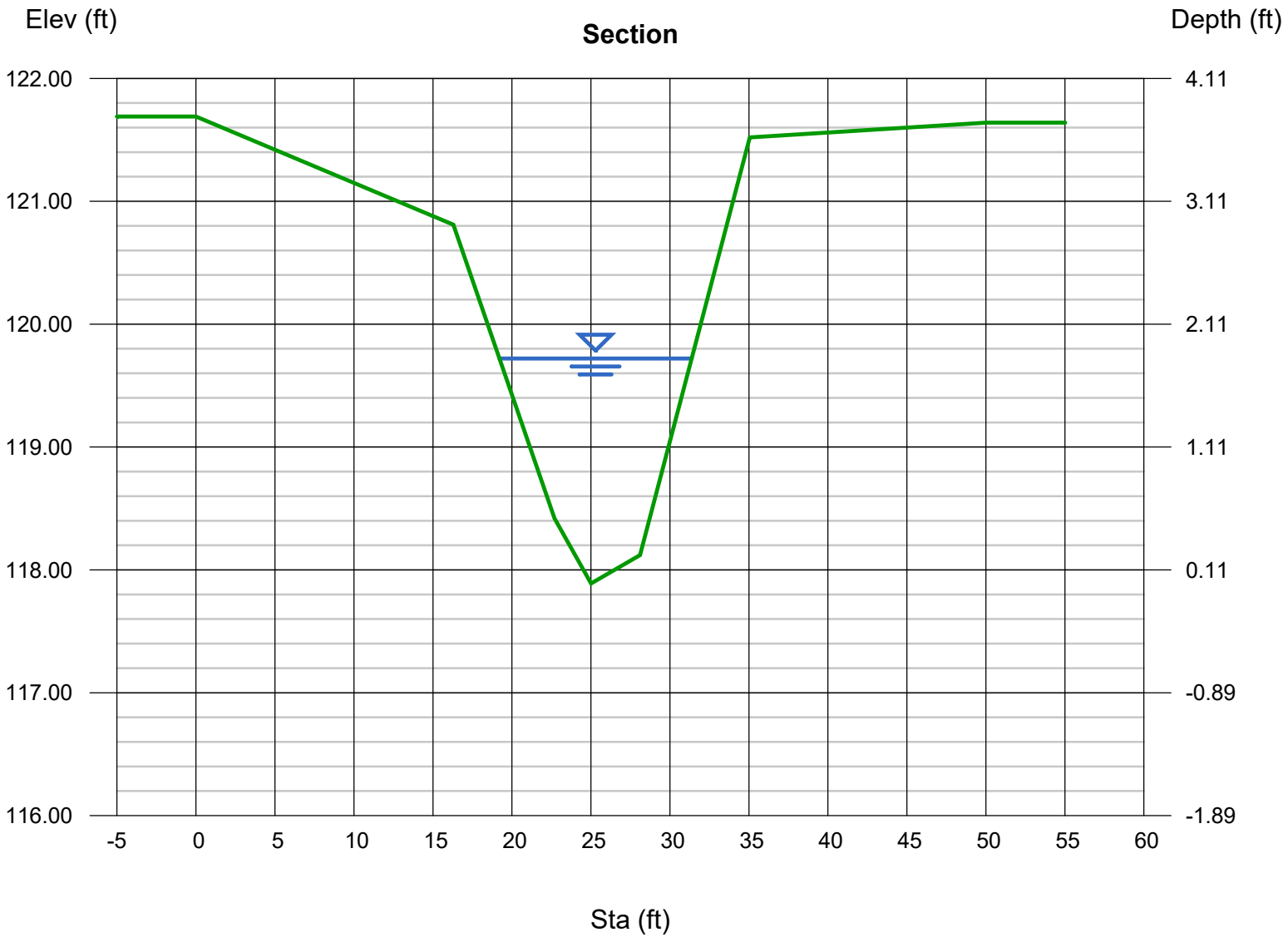
Compute by:	Known Q
Known Q (cfs)	= 25.69

Highlighted

Depth (ft)	= 1.83
Q (cfs)	= 25.69
Area (sqft)	= 13.82
Velocity (ft/s)	= 1.86
Wetted Perim (ft)	= 12.84
Crit Depth, Yc (ft)	= 1.03
Top Width (ft)	= 12.17
EGL (ft)	= 1.88

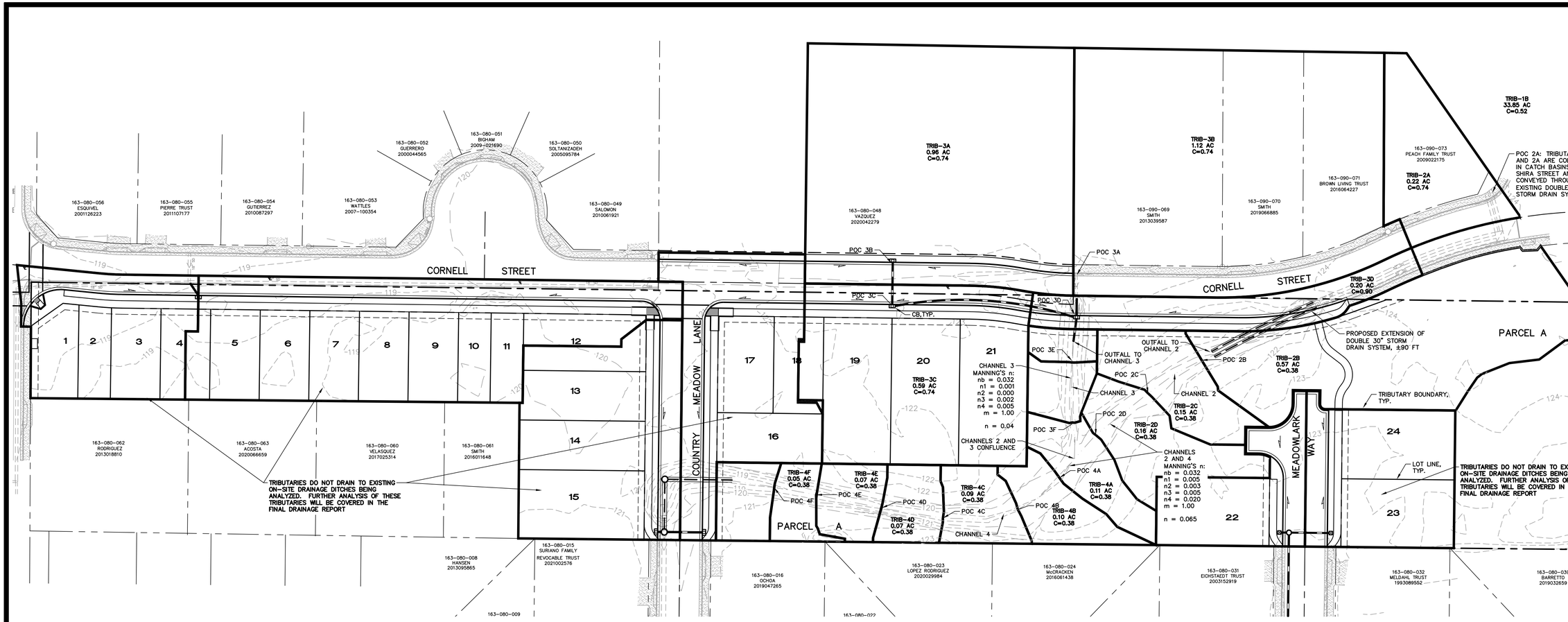
(Sta, El, n)-(Sta, El, n)...

(0.00, 121.69)-(16.29, 120.81, 0.065)-(22.69, 118.42, 0.065)-(25.01, 117.89, 0.065)-(28.11, 118.12, 0.065)-(35.05, 121.52, 0.065)-(50.02, 121.64, 0.065)



CONCLUSIONS

Analysis of the existing drainage ditches shows that the system is fully capable of accepting discharge from the proposed development. The existing channels have the capacity to accept the 10-year runoff from the proposed project and convey the flow to an inlet without flooding. Therefore runoff can continue to be safely discharged to the drainage channels. A final drainage report will be developed with the construction permit drawings to ensure adequate design of the onsite storm drain system.



LEGEND

TRIBUTARY BOUNDARY

TRIB–1 TRIBUTARY DESIGNATION (SEE STORM WATER CALC. SHEETS)

0 40 100

SCALE: 1" = 40'

MATTHEW P. LAWTON No. C87165 REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA CIVIL

DATE

MATTHEW LAWTON RCE C87165

CIVIL DESIGN CONSULTANTS, INC.
2200 Range Avenue, Suite 204
Santa Rosa, CA 95403
(707) 542–4820

HYDRO MAP FOR EXISTING ON–SITE DRAINAGE DITCHES

HEMBREE LANE

7842 HEMBREE LANE
WINDSOR, CALIFORNIA

DOC.NO. 2012067749
APN 163–080–047

5.10 ACRES
24 LOTS
1 PARCEL
OCTOBER 2022

JOB NO. 21–107

SHEET NO. 1

OF 1 SHEETS

Q=KCIA
C=Q/IKA
C=(28.5)/(1.18)(1.30)(35.54)
C=0.52

Q=KCIA
C=Q/IKA
C=(28.5)/(1.18)(1.30)(35.54)
C=0.52

OFFSITE AREA = 35.54 - 1.69
OFFSITE AREA = 33.85

RATIONAL METHOD DRAINAGE STUDY

By: JLW Date 1-15-87 Subject CROSS CREEK PHASE 2 DOWNSTREAM OFFSITES Sheet No. 1 of 1

Chkd. By _____ Date _____ Storm Freq. 10 % 10 yr. Job. No. 5538-2

Point of Conc.	Area	EL / Distance	Slope	v	Time of Conc. (in minutes) Travel Time	Total Time	i	K	C	ΔA / A Total	KΔAC	ΣKΔAC	Q	Design	Remarks
1A		122 / 400	—	—	15 MIN	INITIAL	1.70	1.30	.40	2.11 / 2.11	1.10	1.10	1.87		
2A		121 / 580	.003	1.5	6.6	(USE 16B 30.2)	1.18	1.30	.40	2.68 / 35.54	1.39	35.73	47.2		ADDED IN (PT 16B) IN PH 2
1B		119.0 / 270	.004	1.5	3.0	30.2	1.18	1.30	.40	1.69 / 35.54	.88	24.14	28.5		ADD IN (PT. 1 TM) FROM HUDIS
2B		116 / 700	.004	1.6	7.16	USE 2A + 1B 33.6	1.11	1.30	.40	6.34 + 91.52 / 97.86	3.32	63.19	70.14		ADD IN 2A
3B		115 / 500	.002	1.1	7.5	41.1	1.00	1.30	.40	1.49 + 103.00 / 104.49	0.77	66.64	70.14		ADD IN 2C
1C		118 / 410	—	—	15 MIN	INITIAL	1.704	1.30	.40	1.59 / 1.59	.83	.83	1.41		
2C		115 / 410	.007	2.1	3.3	USE 3B 41.1	1.00	1.30	.40	3.55 / 5.14	1.85	2.68	2.68		
															INVERT = 108.31 @ UPSTREAM END OF
					Pt 16B ⇒ A = 51.14										48" UNDER 101
					Q = 39.2										
															INVERT = 108.56 @ JUNCTION OF
					Golden Oak Sub										DUAL 36" & DUAL 48" PIPES
					Hudis (thru Shea)										HGL = 113.17 @ JUNCTION
					A = 33.85										
					Q = 28.2										

Submitted
Reviewed
Date
5/25/88
11

118-1 Rev. 7/64

Cross Creek Unit 1 (formerly Park Place Unit 1) 8-8-18-21

SHIRA ST.

CORNELL ST.

POC 1B

SEE SHEET 2

PT #7 FROM CALCS DONE BY HUDIS AND ASSOC. WAS USED AS THE FLOW AND TIME OF CONCENTRATION ENTERING AREA 1B (HUDIS CALCS INCL. AREAS W AND X AS SHOWN HEREON)

Q=40.7 CFS (FROM PT. 16B OF ONSITE CALCS)

SCALE 1" = 200'

MASTER HYDROLOGY MAP FOR OFFSITE AREAS

PARK PLACE SUBDIVISION

WINDSOR Cross Creek Sub. CALIFORNIA

8-8-18-21

MacKAY & SOMPS

CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING

SANTA ROSA OFFICE	1" = 200' SCALE	JUNE 1987 DATE	5538-1 JOB NO.

SHEET 1 OF 3

WINDSOR AND VICINITY

PREPARED BY
SONOMA COUNTY WATER AGENCY, COUNTY OF SONOMA
AND WINDSOR WATER DISTRICT

Photogrammetry Provided By:
CARTWRIGHT AERIAL SURVEYS
Sacramento, California

Survey Control Provided By:
BRELJE & RACE
CARLILE/DAUGHERTY/CARLENZOLI
Santa Rosa, California

HORIZONTAL AND VERTICAL DATUM

Horizontal datum based on California Coordinate System, Zone 2

Vertical datum based on U.S. National Geodetic Survey Mean Sea Level of 1929

Horiz. Vert. Control
Photo Center
Water Valve
Manhole
Culvert Headwall
Power Pole
Fire Hydrant

LEGEND
Vegetation
Fence
Water
Dirt Road
Paved Road
Curb
Guard Rail

NOTE: All spot elevation positions, except those shown with an "x", are at the decimal point.

NOTE:
Spot elevations shown to nearest half foot are only accurate to one quarter of a contour

WINDSOR WATER DISTRICT

1"=200' scale 200 0 200 400 feet

Date of Photography: 3/21/84

APPENDIX E

TREE INVENTORY REPORT AND TREE PRESERVATION PLAN

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE INVENTORY REPORT

7842 Hembree Lane
Windsor, CA

Prepared for:

DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasant Hill, CA 94523

Prepared by:

John C. Meserve
Consulting Arborist and Horticulturist
American Society of Consulting Arborists
ISA Certified Arborist, WE #0478A
ISA Tree Risk Assessment Qualified

June 9, 2022

HORTICULTURAL Associates
Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

June 9, 2022

Mr. Doyle Heaton
DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasanton, CA 94523

Re: Completed *Tree Inventory Report*, 7842 Hembree Lane in Windsor, California

Doyle,

Attached you will find our completed *Tree Inventory Report* for the above noted site in Windsor. A total of 234 trees were evaluated, and this includes all trees that are greater than 6 inches in trunk diameter and located in the area of development. Many other trees are present at the property that will not be disturbed by construction activity and these have not been included in this survey

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also provides an assessment of expected impact for each tree based on the plan that was provided, as well as recommendations for preservation or removal. A *Tree Location Plan* shows the location and numbering sequence of all trees that were included. Also included are a *Fencing Detail*, *Tree Pruning Standards*, and *Tree Preservation Guidelines*.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. No other trees are included in this report. If other trees need to be included it your responsibility to provide that direction to us.

EXISTING SITE CONDITION SUMMARY

The project site consists of an empty infill property.

EXISTING TREE SUMMARY

Tree species native to the site include Valley Oak, Coast Live Oak, and Black Oak.

Trees native to California, but not native to this site include Coast Redwood.

Ornamental species present include Pear, Wild Plum, Blue Gum, and English Walnut.

CONSTRUCTION IMPACT SUMMARY

The following summary of expected development impacts is provided:

(42) Trees are preservable

(192) Trees that need to be removed due to expected construction impacts

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

TREE INVENTORY
7842 Hembree Lane
Windsor, CA

June 9, 2022

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
1	*Quercus lobata*	Valley Oak	15	4	16	4	3	2	1, 6, 7, 8, 9
2	*Purus communis*	Pear	8+4	12	8	4	3	3	2
3	*Eucalyptus globulus*	Blue Gum	45	70	27	3	2	3	2
4	*Juglans regia*	English Walnut	3+3+3+4	8	6	4	3	3	2
5	*Quercus lobata*	Valley Oak	8	22	1	4	3	3	2
6	*Quercus lobata*	Valley Oak	8	25	10	4	3	3	2
7	*Quercus agrifolia*	Coast Live Oak	2+2+3+4	9	6	4	3	3	2
8	*Quercus lobata*	Valley Oak	4	14	5	4	3	3	2
9	Coast Live Oak	Coast Live Oak	4	8	10	4	3	3	2
10	*Quercus lobata*	Valley Oak	2+5	14	8	4	3	3	2
11	*Quercus lobata*	Valley Oak	18	35	17	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
12	Coast Live Oak	Coast Live Oak	7+8+8	15	12	4	3	3	2
13	*Quercus lobata*	Valley Oak	17	40	20	4	3	3	2
14	*Prunus domestica*	Wild Plum	15	16	8	2	1	3	2
15	*Prubus domestica*	Wild Plum	4+6+8	12	6	2	1	3	2
16	*Quercus lobata*	Valley Oak	11	25	15	4	3	3	2
17	*Quercus lobata*	Valley Oak	10	25	15	4	3	3	2
18	*Quercus lobata*	Valley Oak	5+11	30	15	4	3	3	2
19	*Quercus lobata*	Valley Oak	17	40	20	4	3	3	2
20	*Quercus lobata*	Valley Oak	11	40	25	4	3	3	2
21	*Quercus lobata*	Valley Oak	25	40	20	4	3	3	2
22	*Quercus lobata*	Valley Oak	8+8+14+15	40	25	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
23	*Quercus lobata*	Valley Oak	22	40	30	4	3	3	2
24	*Quercus lobata*	Valley Oak	6+6+12	40	18	4	3	3	2
25	*Prunuis domestica*	Wild Plum	multi	12	12	4	2	3	2
26	*Quercus lobata*	Valley Oak	5+4	12	10	3	3	3	2
27	*Quercus lobata*	Valley Oak	19	40	22	4	3	3	2
28	*Quercus lobata*	Valley Oak	11	40	18	4	3	3	2
29	*Quercus lobata*	Valley Oak	11	40	18	4	3	3	2
30	*Quercus lobata*	Valley Oak	13	40	22	4	3	3	2
31	*Quercus lobata*	Valley Oak	7+8+8+9	40	21	4	2	3	2
32	*Quercus lobata*	Valley Oak	5	15	10	4	3	3	2
33	*Quercus lobata*	Valley Oak	6+6	25	12	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
34	*Quercus lobata*	Valley Oak	12	25	16	4	3	3	2
35	*Quercus lobata*	Valley Oak	6	12	6	4	3	3	2
36	*Quercus lobata*	Valley Oak	15	40	18	4	3	3	2
37	*Quercus lobata*	Valley Oak	3+5+6	14	8	3	3	2	1, 6, 7, 8, 9
38	*Quercus lobata*	Valley Oak	6+7	35	12	4	3	3	2
39	*Quercus lobata*	Valley Oak	13	40	15	4	3	3	2
40	*Quercus lobata*	Valley Oak	12+12	40	16	4	3	3	2
41	*Quercus lobata*	Valley Oak	16	40	21	4	3	3	2
42	*Quercus lobata*	Valley Oak	10+12+13	40	25	4	3	3	2
43	*Quercus lobata*	Valley Oak	8	35	12	4	3	3	2
44	*Quercus lobata*	Valley Oak	8	35	12	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
45	*Quercus lobata*	Valley Oak	5+6+6	35	14	4	3	3	2
46	*Sequoia sempervirens*	Coast Redwood	28	70	14	4	3	1	1, 6, 7, 8, 9, 11
47	*Quercus lobata*	Valley Oak	8	35	15	4	3	3	2
48	*Quercus agrifolia*	Coast Live Oak	5+7+7+12	30	16	4	3	3	2
49	*Quercus lobata*	Valley Oak	11	35	14	4	3	3	2
50	*Quercus lobata*	Valley Oak	6+7+7+7	35	15	4	3	3	2
51	*Quercus lobata*	Valley Oak	8	35	14	4	3	3	2
52	*Quercus lobata*	Valley Oak	23	40	30	4	3	3	2
53	*Quercus lobata*	Valley Oak	5+6	30	14	4	3	3	2
54	*Quercus lobata*	Valley Oak	5	30	14	4	3	3	2
55	*Quercus lobata*	Valley Oak	7	30	14	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
56	*Quercus lobata*	Valley Oak	5+6	30	14	4	3	3	2
57	*Quercus lobata*	Valley Oak	10	30	14	4	3	3	2
58	*Quercus lobata*	Valley Oak	3+4+4+5	12	25	4	3	3	2
59	*Quercus lobata*	Valley Oak	5	25	67	4	3	3	2
60	*Quercus lobata*	Valley Oak	6+10+10+12	30	15	4	3	3	2
61	*Quercus lobata*	Valley Oak	7	30	15	4	3	3	2
62	*Quercus lobata*	Valley Oak	12	30	18	4	3	3	2
63	*Quercus lobata*	Valley Oak	5	20	10	4	3	3	2
64	*Quercus lobata*	Valley Oak	9	25	14	4	3	3	2
65	*Quercus lobata*	Valley Oak	5	22	12	4	3	3	2
66	*Quercus lobata*	Valley Oak	10	12		4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
67	*Quercus agrifolia*	Coast Live Oak	5	14	8	4	3	3	2
68	*Quercus lobata*	Valley Oak	5+6	35	12	4	3	3	2
69	*Quercus lobata*	Valley Oak	6	35	12	3	3	3	2
70	*Quercus lobata*	Valley Oak	12	35	14	4	3	3	2
71	*Quercus lobata*	Valley Oak	5+6	35	12	4	3	3	2
72	*Quercus lobata*	Valley Oak	7	35	12	4	3	3	2
73	*Quercus lobata*	Valley Oak	8	35	12	4	3	3	2
74	*Quercus lobata*	Valley Oak	7	35	12	3	3	3	2
75	*Quercus lobata*	Valley Oak	6	30	10	3	3	3	2
76	*Quercus lobata*	Valley Oak	9	35	14	3	3	3	2
77	*Quercus lobata*	Valley Oak	6	30	12	3	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
78	*Quercus lobata*	Valley Oak	18	45	25	4	2	3	2
79	*Quercus lobata*	Valley Oak	6	20	10	4	2	3	2
80	*Quercus lobata*	Valley Oak	9	20	12	4	2	3	2
81	*Quercus lobata*	Valley Oak	15	45	21	4	3	3	2
82	*Quercus kelloggii*	Black Oak	13	14	12	4	2	3	2
83	*Quercus lobata*	Valley Oak	9+17	45	22	3	3	3	2
84	*Quercus lobata*	Valley Oak	8+10	35	15	3	3	3	2
85	*Quercus lobata*	Valley Oak	6	35	10	3	3	3	2
86	*Quercus lobata*	Valley Oak	7+7	35	12	3	3	3	2
87	*Quercus lobata*	Valley Oak	6	35	12	3	3	3	2
88	*Quercus lobata*	Valley Oak	7+7	35	12	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
89	*Quercus lobata*	Valley Oak	6	40	15	4	3	3	2
90	*Quercus lobata*	Valley Oak	12	45	20	4	3	2	1, 6, 7, 8, 9
91	*Quercus lobata*	Valley Oak	10+8	40	18	4	3	3	2
92	*Quercus lobata*	Valley Oak	7	40	12	4	3	3	2
93	*Quercus lobata*	Valley Oak	7	35	14	3	3	3	2
94	*Quercus lobata*	Valley Oak	6	30	12	3	3	3	2
95	*Quercus lobata*	Valley Oak	6	35	14	4	3	3	2
96	*Quercus lobata*	Valley Oak	6	30	12	4	3	3	2
97	*Quercus lobata*	Valley Oak	7	30	14	4	3	3	2
98	*Quercus lobata*	Valley Oak	11	20	16	4	2	3	2
99	*Quercus lobata*	Valley Oak	12	12	15	4	2	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
100	*Quercus lobata*	Valley Oak	12	40	16	4	3	3	2
	Gap in number sequence here								
140	*Quercus agrifolia*	Coast Live Oak	7	12	8	4	2	3	2
141	*Quercus lobata*	Valley Oak	6	12	8	4	2	3	2
142	*Quercus lobata*	Valley Oak	12	40	16	4	2	3	2
143	*Quercus lobata*	Valley Oak	6	14	8	3	2	3	2
144	*Quercus lobata*	Valley Oak	6	25	16	3	2	3	2
145	*Quercus lobata*	Valley Oak	12	30	15	4	3	3	2
146	*Quercus lobata*	Valley Oak	4+10	35	15	4	3	3	2
147	*Quercus lobata*	Valley Oak	10	35	15	4	3	3	2
148	*Quercus lobata*	Valley Oak	9+10	35	16	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
149	*Quercus lobata*	Valley Oak	7	35	15	4	3	3	2
150	*Quercus lobata*	Valley Oak	8	30	15	4	3	3	2
151	*Quercus lobata*	Valley Oak	12	35	16	4	3	3	2
152	*Quercus lobata*	Valley Oak	6	22	12	3	3	3	2
153	*Quercus lobata*	Valley Oak	6	35	12	4	3	3	2
154	*Quercus lobata*	Valley Oak	11	35	14	4	3	3	2
155	*Quercus lobata*	Valley Oak	13	35	21	4	3	3	2
156	*Quercus lobata*	Valley Oak	18	35	22	4	3	3	2
157	*Quercus lobata*	Valley Oak	17	35	20	3	3	3	2
158	*Quercus lobata*	Valley Oak	5+7+9	35	15	4	3	2	1, 6, 7, 8, 9
159	*Quercus lobata*	Valley Oak	5+6+6+11	30	16	3	3	1	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
160	*Quercus lobata*	Valley Oak	9	30	15	3	3	1	1, 6, 7, 8, 9
161	*Quercus lobata*	Valley Oak	7	25	15	3	3	0	1, 6, 7, 8, 9
162	*Quercus lobata*	Valley Oak	9	35	15	3	3	0	1, 6, 7, 8, 9
163	*Quercus lobata*	Valley Oak	6	35	12	3	3	0	1, 6, 7, 8, 9
164	*Quercus lobata*	Valley Oak	6	35	14	3	3	0	1, 6, 7, 8, 9
165	*Quercus lobata*	Valley Oak	4	16	8	4	3	3	2
166	*Quercus lobata*	Valley Oak	10	30	15	4	3	3	2
167	*Quercus lobata*	Valley Oak	8+9+11	35	18	4	3	3	2
168	*Quercus lobata*	Valley Oak	8	35	14	4	3	3	2
169	*Quercus lobata*	Valley Oak	6+9	35	14	3	3	3	2
170	*Quercus lobata*	Valley Oak	12	40	15	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
171	*Quercus lobata*	Valley Oak	9	40	14	4	3	2	1, 6, 7, 8, 9
172	*Quercus lobata*	Valley Oak	11	35	14	4	3	1	1, 6, 7, 8, 9
173	*Quercus lobata*	Valley Oak	10+11	30	16	4	3	1	1, 6, 7, 8, 9
174	*Quercus lobata*	Valley Oak	6	30	10	4	3	2	1, 6, 7, 8, 9
175	*Quercus lobata*	Valley Oak	8	30	12	4	3	2	1, 6, 7, 8, 9
176	*Quercus lobata*	Valley Oak	8+10	30	14	4	3	3	2
177	*Quercus lobata*	Valley Oak	9	30	15	4	3	3	2
178	*Quercus lobata*	Valley Oak	8+10	30	15	4	3	3	2
179	*Quercus lobata*	Valley Oak	11	25	22	4	3	0	1, 6, 7, 8, 9
180	*Quercus lobata*	Valley Oak	8	16	18	4	3	0	1, 6, 7, 8, 9
181	*Quercus lobata*	Valley Oak	21	40	25	4	3	0	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
182	*Quercus lobata*	Valley Oak	10	25	15	4	3	0	1, 6, 7, 8, 9
183	*Quercus lobata*	Valley Oak	40	20		4	3	0	1, 6, 7, 8, 9
184	*Quercus lobata*	Valley Oak	12	35	16	4	3	0	1, 6, 7, 8, 9
185	*Quercus lobata*	Valley Oak	13	40	20	4	3	0	1, 6, 7, 8, 9
186	*Quercus lobata*	Valley Oak	12	35	16	4	3	3	2
187	*Quercus lobata*	Valley Oak	6	30	15	4	3	3	2
188	*Quercus lobata*	Valley Oak	7	25	12	4	3	3	2
189	*Quercus lobata*	Valley Oak	8	30	14	4	3	3	2
190	*Quercus lobata*	Valley Oak	6	30	14	4	3	3	2
191	*Quercus lobata*	Valley Oak	7	25	12	4	3	3	2
192	*Quercus lobata*	Valley Oak	6	30	10	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
193	*Quercus lobata*	Valley Oak	6	30	10	2	3	3	2
194	*Quercus lobata*	Valley Oak	6	30	14	4	3	3	2
195	*Quercus lobata*	Valley Oak	7	25	12	4	3	3	2
196	*Quercus lobata*	Valley Oak	6	22	12	4	3	3	2
197	*Quercus lobata*	Valley Oak	6	40	18	4	3	3	2
	Gap in number sequence here								
323	*Quercus lobata*	Valley Oak	9	40	15	4	3	3	2
324	*Quercus lobata*	Valley Oak	6	35	14	4	3	3	2
325	*Quercus lobata*	Valley Oak	11	40	16	4	3	3	2
326	*Quercus lobata*	Valley Oak	10	40	15	3	3	3	2
327	*Quercus lobata*	Valley Oak	6	30	10	3	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
328	*Quercus lobata*	Valley Oak	6	35	12	3	3	3	2
329	*Quercus lobata*	Valley Oak	11	35	14	3	3	3	2
330	*Quercus lobata*	Valley Oak	9	35	15	4	3	3	2
331	*Quercus lobata*	Valley Oak	13	40	15	4	3	3	2
332	*Quercus lobata*	Valley Oak	9	40	15	4	3	3	2
333	*Quercus lobata*	Valley Oak	6	30	12	4	3	3	2
334	*Quercus lobata*	Valley Oak	10	40	16	4	3	3	2
335	*Quercus lobata*	Valley Oak	7	35	12	3	3	3	2
336	*Quercus lobata*	Valley Oak	5+7	35	14	4	3	3	2
337	*Quercus lobata*	Valley Oak	6	30	12	4	3	3	2
338	*Quercus lobata*	Valley Oak	10	35	12	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
339	*Quercus lobata*	Valley Oak	6	30	10	3	3	3	2
340	*Quercus lobata*	Valley Oak	4+7	35	12	4	3	3	2
341	*Quercus lobata*	Valley Oak	12	40	15	4	3	3	2
342	*Quercus lobata*	Valley Oak	5+5	30	14	4	3	3	2
343	*Quercus lobata*	Valley Oak	7	35	14	4	3	3	2
344	*Quercus lobata*	Valley Oak	8	35	14	4	3	3	2
345	*Quercus lobata*	Valley Oak	10	35	12	4	3	3	2
346	*Quercus lobata*	Valley Oak	8	35	12	4	3	3	2
347	*Quercus kelloggii*	Black Oak	14	40	16	4	3	3	2
348	*Quercus lobata*	Valley Oak	9	40	16	4	3	3	2
349	*Quercus lobata*	Valley Oak	6	30	12	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
350	*Quercus lobata*	Valley Oak	11	40	18	4	3	3	2
351	*Quercus lobata*	Valley Oak	6	30	10	4	3	3	2
352	*Quercus lobata*	Valley Oak	6	30	10	4	3	3	2
353	*Quercus lobata*	Valley Oak	6	22	12	4	3	3	2
354	*Quercus lobata*	Valley Oak	6+10	40	18	4	3	3	2
355	*Quercus lobata*	Valley Oak	7+8+19+21	35	25	4	3	3	2
356	*Sequoia sempervirens*	Coast Redwood	36	70	15	4	3	1	1, 6, 7, 8, 9, 11
357	*Salix species*	Willow	multi	14	12	4	3	3	2
358	*Quercus lobata*	Valley Oak	11	30	21	4	3	3	2
359	*Quercus lobata*	Valley Oak	21	45	30	4	3	3	2
360	*Quercus agrifolia*	Coast Live Oak	11+12+12+13+13	45	28	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
361	*Quercus lobata*	Valley Oak	8	30	20	4	3	3	2
362	*Quercus lobata*	Valley Oak	12+21	40	18	4	3	3	2
363	*Quercus agrifolia*	Coast Live Oak	23	45	30	4	3	0	1, 6, 7, 8, 9
364	*Quercus lobata*	Valley Oak	10	40	20	4	3	3	2
365	*Quercus lobata*	Valley Oak	6+8	25	16	4	3	0	1, 6, 7, 8, 9
366	*Quercus lobata*	Valley Oak	10	40	14	4	3	3	2
367	*Quercus lobata*	Valley Oak	6+8	35	12	4	3	3	2
368	*Quercus lobata*	Valley Oak	6	25	12	4	3	3	2
369	*Quercus lobata*	Valley Oak	7+12+13+14	40	28	4	3	3	2
370	*Quercus lobata*	Valley Oak	9	35	14	4	3	3	2
371	*Quercus lobata*	Valley Oak	12+12+14	40	20	4	3	0	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
372	*Quercus lobata*	Valley Oak	10	40	15	4	3	0	1, 6, 7, 8, 9
373	*Quercus lobata*	Valley Oak	7	35	14	4	3	3	2
374	*Quercus lobata*	Valley Oak	6	30	12	4	3	3	2
375	*Quercus lobata*	Valley Oak	15	40	18	4	3	0	1, 6, 7, 8, 9
376	*Quercus kelloggii*	BlackOak	8	40	16	4	3	0	1, 6, 7, 8, 9
377	*Quercus lobata*	Valley Oak	5+6+8	40	15	4	3	0	1, 6, 7, 8, 9
378	*Quercus lobata*	Valley Oak	7+12	40	20	4	3	0	1, 6, 7, 8, 9
379	*Quercus lobata*	Valley Oak	12	40	20	4	3	0	1, 6, 7, 8, 9
380	*Quercus lobata*	Valley Oak	6	25	12	4	3	0	1, 6, 7, 8, 9
381	*Quercus lobata*	Valley Oak	12	40	20	4	3	0	1, 6, 7, 8, 9
382	*Quercus lobata*	Valley Oak	10+12	40	21	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
383	*Quercus lobata*	Valley Oak	6	35	12	4	3	3	2
384	*Quercus lobata*	Valley Oak	18	40	15	4	3	0	1, 6, 7, 8, 9
385	*Quercus lobata*	Valley Oak	16+16	40	20	4	3	0	1, 6, 7, 8, 9
386	*Quercus lobata*	Valley Oak	10+12	45	20	4	3	0	1, 6, 7, 8, 9
387	*Quercus lobata*	Valley Oak	6	16	8	4	3	3	2
388	*Quercus lobata*	Valley Oak	13	40	20	3	3	3	2
389	*Quercus lobata*	Valley Oak	6	12	12	4	3	3	2
390	*Quercus lobata*	Valley Oak	7	30	16	4	3	3	2
391	*Quercus lobata*	Valley Oak	10	30	15	3	3	3	2
392	*Quercus lobata*	Valley Oak	10	35	15	4	3	3	2
393	*Quercus lobata*	Valley Oak	8	30	14	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
394	*Quercus lobata*	Valley Oak	28	45	30	4	3	3	2
395	*Quercus lobata*	Valley Oak	19	45	30	4	3	3	2
396	*Quercus lobata*	Valley Oak	7	25	18	4	3	3	2
397	*Quercus lobata*	Valley Oak	8+9	40	18	3	3	0	1, 6, 7, 8, 9
398	*Quercus lobata*	Valley Oak	6	20	10	4	3	0	1, 6, 7, 8, 9
399	*Quercus lobata*	Valley Oak	18	40	25	4	3	1	1, 6, 7, 8, 9
400	*Quercus lobata*	Valley Oak	7	35	12	4	3	2	1, 6, 7, 8, 9

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level. The *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured or estimated, in inches, to document its diameter, at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Species Value

The following descriptions are used to rate the species value of a tree. These values are the subjective opinion of the consulting arborist. This rating system is intended to assist the layperson in making decisions about the value of a particular species.

(3) High value tree; long lived, structurally strong, good pest and disease resistance.

(2) Moderate value tree; moderate life span, structurally strong but with some inherent defects, reasonable pest and disease resistance.

(1) Low value tree; fast growth and short life, often with numerous structural deficiencies, often prone to pest or disease problems.

Construction Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible.

(2) Removal is required due to significant development impacts.

(3) Removal is required due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean the canopy, per International Society of Arboriculture pruning standards.

(10) Prune to provide clearance for adjacent improvements, per International Society of Arboriculture pruning standards.

(11) This trunk is located off site, but the canopy overhangs the project site.

(12) Excavation may be required within the TPZ and the dripline for development. Excavation within the TPZ of any type must adhere to the following guidelines:

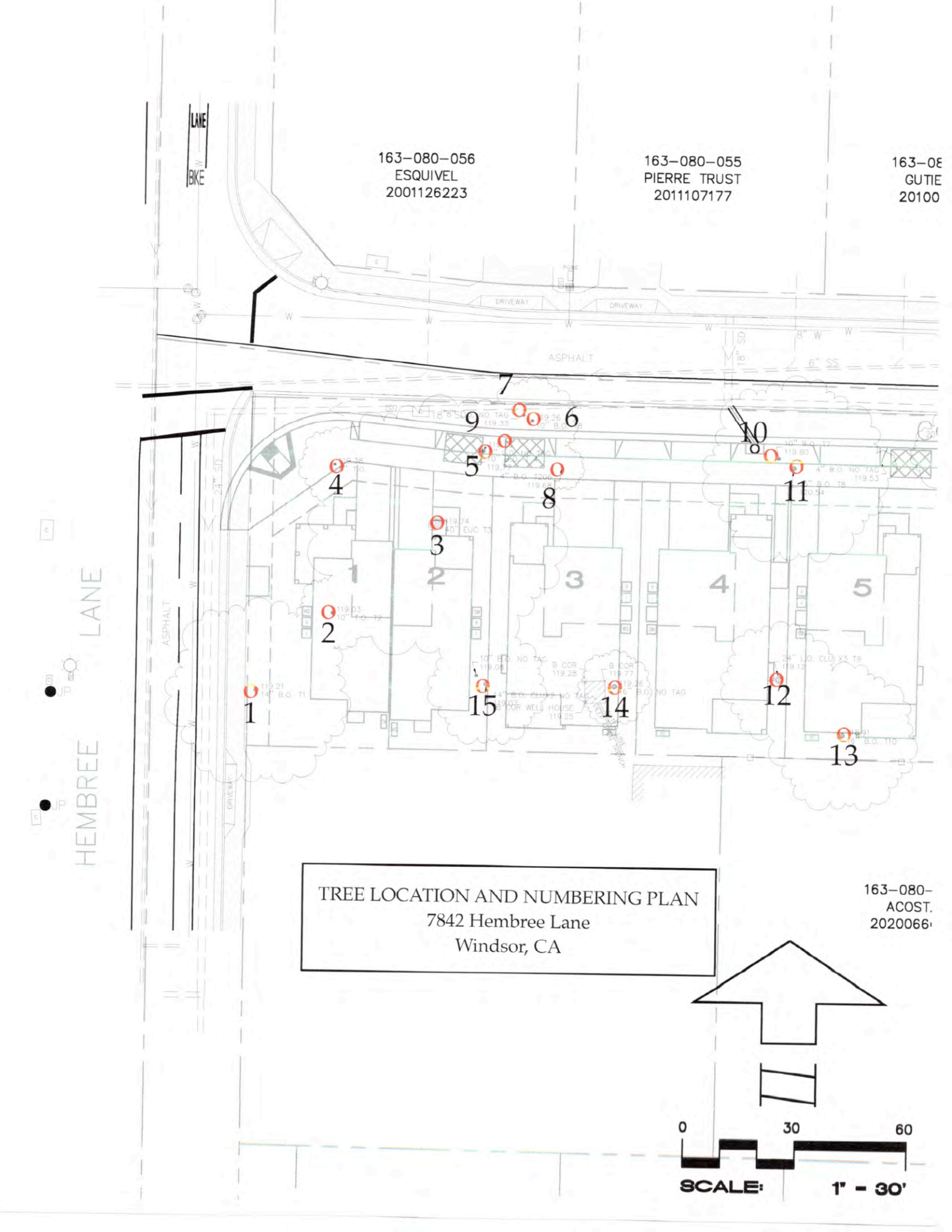
All roots encountered that are 2 inches or larger in diameter must be cleanly cut as they are encountered by excavating equipment.

Roots may not be ripped from the ground and then trimmed. They must be trimmed as encountered and this will require the use of a ground man working with a suitable power tool.

Pruned and exposed roots greater than 2 inches in diameter must be protected from desiccation if left exposed for more than 24 hours. Cover cut roots with heavy cloth, burlap, used carpeting, or similar material that has been soaked in water, until trench or excavation has been backfilled.

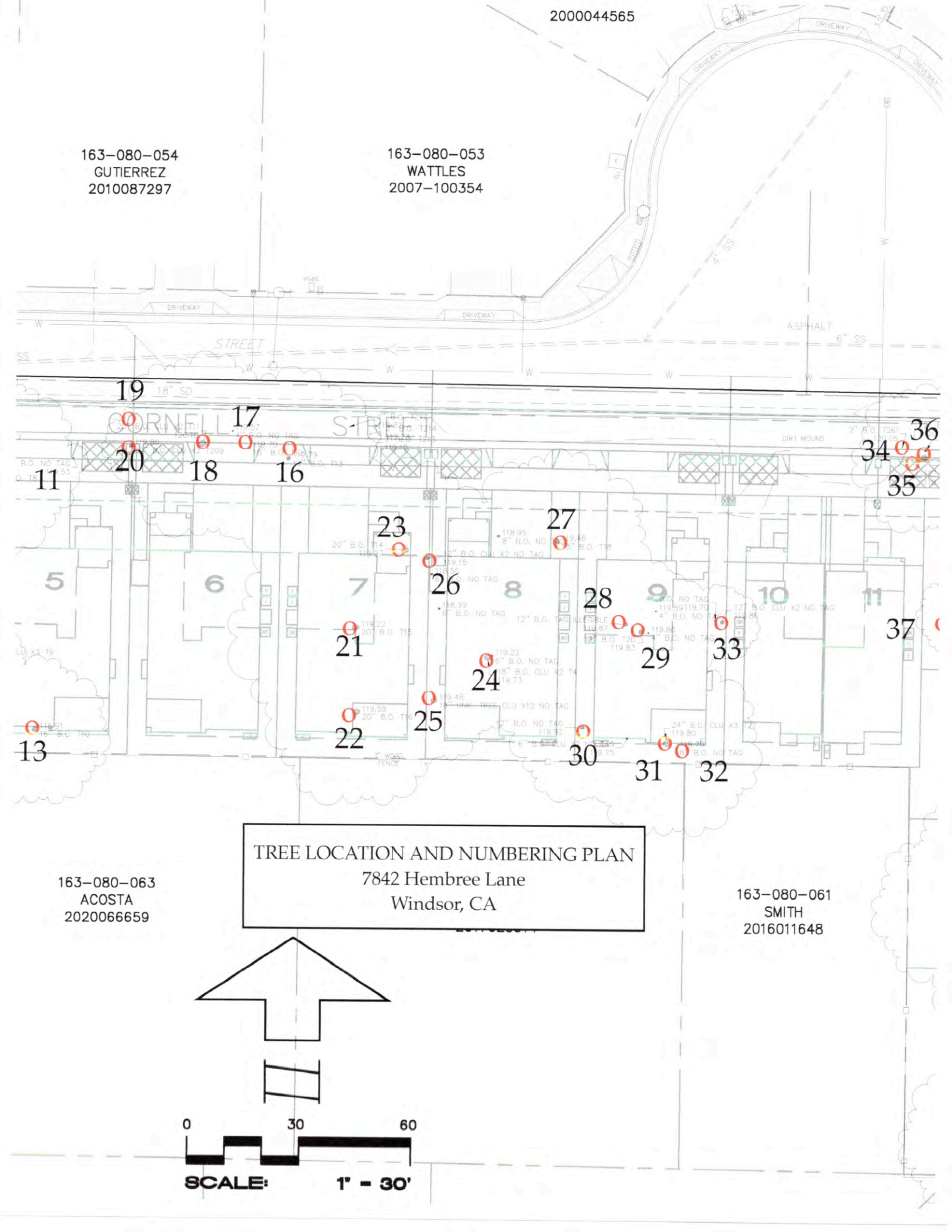
If excavation impacts more than 20% of the defined TPZ then supplemental irrigation may be required to offset loss of roots. Excavation in this case should be directed by the project arborist who will determine whether excavation is required, when, and how.

TREE LOCATION PLAN

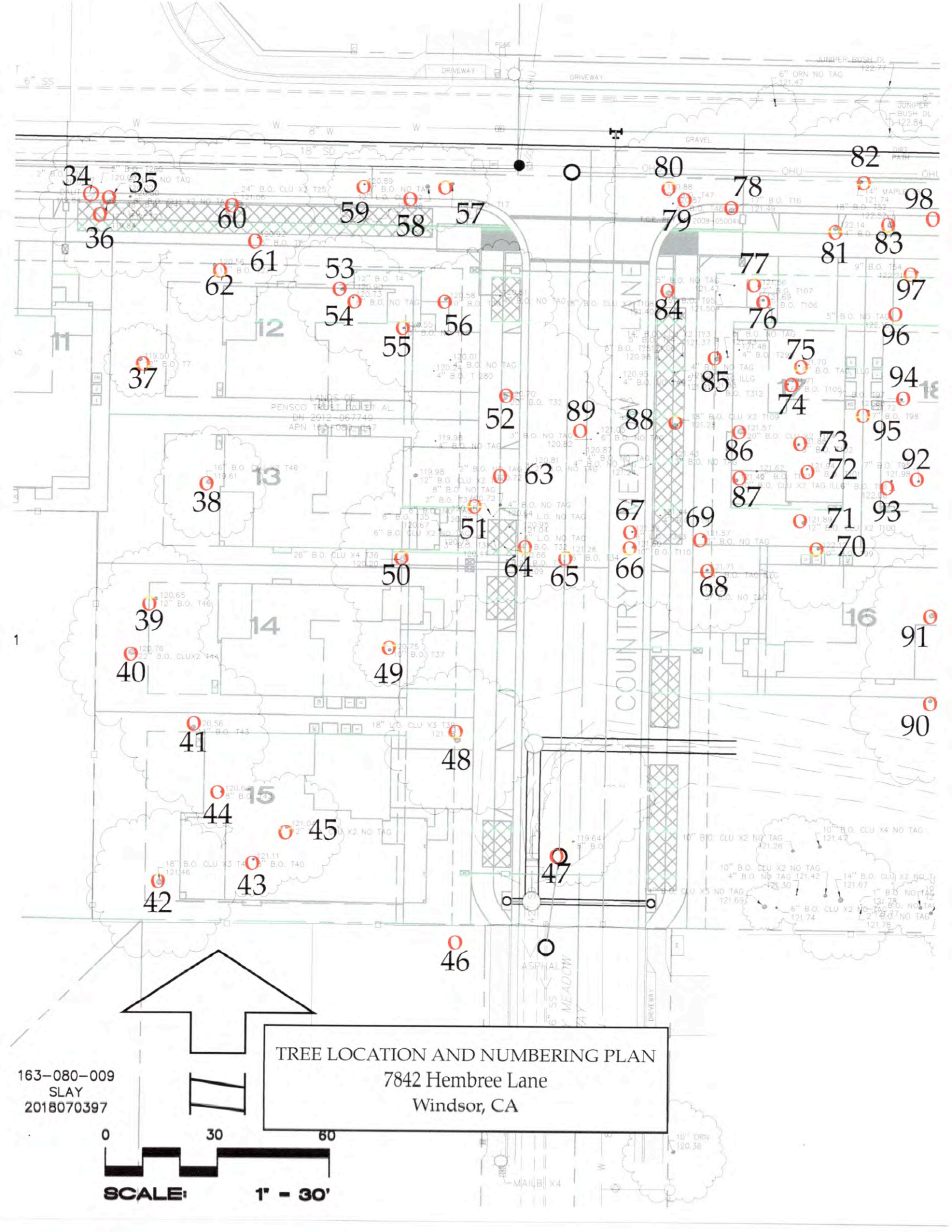


TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Windsor, CA

163-080-
ACOST.
2020066



TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Windsor, CA


TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Windsor, CA
163-080-009
SLAY
2018070397
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30
60
SCALE: 1" = 30'
COUNTRY MEADOW LANE
DRIVEWAY
GRAVEL
ASPHALT
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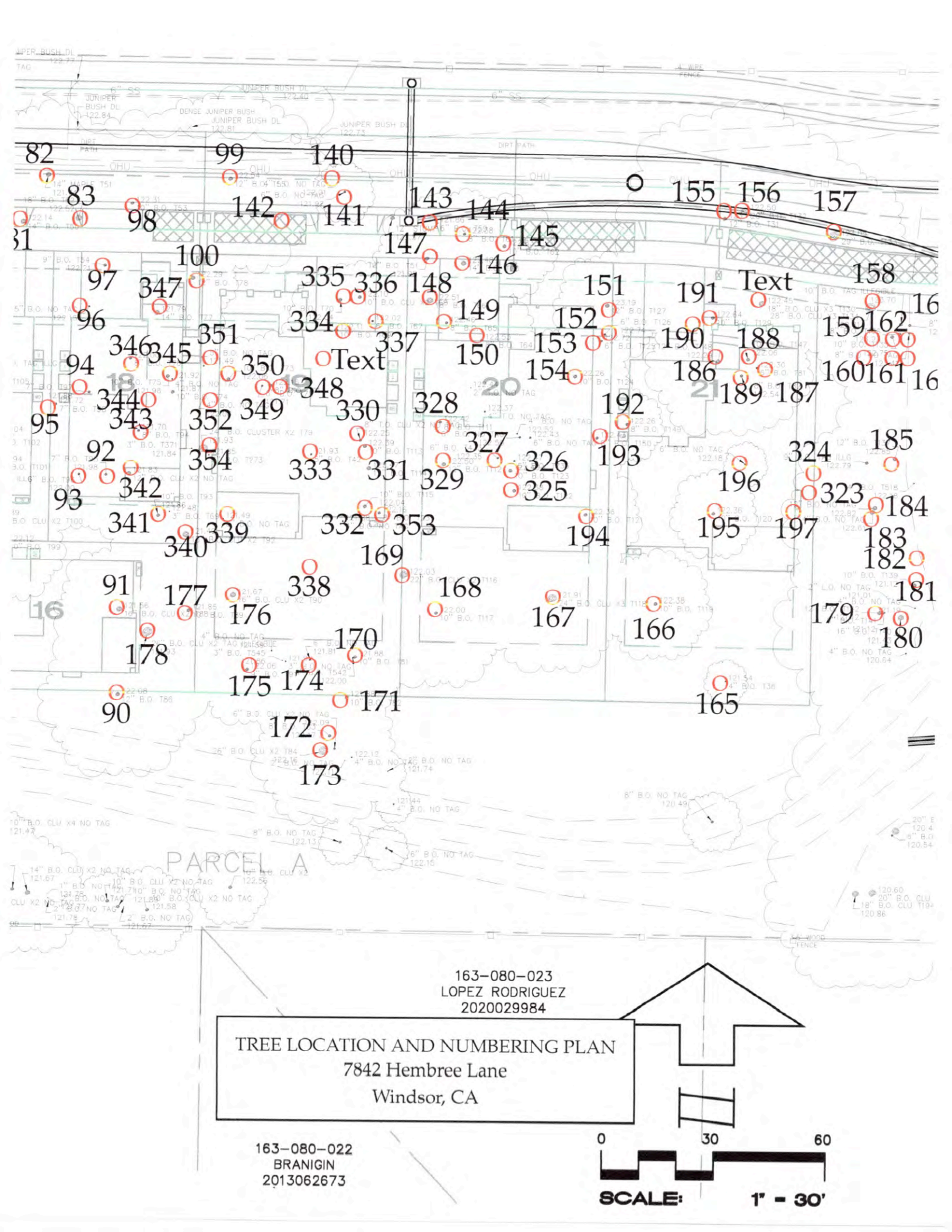
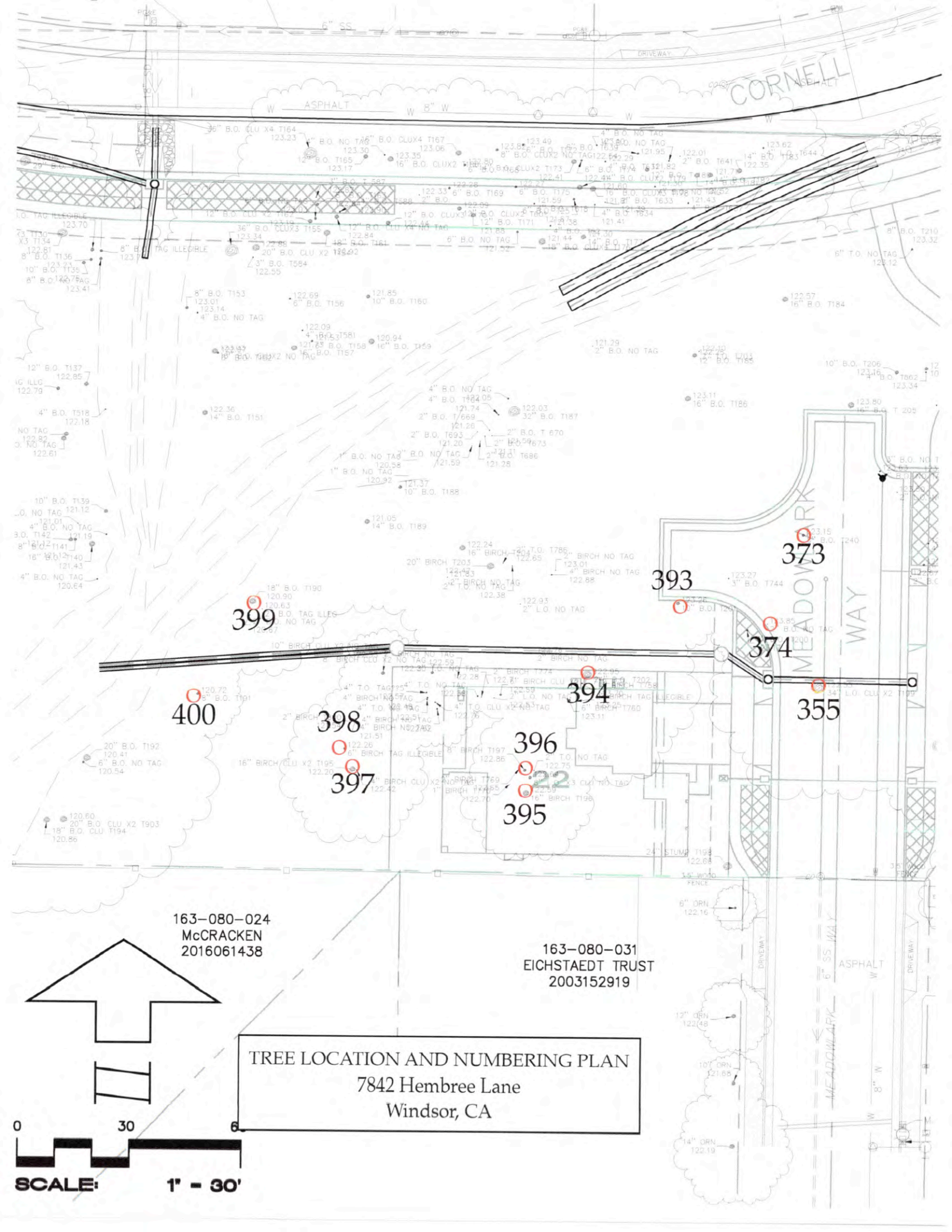


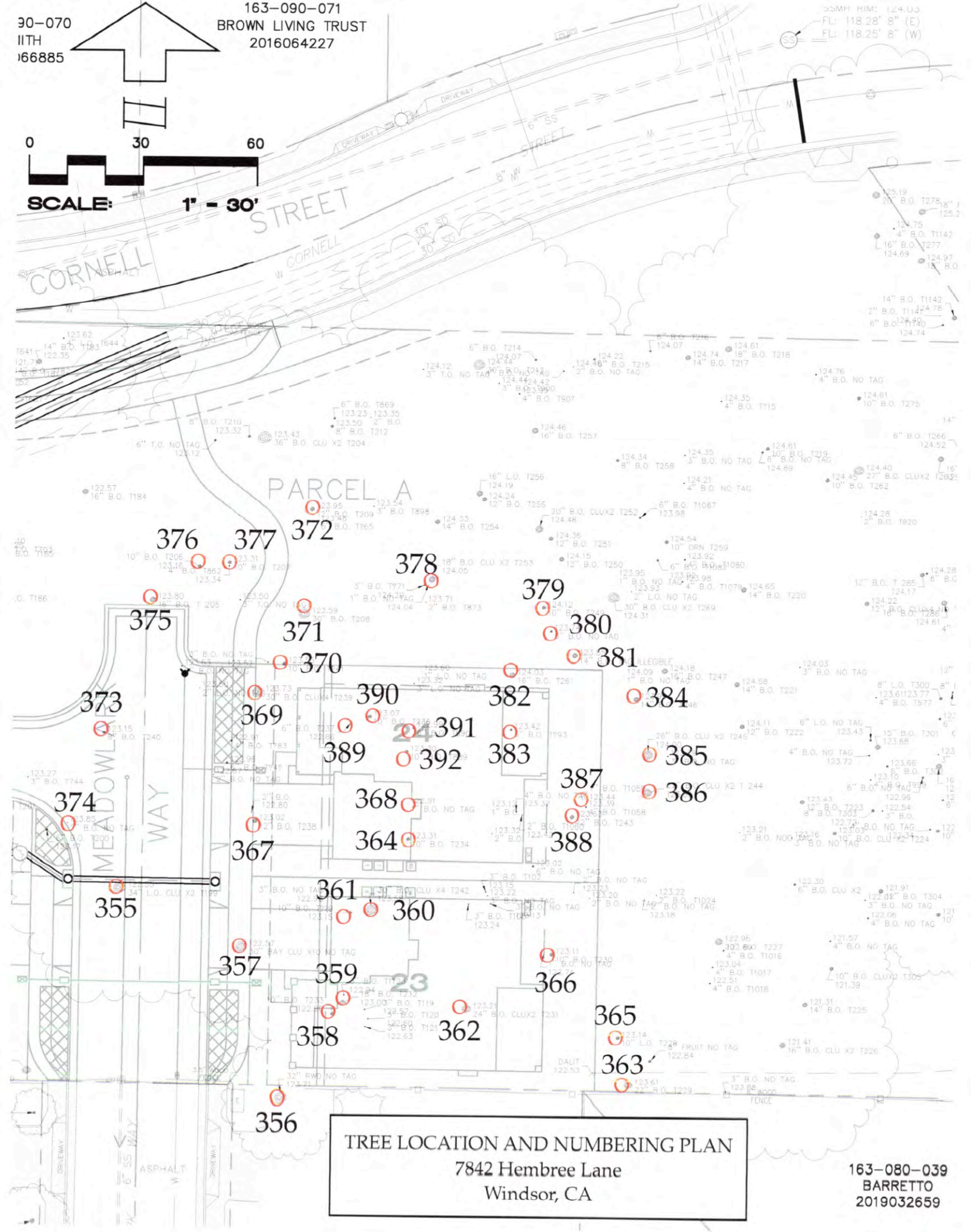
TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Windsor, CA



TREE LOCATION AND NUMBERING PLAN

7842 Hembree Lane

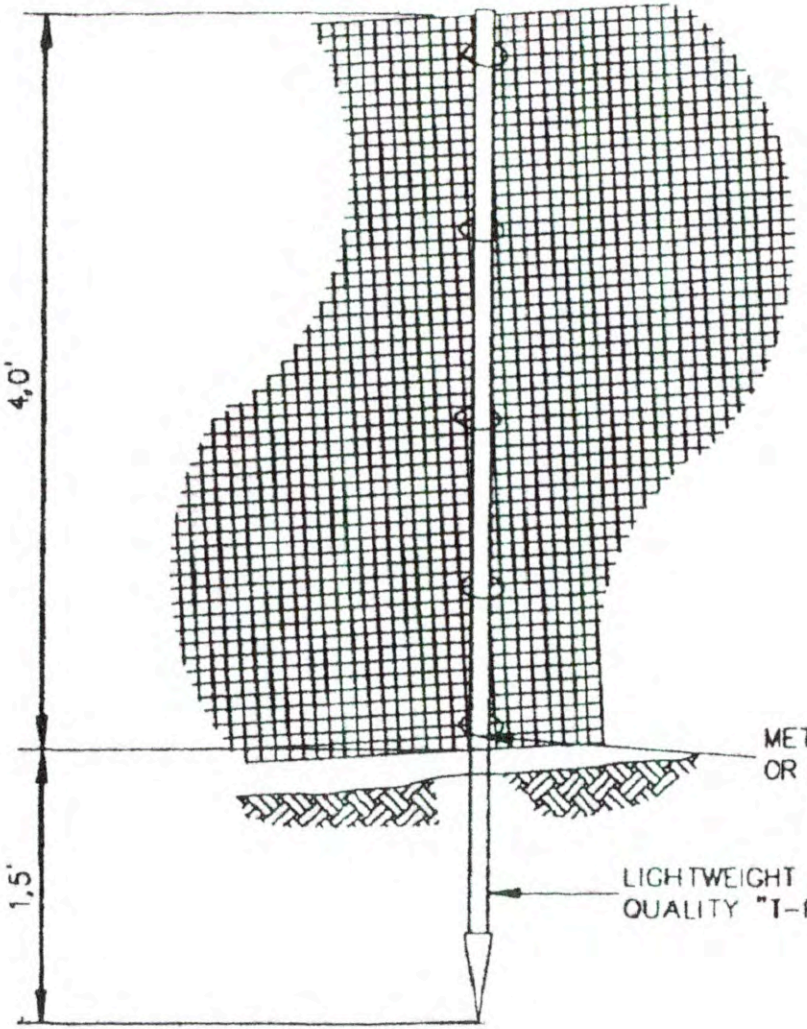
Windsor, CA



TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Windsor, CA

163-080-039
BARRETTO
2019032659

TREE FENCING DETAIL



NOTE:
TENSOR LIGHTWEIGHT SAFTY GRID, ORANGE
COLOR, BX226516, CUT OR FOLD AT POSTS
AS NEEDED TO CONFORM TO SLOPING TERRAIN.

TREE PROTECTION FENCING DETAIL

TREE PRESERVATION GUIDELINES

TREE PRESERVATION GUIDELINES

INTRODUCTION

Great care must be exercised when development is proposed in the vicinity of established trees of any type. The trees present at this site require specialized protection techniques during all construction activities to minimize negative impact on their long term health and vigor. The area immediately beneath and around canopy driplines is especially critical, and the specifications that follow are established to protect short and long term tree integrity. The purpose of this specification is therefore to define the procedures that must be followed during any and all phases of development in the immediate vicinity of designated protected trees.

Established, mature trees respond in a number of different ways to the disruption of their natural conditions. Change of grade within the root system area or near the root collar, damage to the bark of the trunk, soil compaction above the root system, root system reduction or damage, or alteration of summer soil moisture levels may individually or collectively cause physiological stress leading to tree decline and death. The individual impacts of these activities may cause trees to immediately exhibit symptoms and begin to decline, but more commonly the decline process takes many years, with symptoms appearing slowly and over a period of time. Trees may not begin to show obvious signs of decline from the negative impacts of construction until many years after construction is completed. It is not appropriate to wait for symptoms to appear, as this may be too late to correct the conditions at fault and to halt decline.

It is therefore critical to the long-term health of all protected trees that a defined protection program be established before beginning any construction activity where protected trees are found. Once incorporated at the design level, it is mandatory that developers, contractors, and construction personnel understand the critical importance of these guidelines, and the potential penalties that will be levied if they are not fully incorporated at every stage of development.

The following specifications are meant to be utilized by project managers and those supervising any construction in the vicinity of protected trees including grading contractors, underground contractors, all equipment operators, construction personnel, and landscape contractors. Questions which arise, or interpretation of specifications as they apply to specific site activities, must be referred to the project arborist as they occur.

Horticultural Associates
P.O. Box 1261
Glen Ellen, CA 95442
707-935-3911

TREE PROTECTION ZONE

1. The canopy dripline is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing.

2. No encroachment into the dripline is allowed at any time without approval from the project arborist, and unauthorized entry may be subject to civil action and penalties.

3. The dripline will be designated by the project arborist at a location determined to be adequate to ensure long term tree viability and health. This is to occur prior to installation of fencing and in conjunction with the fencing contractor

TREE PROTECTION FENCING

1. Prior to initiating any construction activity on a construction project, including demolition or grading, temporary protective fencing shall be installed at each site tree, or group of trees. Fencing shall be located at the dripline designated by the project arborist and generally illustrated on the Improvement Plans.

2. Fencing shall be minimum 4' height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing such as *Tensar* plastic fencing is recommended, but any fencing system that adequately prevents entry will be considered for approval by the project arborist. The use of post and cable fencing is not acceptable, however.

3. Fencing shall be installed tightly between steel fence posts (standard quality farm 'T' posts work well) placed no more than 8 feet on center. Fencing shall be attached to each post at 5 locations with plastic electrical ties, metal tie wire, or flip ties. See attached fencing detail.

4. Fencing shall serve as a barrier to prevent encroachment of any type by construction activities, equipment, materials storage, or personnel.

5. All encroachment into the fenced dripline must be approved and supervised by the project arborist. Approved dripline encroachment may require

additional mitigation or protection measures that will be determined by the project arborist at the time of the request.

6. Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.

7. Fencing shall be upright and functional at all times from start to completion of project. Fencing shall remain in place and not be moved or removed until all construction activities at the site are completed.

TREE PRUNING AND TREATMENTS

1. All recommendations for pruning or other treatments must be completed prior to acceptance of the project. It is strongly recommended that pruning be completed prior to the start of grading to facilitate optimum logistics and access.

2. All pruning shall be conducted in conformance with International Society of Arboriculture pruning standards, and all pruning must occur by, or under the direct supervision of, an arborist certified by the International Society of Arboriculture.

GRADING AND TRENCHING

1. Any construction activity that necessitates soil excavation in the vicinity of preserved trees shall be avoided where possible, or be appropriately mitigated under the guidance of the project arborist. All contractors must be aware at all times that specific protection measures are defined, and non conformance may generate stop-work orders.

2. The designated dripline is defined around all site trees to be preserved. Fences protect the designated areas. No grading or trenching is to occur within this defined area unless so designated by the Improvement Plan, and where designated shall occur under the direct supervision of the project arborist.

3. Trenching should be routed around the dripline. Where trenching has been designated within the dripline, utilization of underground technology to bore, tunnel or excavate with high-pressure air or water will be specified. Hand digging will be generally discouraged unless site conditions restrict the use of alternate technology.

4. All roots greater than one inch in diameter shall be cleanly hand-cut as they are encountered in any trench or during any grading activity. The tearing of roots by equipment shall not be allowed. Mitigation treatment of pruned roots shall be specified by the project arborist as determined by the degree of root pruning, location of root pruning, and potential exposure to desiccation. No pruning paints or sealants shall be used on cut roots.

5. Where significant roots are encountered mitigation measures such as supplemental irrigation and/or organic mulches may be specified by the project arborist to offset the reduction of root system capacity.

6. Retaining walls are effective at holding grade changes outside the area of the dripline and are recommended where necessary. Retaining walls shall be constructed in post and beam or drilled pier construction styles where they are necessary near or within a dripline.

7. Grade changes outside the dripline, or those necessary in conjunction with retaining walls, shall be designed so that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%. If grading toward the root collar is unavoidable, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root collar area.

8. Grade reduction within the designated dripline shall be generally discouraged, and where approved, shall be conducted only after careful consideration and coordination with the project arborist.

9. Foundations of all types within the dripline shall be constructed using design techniques that eliminate the need for trenching into natural grade. These techniques might include drilled piers, grade beams, bridges, or cantilevered structures. Building footprints should generally be outside the dripline whenever possible.

DRAINAGE

The location and density of native trees may be directly associated with the presence of naturally occurring water, especially ephemeral waterways. Project design, especially drainage components, should take into consideration that these trees may begin a slow decline if this naturally present association with water is changed or eliminated.

TREE DAMAGE

1. Any form of tree damage which occurs during the demolition, grading, or construction process shall be evaluated by the project arborist. Specific mitigation measures will be developed to compensate for or correct the damage. Fines and penalties may also be levied.

2. Measures may include, but are not limited to, the following:

- pruning to remove damaged limbs or wood
- bark scoring to remove damaged bark and promote callous formation
- alleviation of compaction by lightly scarifying the soil surface
- installation of a specific mulching material
- supplemental irrigation during the growing season for up to 5 years
- treatment with specific amendments intended to promote health, vigor, or root growth
- vertical mulching or soil fracturing to promote root growth
- periodic post-construction monitoring at the developer's expense
- tree replacement, or payment of the established appraised value, if the damage is so severe that long term survival is not expected.

3. Any tree that is significantly damaged and whose survivability is threatened, due to negligence by any contractor, shall be appraised using the Trunk Formula Method provided in the 9th Edition of the Guide For Plant Appraisal. This appraisal value will be the basis for any fines levied on the offending contractor.

MULCHING

1. Trees will benefit from the application of a 4 inch layer of chipped bark mulch over the soil surface within the Tree Protection Zone. Ideal mulch material is a chipped bark containing a wide range of particle sizes. Bark mulches composed of shredded redwood, bark screened for uniformity of size, dyed bark, or chipped lumber will not function as beneficially. All trees that are expected to be

impacted in any way by project activities shall have mulch placed prior to the installation of protection fencing.

2. Mulch should be generated from existing site trees that are removed or pruned as part of the project. Much brought onto the site from an outside source must be from trees that are verified to be free of the Sudden Oak Death pathogen *Phytophtora ramorum*.

ISA PRUNING STANDARDS

WESTERN CHAPTER

ISA

PRUNING STANDARDS

Purpose:

Trees and other woody plants respond in specific and predictable ways to pruning and other maintenance practices. Careful study of these responses has led to pruning practices which best preserve and enhance the beauty, structural integrity, and functional value of trees.

In an effort to promote practices which encourage the preservation of tree structure and health, the W.C. ISA Certification Committee has established the following Standards of Pruning for Certified Arborists. The Standards are presented as working guidelines, recognizing that trees are individually unique in form and structure, and that their pruning needs may not always fit strict rules. The Certified Arborist must take responsibility for special pruning practices that vary greatly from these Standards.

I. Pruning Techniques

A. A thinning cut removes a branch at its point of attachment or shortens it to a lateral large enough to assume the terminal role. Thinning opens up a tree, reduces weight on heavy limbs, can reduce a tree's height, distributes ensuing invigoration throughout a tree and helps retain the tree's natural shape. Thinning cuts are therefore preferred in tree pruning.

When shortening a branch or leader, the lateral to which it is cut should be at least one-half the diameter of the cut being made. Removal of a branch or leader back to a sufficiently large lateral is often called "drop crotching."

B. A heading cut removes a branch to a stub, a bud or a lateral branch not large enough to assume the terminal role. Heading cuts should seldom be used because vigorous, weakly attached upright sprouts are forced just below such cuts, and the tree's natural form is altered. In some situations, branch stubs die or produce only weak sprouts.

C. When removing a live branch, pruning cuts should be made in branch tissue just outside the branch bark ridge and collar, which are trunk tissue. *(Figure 1)* If no collar is visible, the angle of the cut should approximate the angle formed by the branch bark ridge and the trunk. *(Figure 2)*

D. When removing a dead branch, the final cut should be made outside the collar of live callus tissue. If the collar has grown out along the branch stub, only the dead stub should be removed, the live collar should remain intact, and uninjured. *(Figure 3)*

E. When reducing the length of a branch or the height of a leader, the final cut should be made just beyond (without violating) the branch bark ridge of the branch being cut to. The cut should approximately bisect the angle formed by the branch bark ridge and an imaginary line perpendicular to the trunk or branch cut. *(Figure 4)*

F. A goal of structural pruning is to maintain the size of lateral branches to less than three-fourths the diameter of the parent branch or trunk. If the branch is codominant or close to the size of the parent branch, thin the branch's foliage by 15% to 25%, particularly near the terminal. Thin the parent branch less, if at all. This will allow the parent branch to grow at a faster rate, will reduce the weight of the lateral branch, slow its total growth, and develop a stronger branch attachment. If this does not appear appropriate, the branch should be completely removed or shortened to a large lateral. *(Figure 5)*

G. On large-growing trees, except whorl-branching conifers, branches that are more than one-third the diameter of the trunk should be spaced along the trunk at least 18 inches apart, on center. If this is not possible because of the present size of the tree, such branches should have their foliage thinned 15% to 25%, particularly near their terminals. *(Figure 6)*

H. Pruning cuts should be clean and smooth with the bark at the edge of the cut firmly attached to the wood.

I. Large or heavy branches that cannot be thrown clear, should be lowered on ropes to prevent injury to the tree or other property.

J. Wound dressings and tree paints have not been shown to be effective in preventing or reducing decay. They are therefore not recommended for routine use when pruning.

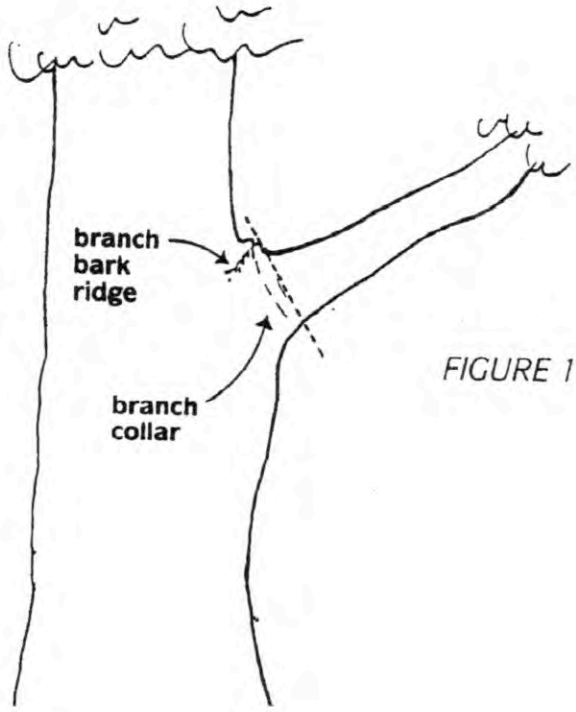


FIGURE 1. When removing a branch, the final cut should be just outside the branch bark ridge and collar.

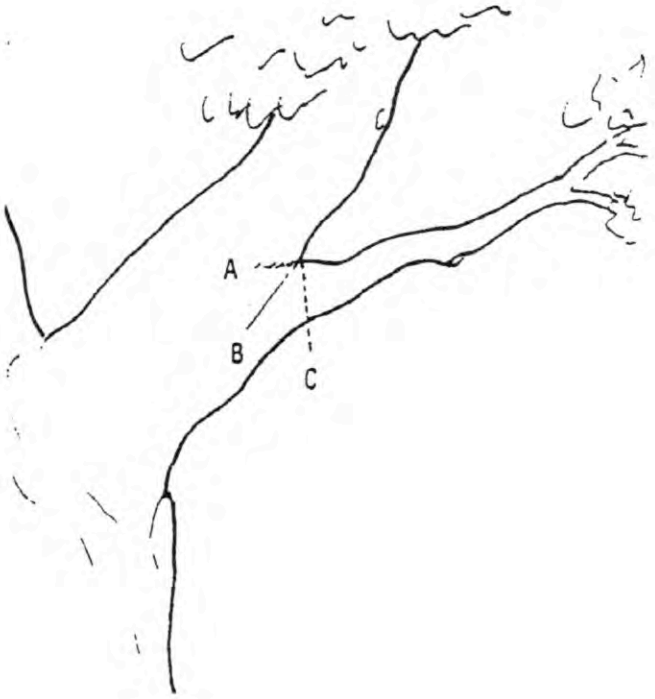


FIGURE 2. In removing a limb without a branch collar, the angle of the final cut to the branch bark ridge should approximate the angle the branch bark ridge forms with the limb. Angle AB should equal Angle BC.

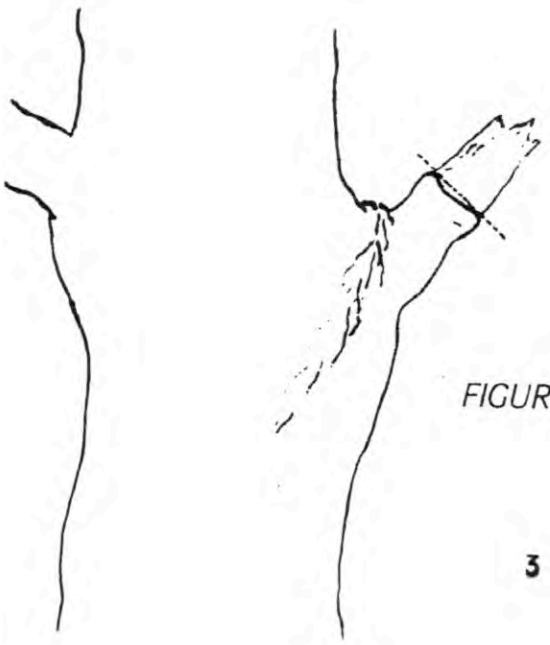


FIGURE 3. When removing a dead branch, cut outside the callus tissue that has begun to form around the branch.

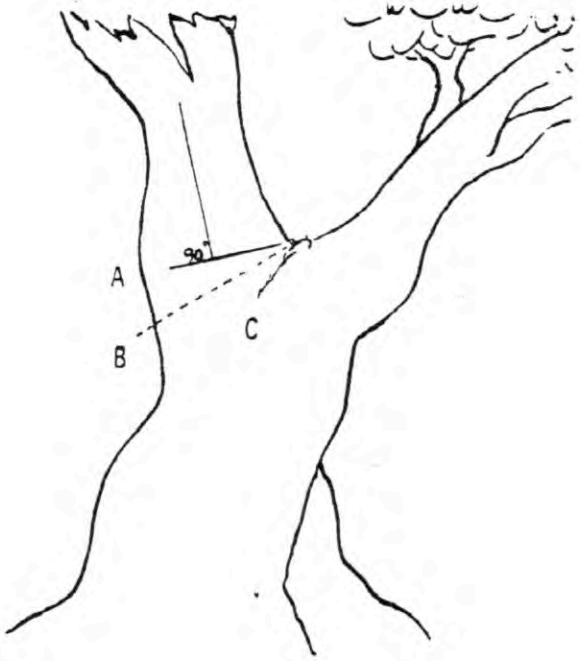


FIGURE 4. *In removing the end of a limb to a large lateral branch, the final cut is made along a line that bisects the angle between the branch bark ridge and a line perpendicular to the limb being removed. Angle AB is equal to Angle BC.*

FIGURE 5. *A tree with limbs tending to be equal-sized, or codominant. Limbs marked B are greater than ¾ the size of the parent limb A. Thin the foliage of branch B more than branch A to slow its growth and develop a stronger branch attachment.*

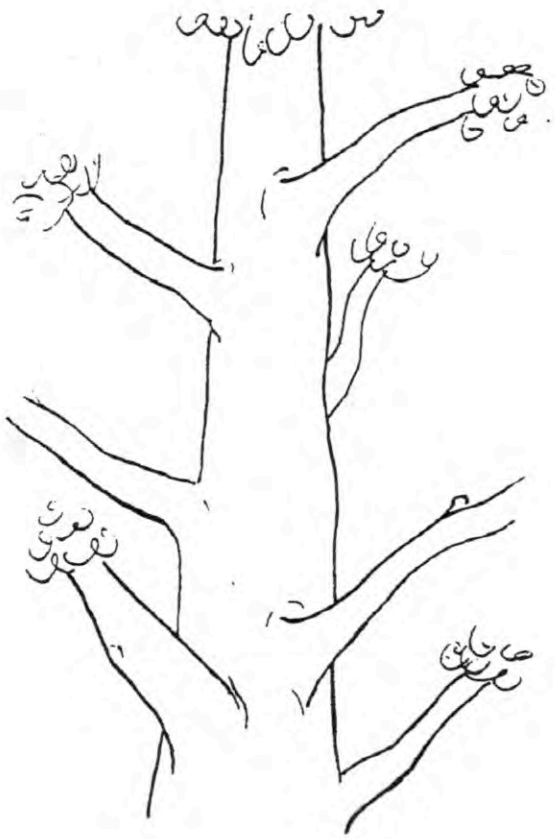


FIGURE 6. *Major branches should be well spaced both along and around the stem.*

II. Types of Pruning — Mature Trees

A. CROWN CLEANING

Crown cleaning or cleaning out is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches and watersprouts from a tree crown.

B. CROWN THINNING

Crown thinning includes crown cleaning and the selective removal of branches to increase light penetration and air movement into the crown. Increased light and air stimulates and maintains interior foliage, which in turn improves branch taper and strength. Thinning reduces the wind-sail effect of the crown and the weight of heavy limbs. Thinning the crown can emphasize the structural beauty of trunk and branches as well as improve the growth of plants beneath the tree by increasing light penetration. When thinning the crown of mature trees, seldom should more than one-third of the live foliage be removed.

At least one-half of the foliage should be on branches that arise in the lower two-thirds of the trees. Likewise, when thinning laterals from a limb, an effort should be made to retain inner lateral branches and leave the same distribution of foliage along the branch. Trees and branches so pruned will have stress more evenly distributed throughout the tree or along a branch.

An effect known as "lion's-tailing" results from pruning out the inside lateral branches. Lion's-tailing, by removing all the inner foliage, displaces the weight to the ends of the branches and may result in sunburned branches, water-sprouts, weakened branch structure and limb breakage.

C. CROWN REDUCTION

Crown reduction is used to reduce the height and/or spread of a tree. Thinning cuts are most effective in maintaining the structural integrity and natural form of a tree and in delaying the time when it will need to be pruned again. The lateral to which a branch or trunk is cut should be at least one-half the diameter of the cut being made.

D. CROWN RESTORATION

Crown restoration can improve the structure and appearance of trees that have been topped or severely pruned using heading cuts. One to three sprouts on main branch stubs should be selected to reform a more natural appearing crown. Selected vigorous sprouts may need to be thinned to a lateral, or even headed, to control length growth in order to ensure adequate attachment for the size of the sprout. Restoration may require several prunings over a number of years.

II. Types of Pruning — Mature Trees *(continued)*

E. CROWN RAISING

Crown raising removes the lower branches of a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas. It is important that a tree have at least one-half of its foliage on branches that originate in the lower two-thirds of its crown to ensure a well-formed, tapered structure and to uniformly distribute stress within a tree.

When pruning for view, it is preferable to develop "windows" through the foliage of the tree, rather than to severely raise or reduce the crown.

III. Size of Pruning Cuts

Each of the Pruning Techniques (Section I) and Types of Pruning (Section II) can be done to different levels of detail or refinement. The removal of many small branches rather than a few large branches will require more time, but will produce a less-pruned appearance, will force fewer watersprouts and will help to maintain the vitality and structure of the tree. Designating the maximum size (base diameter) that any occasional undesirable branch may be left within the tree crown, such as ½", 1" or 2" branch diameter, will establish the degree of pruning desired.

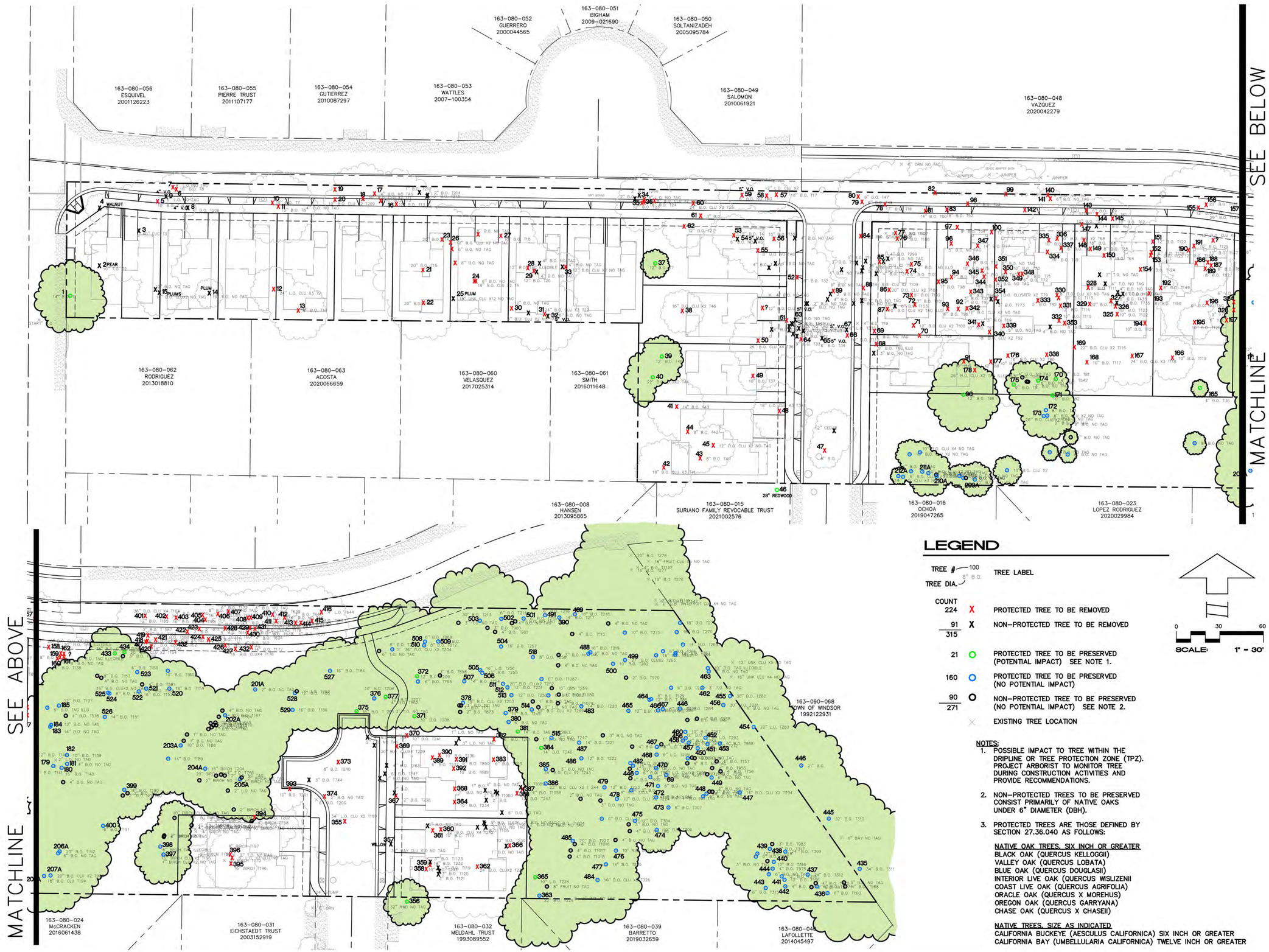
IV. Climbing Techniques

A. Climbing and pruning practices should not injure the tree except for the pruning cuts.

B. Climbing spurs or gaffs should not be used when pruning a tree, unless the branches are more than throw-line distance apart. In such cases, the spurs should be removed once the climber is tied in.

C. Spurs may be used to reach an injured climber and when removing a tree.

D. Rope injury to thin barked trees from loading out heavy limbs should be avoided by installing a block in the tree to carry the load. This technique may also be used to reduce injury to a crotch from the climber's line.



LEGEND

TREE # 100 / TREE DIA. 8" B.O.		TREE LABEL
COUNT		
224	X	PROTECTED TREE TO BE REMOVED
91 / 315	X	NON-PROTECTED TREE TO BE REMOVED
21	○	PROTECTED TREE TO BE PRESERVED (POTENTIAL IMPACT) SEE NOTE 1.
160	○	PROTECTED TREE TO BE PRESERVED (NO POTENTIAL IMPACT)
90 / 271	○	NON-PROTECTED TREE TO BE PRESERVED (NO POTENTIAL IMPACT) SEE NOTE 2.
	X	EXISTING TREE LOCATION

SCALE: 1" = 30'

NOTES:

1. POSSIBLE IMPACT TO TREE WITHIN THE DRIPLINE OR TREE PROTECTION ZONE (TPZ). PROJECT ARBORIST TO MONITOR TREE DURING CONSTRUCTION ACTIVITIES AND PROVIDE RECOMMENDATIONS.
2. NON-PROTECTED TREES TO BE PRESERVED CONSIST PRIMARILY OF NATIVE OAKS UNDER 6" DIAMETER (DBH).
3. PROTECTED TREES ARE THOSE DEFINED BY SECTION 27.36.040 AS FOLLOWS:

NATIVE OAK TREES, SIX INCH OR GREATER
BLACK OAK (QUERCUS KELLOGGII)
VALLEY OAK (QUERCUS LOBATA)
BLUE OAK (QUERCUS DOUGLASII)
INTERIOR LIVE OAK (QUERCUS WISLIZENII
COAST LIVE OAK (QUERCUS AGRIFOLIA)
ORACLE OAK (QUERCUS X MOREHUS)
OREGON OAK (QUERCUS GARRYANA)
CHASE OAK (QUERCUS X CHASEII)

NATIVE TREES, SIZE AS INDICATED
CALIFORNIA BUCKEYE (AESCULUS CALIFORNICA) SIX INCH OR GREATER
CALIFORNIA BAY (UMBELLULARIA CALIFORNICA) TWELVE INCH OR GREATER

ANDREW BORDESSA
RCE 34368
DATE

CIVIL DESIGN CONSULTANTS, INC.
2200 Range Avenue, Suite 204
Santa Rosa, CA 95403
(707) 542-4820

TREE PRESERVATION PLAN

HEMBREE LANE

7842 HEMBREE LANE
WINDSOR, CALIFORNIA

DOC NO. 2012067749
APN 163-080-047

5.10 ACRES
24 LOTS
1 PARCEL
OCTOBER 2022

JOB NO.
21-107

SHEET NO.
1
OF 1 SHEETS

PRELIMINARY BIOLOGICAL ASSESSMENT

HEMBREE LANE OAKS
7842 HEMBREE LANE
WINDSOR, CA

Prepared For:

Doyle Heaton
DRG Builders
3496 Buskirk Ave
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Prepared By:

Darren Wiemeyer
Wiemeyer Ecological Sciences
4000 Montgomery Drive, Suite L-5
Santa Rosa, CA 95405

August 17, 2021

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FIGURES

APPENDICES

1 SUMMARY

The Hembree Lane Oaks project site is located at 7842 Hembree Lane in Windsor, CA (APN 163-080-047) (referred to as the "site") (Figure 1). Darren Wiemeyer, a qualified biologist, performed a site visit on August 3, 2021 to map habitat types and perform a special-status animal species habitat assessment. Habitat types at the site consist of non-native annual grassland, valley oak woodland and seasonal wetland (Figure 4). Additional studies that are needed to be performed include a wetland delineation, special-status plant species surveys and nesting bird surveys. These studies will be performed in spring through early summer of 2022.

The site is not within the potential range of the California tiger salamander (*Ambystoma californiense*) (CTS) as mapped by the United States Fish and Wildlife Service (USFWS) according to the Santa Rosa Plain Conservation Strategy (SRPCS) (SRPCST, 2005). The site is categorized as "Presence for CTS is not likely but Mitigation for listed plants may be required" according to Figure 3 of the SRPCS (SRPCST, 2005). The SRPCS states that "neither surveys nor mitigation would be required for projects on these properties".

In addition, the site is categorized as "May affect listed plants, but would not likely affect CTS" according to the Programmatic Biological Opinion (PBO) – Re-initiation of Formal Consultation of Issuance of Clean Water Act, Section 404 Permits by the U.S. Army Corps of Engineers (Corps) on the Santa Rosa Plain, Sonoma County, California dated June 11, 2020 (USFWS, 2020). According to these two documents, mitigation for potential impacts to California tiger salamander habitat will not be required and a CTS site assessment will not need to be conducted.

The proposed project is a 3.2-acre single-family home residential development that will develop the western portion and a part of the southeast portion of the site. The project will result in the loss of non-native annual grassland and valley oak woodland habitats at the site. In addition, a small portion of the western end of the seasonal wetland swale will be filled/impacted to accommodate the extension of County Meadow Lane. An undetermined number of trees are proposed to be removed as a result of site developments. Approximately 2.0-acres of the eastern portion of the site will be dedicated to the Town of Windsor as an open space preserve to preserve valley oak woodland and seasonal wetland habitat.

Site development activities and tree removal has the potential to impact special-status bee species, special-status bat species, raptors and native nesting birds. The filling of the far western portion of the seasonal wetland swale has the potential to impact western pond turtle.

All recommended avoidance, minimization and mitigation measures are proposed in Section 8 of this report to reduce impacts to non-native annual grassland, valley oak woodland and seasonal wetland habitats and to special-status animal species to a less than significant level. These avoidance and minimization measures will reduce identified potential impacts to biological resources to less than significant levels.

Additional studies that are needed to be performed at the site include an updated wetland delineation, special-status plant species surveys, further special-status animal species habitat evaluations and nesting bird surveys. These studies are proposed to be performed in spring through early summer of 2022. An updated Biological Assessment will be prepared to report on these additional studies.

2 PURPOSE OF STUDY

The purpose of this Preliminary Biological Assessment is to determine whether the site provides habitat for any special-status plant species, special-status animal species, or special-status habitats, including seasonal wetlands and waterways. In the event these resources exist on site, the significance of potential direct and indirect impacts to biological resources would be assessed pursuant to provisions of the California Environmental Quality Act (CEQA).

This Preliminary Biological Assessment will also be in compliance with the requirements of the Santa Rosa Plain Conservation Strategy as well as the Town of Windsor CEQA requirements per the Memo from Peter Chamberlin dated May 29, 2008 entitled "Contents of Biological Assessments". In addition, this Preliminary Biological Assessment will discuss compliance with the Programmatic Biological Opinion (PBO) – Re-initiation of Formal Consultation of Issuance of Clean Water Act, Section 404 Permits by the U.S. Army Corps of Engineers (Corps) on the Santa Rosa Plain, Sonoma County, California dated June 11, 2020 (USFWS, 2020).

This Preliminary Biological Assessment will identify appropriate mitigation measures to off-set potential direct and indirect impacts to biological resources on the subject site as a result of site development. Additional mitigation measures may be identified and required, if additional required studies identify additional significant impacts to biological resources at the site.

2.1 PAST STUDIES

Past studies at the site consist of special-status plant species in 2006 and 2008 and a wetland delineation in 2006 by Charlie Patterson (Patterson, 2016). Because these studies are outdated, a re-delineation of wetlands and a season of updated special-status plant species surveys are recommended.

2.2 ADDITIONAL STUDIES

Additional studies that are needed to be performed at the site include an updated wetland delineation, special-status plant species surveys, further special-status animal species habitat evaluations and nesting bird surveys. These studies are proposed to be performed in spring through early summer of 2022. An updated Biological Assessment will be prepared to report on these additional studies.

3 SITE DESCRIPTION

The site is located at 7842 Hembree Lane, Windsor (APN 163-080-047) (Figure 1). The site is 5.2-acres in size. The site currently has no structures. There are many bike trails consisting of built jumps and berms with soil borrow pits. Photos of the site are included as Photo Plate A in the Figures section.

3.1 HABITATS

Habitat types at the site consist of non-native annual grassland, valley oak woodland and seasonal wetland (Figure 4). Two seasonal wetlands have been preliminarily mapped and consist of a seasonal wetland depression at the eastern end of the site and a long seasonal wetland swale that flows from near the northeast corner to the southern end of the site (Figure 4). This seasonal wetland swale is disconnected from other surface waters to the north or south of the site. The seasonal wetland swale is not being considered a seasonal drainage or stream as the swale is vegetated without a defined bed and bank and the substrate consists of soil. This swale appears to have been channelized and deepened in the past. The western end of the site does contain some revetment rock before a culvert that continues underground to the south.

3.2 SURROUNDING LANDS

The site is completely surrounded by residential developments. Robbins Park is located directly adjacent to the east from the site.

3.3 TOPOGRAPHY

The site is flat and elevations range from 117-122 feet above sea level (Figure 2).

3.4 HYDROLOGY

The site is flat and appears that surface water runoff from the site flows into the seasonal wetland swale, except for the far eastern portion of the site where surface water runoff flows into the seasonal wetland depression at the eastern end of the site (Figure 4). The seasonal wetland swale is disconnected from other surface waters to the north or south of the site and does not appear to be part of a mapped stream (Figure 2). The seasonal wetland swale receives water from residential areas to the northeast, then connects to a culvert at the southern end of the site. It is unknown where this culvert connects, but is thought to connect to Pool Creek on the east side of Highway 101. Pool Creek flows west under Highway 101 and connects to Windsor Creek. Windsor Creek flows into Mark West Creek which flows into the Russian River. The Russian River continues west and is the ultimate drainage prior to its terminus at the Pacific Ocean.

3.5 SOIL TYPES

The site is mapped as having a single soil type, Huichica loam, shallow, ponded, 0 to 5 percent slopes (HwB) (Figure 3).

4 PROJECT DESCRIPTION

The proposed project is a 3.2-acre single-family home residential development that will develop the western portion and a part of the southeast portion of the site. The project will result in the loss of non-native annual grassland and valley oak woodland habitats at the site. In addition, a small portion of the western end of the seasonal wetland swale will be impacted to accommodate the extension of County Meadow Lane. Approximately 2.0-acres of the eastern portion of the site will be dedicated to the Town of Windsor as an open space preserve to preserve valley oak woodland and seasonal wetland habitat. Furthermore, the Town of Windsor has expressed support for a "Development Agreement" to pursue a "net-zero" tree mitigation fee. An undetermined number of trees are proposed to be removed as a result of site developments.

A Conceptual Site Plan is included in the Figures section.

5 REGULATORY CONTEXT

5.1 UNITED STATES FISH AND WILDLIFE SERVICE

The United States Fish and Wildlife Service (USFWS) administers the federal Endangered Species Act (ESA). Listed threatened and endangered species are protected from take, defined as direct or indirect harm, unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via ESA Section 7 consultation. Pursuant to the requirements of ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the study area and determine whether the proposed federal action will jeopardize the continued existence of the species.

Under ESA, habitat loss is considered to be an adverse effect to a species. In addition, the action agency is required to determine whether its action is likely to jeopardize the continued existence of any species that is proposed for listing under ESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species. The USFWS also administers the federal Migratory Bird Treaty Act of 1918. Under this legislation, it is unlawful to destroy active nests, eggs, and young.

5.2 UNITED STATES ARMY CORPS OF ENGINEERS

The United States Army Corps of Engineers (USACE) administers the federal Clean Water Act (CWA). Section 404 of the CWA requires approval prior to discharging dredged or fill material into the waters of the United States. Waters of the United States includes essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. "Wetlands" are areas characterized by growth of wetland vegetation where the soil is saturated during a portion of the growing season or the surface is flooded during some part of most years. Wetlands generally include seasonally inundated wetlands, swamps, marshes, bogs and similar areas.

5.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA). It is state policy to conserve, protect, restore and enhance any endangered or threatened species and its habitat. The CDFW has jurisdiction over species that are formally listed as threatened or endangered under the CESA. The CESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the state. In addition to CESA, the California Native Plant Protection Act (NPPA) provides protection to endangered and rare plant species. The CDFW also maintains a list of species of special concern to be considered during CEQA review.

Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether any state-listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. If significant impacts to state listed species are identified, the state lead agency must adopt reasonable and prudent alternatives as specified by CDFW to prevent or mitigate for impacts. CDFW can authorize take of a state-listed species if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with the federal ESA, or if the director of CDFW issues a permit under Section 2080 in those cases where it is demonstrated that the impacts are minimized and mitigated.

CDFW also administers the California Fish and Game Code. California Fish and Game Code Section 3503.5 makes it unlawful to take, possess or destroy birds in the Falconiformes (birds of prey, vultures, eagles, falcons) and Strigiformes (owls) families, which can include nest disturbance from construction and other activities.

5.4 STATE WATER RESOURCES CONTROL BOARD

The State Water Resources Control Board (SWRCB) administers the state CWA. Under Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredge or fill material, and projects that qualify for a Nationwide Permit, must obtain water quality certification from the RWQCB that the project will uphold state water quality standards. The SWRCB also administers the National Pollutant Discharge Elimination System (NPDES) which includes the General Permit for Storm Water Discharges from Construction Activities.

5.5 CALIFORNIA NATIVE PLANT SOCIETY

The California Native Plant Society (CNPS) is a non-profit group dedicated to preserving the state's native flora. It has developed lists of plants of special concern in California (Skinner and Pavlik 1994). In the spring of 2011, CNPS officially changed the name "CNPS List" to "California Rare Plant Rank" (CRPR). The definitions of the ranks and the ranking system have not changed, and the ranks are still used to categorize the same degrees of concern, which are described as follows:

CRPR 1A: The plants with a California Rare Plant Rank of 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct as well as those plants which are presumed extirpated in California. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range. All of

the plants constituting California Rare Plant Rank 1A meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to the California Environmental Quality Act (CEQA).

CRPR 1B: Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of taxa in the CNPS *Inventory*, with more than 1,000 plants assigned to this category of rarity. All of the plants constituting California Rare Plant Rank 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

CRPR 2: Except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2 would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act. Until 1979, a similar policy was followed in California. However, after the passage of the Native Plant Protection Act in 1979, plants were considered for protection without regard to their distribution outside the state. With California Rare Plant Rank 2, we recognize the importance of protecting the geographic range of widespread species. In this way we protect the diversity of our own state's flora and help maintain evolutionary processes and genetic diversity within species. All of the plants constituting California Rare Plant Rank 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

CRPR 3: The plants that comprise California Rare Plant Rank 3 are united by one common theme - we lack the necessary information to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting California Rare Plant Rank 3 are taxonomically problematic. For each California Rare Plant Rank 3 plant we have provided the known information and indicated in the “Notes” section of the CNPS *Inventory* record where assistance is needed. Data regarding distribution, endangerment, ecology, and taxonomic validity are welcomed and can be submitted by emailing the Rare Plant Botanist at asims cnps.org or (916) 324-3816. Some of the plants constituting California Rare Plant Rank 3 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. We strongly recommend that California Rare Plant Rank 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

CRPR 4: The plants in this category are of limited distribution or infrequent throughout a broader area in California. While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a California Rare Plant Rank 4 plant change, we will transfer it to a

more appropriate rank. Very few of the plants constituting California Rare Plant Rank 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and we strongly recommend that California Rare Plant Rank 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

5.6 LITERATURE REVIEW

The CDFW California Natural Diversity Data Base (CNDDB) was queried for a list of all plant and animal species reported from the *Healdsburg, Santa Rosa, Mark West Springs, Geyserville, Sebastopol, Jimtown, Kenwood, Mt. St. Helena, and Guerneville* USGS 7.5-minute quadrangles (nine quad search) (CNDDB, 2021). The Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2021) was queried for a list of all plant species reported from the *Healdsburg, Santa Rosa, Mark West Springs, Geyserville, Sebastopol, Jimtown, Kenwood, Mt. St. Helena, and Guerneville* USGS 7.5-minute quadrangles.

The following table (Table 1) is a list of special-status plant species that have the potential to occur at the site based on habitat types that exist at the site. A full list of special-status plant species is provided in Appendix A.

Table 1. Special-Status Plant Species with the Potential to Occur in the Study Area.

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	1B.1	None	Endangered	May-Jul	Marshes and swamps, Riparian scrub
Amorpha californica var. napensis	Napa false indigo	1B.2	None	None	Apr-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	None	None	Mar-Jun	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	1B.3	None	None	(Jan)Mar-May(Jul)	Chaparral, Cismontane woodland, Lower montane coniferous forest
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	1B.1	None	None	Feb-Apr(May)	Chaparral, Cismontane woodland
Asclepias solanoana	serpentine milkweed	4.2	None	None	May-Jul(Aug)	Chaparral, Cismontane woodland, Lower montane coniferous forest
Astragalus breweri	Brewer's milk-vetch	4.2	None	None	Apr-Jun	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland
Astragalus claranus	Clara Hunt's milk-vetch	1B.1	Threatened	Endangered	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Astragalus clevelandii	Cleveland's milk-vetch	4.3	None	None	Jun-Sep	Chaparral, Cismontane woodland, Riparian forest

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Blennosperma bakeri	Sonoma sunshine	1B.1	Endangered	Endangered	Mar-May	Valley and foothill grassland, Vernal pools
Brodiaea leptandra	narrow-anthered brodiaea	1B.2	None	None	May-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
Calamagrostis ophitidis	serpentine reed grass	4.3	None	None	Apr-Jul	Chaparral, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland
Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	4.2	None	None	Apr-Jun	Chaparral, Lower montane coniferous forest, Valley and foothill grassland
Carex comosa	bristly sedge	2B.1	None	None	May-Sep	Coastal prairie, Marshes and swamps, Valley and foothill grassland
Castilleja ambigua var. ambigua	johnny-nip	4.2	None	None	Mar-Aug	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools
Ceanothus confusus	Rincon Ridge ceanothus	1B.1	None	None	Feb-Jun	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Ceanothus purpureus	holly-leaved ceanothus	1B.2	None	None	Feb-Jun	Chaparral, Cismontane woodland
Centromadia parryi ssp. parryi	pappose tarplant	1B.2	None	None	May-Nov	Chaparral, Coastal prairie, Marshes and swamps, Meadows and seeps, Valley and foothill grassland
Clarkia imbricata	Vine Hill clarkia	1B.1	Endangered	Endangered	Jun-Aug	Chaparral, Valley and foothill grassland
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	4.3	None	None	Jul-Aug	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Cypripedium montanum	mountain lady's-slipper	4.2	None	None	Mar-Aug	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest
Delphinium bakeri	Baker's larkspur	1B.1	Endangered	Endangered	Mar-May	Broadleafed upland forest, Coastal scrub, Valley and foothill grassland
Delphinium uliginosum	swamp larkspur	4.2	None	None	May-Jun	Chaparral, Valley and foothill grassland
Downingia pusilla	dwarf downingia	2B.2	None	None	Mar-May	Valley and foothill grassland, Vernal pools
Elymus californicus	California bottle-brush grass	4.3	None	None	May-Aug(Nov)	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland
Erigeron biolettii	streamside daisy	3	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest
Eriogonum umbellatum var. bahiiforme	bay buckwheat	4.2	None	None	Jul-Sep	Cismontane woodland, Lower montane coniferous forest

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Erythronium helenae	St. Helena fawn lily	4.2	None	None	Mar-May	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
Fritillaria liliacea	fragrant fritillary	1B.2	None	None	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland
Fritillaria purdyi	Purdy's fritillary	4.3	None	None	Mar-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest
Gilia capitata ssp. tomentosa	woolly-headed gilia	1B.1	None	None	May-Jul	Coastal bluff scrub, Valley and foothill grassland
Gratiola heterosepala	Boggs Lake hedge-hyssop	1B.2	Endangered	None	Apr-Aug	Marshes and swamps, Vernal pools
Harmonia nutans	nodding harmonia	4.3	None	None	Mar-May	Chaparral, Cismontane woodland
Helianthus exilis	serpentine sunflower	4.2	None	None	Jun-Nov	Chaparral, Cismontane woodland
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	1B.2	None	None	Apr-Nov	Valley and foothill grassland
Hesperevax caulescens	hogwallow starfish	4.2	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools
Horkelia parryi	Parry's horkelia	1B.2	None	None	Apr-Sep	Chaparral, Cismontane woodland
Horkelia tenuiloba	thin-lobed horkelia	1B.2	None	None	May-Jul(Aug)	Broadleafed upland forest, Chaparral, Valley and foothill grassland
Hosackia gracilis	harlequin lotus	4.2	None	None	Mar-Jul	Broadleafed upland forest, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest, Valley and foothill grassland
Lasthenia burkei	Burke's goldfields	1B.1	Endangered	Endangered	Apr-Jun	Meadows and seeps, Vernal pools
Layia septentrionalis	Colusa layia	1B.2	None	None	Apr-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Legenere limosa	legenere	1B.1	None	None	Apr-Jun	Vernal pools
Leptosiphon acicularis	bristly leptosiphon	4.2	None	None	Apr-Jul	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland
Leptosiphon jepsonii	Jepson's leptosiphon	1B.2	None	None	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Leptosiphon latisectus	broad-lobed leptosiphon	4.3	None	None	Apr-Jun	Broadleafed upland forest, Cismontane woodland
Lessingia arachnoidea	Crystal Springs lessingia	1B.2	None	None	Jul-Oct	Cismontane woodland, Coastal scrub, Valley and foothill grassland
Lessingia hololeuca	woolly-headed lessingia	3	None	None	Jun-Oct	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland

Scientific Name	Common Name	Rare Plant Rank	State Listing	Federal Listing	Blooming Period	Habitat
Lilium pardalinum ssp. pitkinense	Pitkin Marsh lily	1B.1	Endangered	Endangered	Jun-Jul	Cismontane woodland, Marshes and swamps, Meadows and seeps
Limnanthes vinculans	Sebastopol meadowfoam	1B.1	Endangered	Endangered	Apr-May	Meadows and seeps, Valley and foothill grassland, Vernal pools
Lomatium repostum	Napa lomatium	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland
Lupinus sericatus	Cobb Mountain lupine	1B.2	None	None	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest
Microseris paludosa	marsh microseris	1B.2	None	None	Apr-Jun(Jul)	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland
Monardella viridis	green monardella	4.3	None	None	Jun-Sep	Broadleafed upland forest, Chaparral, Cismontane woodland
Navarretia cotulifolia	cotula navarretia	4.2	None	None	May-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools
Navarretia leucocephala ssp. plieantha	many-flowered navarretia	1B.2	Endangered	Endangered	May-Jun	Vernal pools
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	4.2	None	None	Jun-Oct	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools
Ranunculus lobbii	Lobb's aquatic buttercup	4.2	None	None	Feb-May	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools
Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	1B.2	None	None	May-Jul	Chaparral, Cismontane woodland
Trifolium amoenum	two-fork clover	1B.1	None	Endangered	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland
Trifolium buckwestiorum	Santa Cruz clover	1B.1	None	None	Apr-Oct	Broadleafed upland forest, Cismontane woodland, Coastal prairie
Trifolium hydrophilum	saline clover	1B.2	None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland, Vernal pools
Viburnum ellipticum	oval-leaved viburnum	2B.3	None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest

The following table (Table 2) is a list of special-status animal species that have the potential to occur at the site based on habitat types that exist at the site. A full list of special-status animal species is provided in Appendix B.

Table 2. Special-Status Animal Species with the Potential to Occur in the Study Area.

Scientific Name	Common Name	Federal List	State List	CDFW Status	Habitats
Accipiter cooperii	Cooper's hawk	None	None	Watch List	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	None	None	None	Vernal pool
Antrozous pallidus	pallid bat	None	None	Species of Special Concern	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland
Athene cunicularia	burrowing owl	None	None	Species of Special Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland
Bombus caliginosus	obscure bumble bee	None	None	None	Habitat types not provided
Bombus occidentalis	western bumble bee	None	Candidate Endangered	None	Habitat types not provided
Corynorhinus townsendii	Townsend's big-eared bat	None	None	Species of Special Concern	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojavean desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland
Elanus leucurus	white-tailed kite	None	None	Fully Protected	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland
Emys marmorata	western pond turtle	None	None	Species of Special Concern	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Lasiurus blossevillii	western red bat	None	None	Species of Special Concern	Cismontane woodland | Lower montane coniferous forest | Riparian forest | Riparian woodland
Lasiurus cinereus	hoary bat	None	None	None	Broadleaved upland forest | Cismontane woodland | Lower montane coniferous forest | North coast coniferous forest

Scientific Name	Common Name	Federal List	State List	CDFW Status	Habitats
Linderiella occidentalis	California linderiella	None	None	None	Vernal pool
Myotis thysanodes	fringed myotis	None	None	None	Habitat types not provided
Taxidea taxus	American badger	None	None	Species of Special Concern	Only regional habitat types: Bog & fen | Broadleaved upland forest | Chaparral | Cismontane woodland | Closed-cone coniferous forest | Freshwater marsh | Marsh & swamp | Meadow & seep | North coast coniferous forest | Redwood | Riparian forest | Riparian scrub | Riparian woodland | Upper montane coniferous forest | Valley & foothill grassland

6 STUDY METHODS

6.1 SPECIAL-STATUS PLANT SPECIES

On August 3, 2021, Darren Wiemeyer, a qualified botanist, performed a habitat assessment for special-status plant species surveys at the site. Because this initial site visit was performed outside of the flowering season, it was not considered a formal survey for special-status plant species in accordance with state and federal plant survey protocols (CDFG 2000; USFWS 1996a; USFWS 1996b). Although several grasses and forbs were identifiable to species, many plant species were dried and past their blooming window and were not identifiable. Therefore, a plant inventory has not been conducted for this Preliminary Biological Assessment.

6.2 SPECIAL-STATUS ANIMAL SPECIES

Existing literature was reviewed for information regarding sensitive wildlife resources that have the potential to occur in the project area (CH2M Hill et al, 1995). A CNDDB printout for the Healdsburg quad and its eight surrounding quads were utilized to prepare a list of all animal species that could potentially occur in the project study area (Table 2). Only those species that are known to inhabit or forage within non-native annual grassland, oak woodland and seasonal wetlands have the potential to occur at the site. Because the seasonal wetland swale is not considered a seasonal stream or connected to a known seasonal stream to the east of the site, special-status animal species that are known to inhabit stream or riparian habitats are not being evaluated as part of this Preliminary Biological Assessment.

Darren Wiemeyer, a qualified biologist, performed a habitat assessment on August 3, 2021 for special-status animal species, including a special-status bee species habitat assessment, a special-status bat species habitat assessment and a raptor nest search. A comprehensive bird nesting survey was not performed at the site. Trees were searched for raptor nests and evaluated for suitable bat roosting habitat. The site was searched for the presence of burrows that could be utilized by burrowing owl or American badger and the grassland habitat was evaluated for

special-status bee habitat. The seasonal wetlands were evaluated for habitat suitability for western pond turtle and California linderiella.

6.3 WILDLIFE

Due to the importance of habitat and its subsequent effect upon which wildlife species are present, a general picture of wildlife that is present can be made based upon habitat assessments gathered during the site survey. The term "wildlife" is being used to define all animal species (mammals, birds, fish, amphibians, reptiles, invertebrates). Daylight site visits greatly limits the amount and variety of wildlife species that could potentially utilize habitats at the site at any given time.

7 RESULTS OF SURVEYS

7.1 HABITATS

Habitat types at the site consist of non-native annual grassland, valley oak woodland and seasonal wetland (Figure 4). Two seasonal wetlands have been preliminarily mapped and consist of a seasonal wetland depression at the eastern end of the site and a long seasonal wetland swale that flows from near the northeast corner to the southern end of the site (Figure 4).

7.1.1 Non-Native Annual Grassland

Non-native annual grassland was the dominant plant community observed at the site and is associated with valley oak woodland habitat (Figure 4). Although plant identification was limited during the site visit, dominant plant species observed consist of wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), Italian rye-grass (*Festuca perennis*), bermuda grass (*Cynodon dactylon*), spring vetch (*Vicia sativa*) and field mustard (*Brassica rapa*). The proposed project will result in the loss of this habitat type.

7.1.2 Valley Oak Woodland

Valley oak woodland habitat occurs throughout the majority of the site, although there are some areas with canopy openings (Figure 4). The dominant oak species is valley oak (*Quercus lobata*) with coast live oak (*Quercus agrifolia*) being sub-dominant. Most of the valley oak and coast live oak trees are medium sized, but there are some larger trees on the site.

Valley oak woodland is considered a State Sensitive Natural Community. The proposed project will result in the loss of this habitat type.

7.1.3 Seasonal Wetland

Two seasonal wetlands have been preliminarily mapped and consist of a long seasonal wetland swale that flows from near the northeast corner to the southern end of the site and a seasonal wetland depression at the eastern end of the site (Figure 4).

The seasonal wetland swale is disconnected from other surface waters to the north or south of the site. The seasonal wetland swale is not being considered a seasonal drainage or stream as the swale is vegetated without a defined bed and bank and the substrate consists of soil. This swale appears to have been channelized and deepened in the past. The western end of the site does contain some revetment rock before a culvert that continues underground to the south. This seasonal wetland swale would not be considered a vernal pool as it is not a natural depression with an outlet barrier.

Dominant plant species in the seasonal wetland swale are mostly non-native species and consist of cattail (*Typha spp.),* curly dock (*Rumex crispus*), willow herb (*Epilobium ciliatum*), nutsedge (*Cyperus eragrostis*) and dallis grass (*Paspalum dilatatum*). The outer edge of the seasonal wetland swale is dominated by Himalayan berry (*Rubus discolor*). The western end of the seasonal wetland swale contains some arroyo willow (*Salix lasiolepis*), but is not being considered riparian woodland.

The seasonal wetland depression on the eastern end of the site appears to have been modified on the eastern edge from the development of Robbins Park resulting in a deeper depression. It was difficult to identify plant species in the seasonal wetland depression. Plant species that were identified includes perennial rye-grass, Mediterranean barley (*Hordeum marinum ssp. gussoneanum*) and pennyroyal (*Mentha pulegium*).

The seasonal wetlands would be and "Waters of the State" and would be subject to Section 401 of the Clean Water Act and regulated by the State Water Resources Control Board (SWRCB). If the United States Army Corps of Engineers (USACE) exerts jurisdiction on the seasonal wetlands, then they would be considered "Waters of the United States" and would be subject to Section 404 of the Clean Water Act. If the USACE considers the seasonal wetlands "isolated", then they would not be subject to Section 404 of the Clean Water Act. The seasonal wetland swale is not determined to be a seasonal drainage or stream. Therefore, it is unlikely that the California Department of Fish and Wildlife (CDFW) would take jurisdiction on this seasonal wetland swale.

The proposed project will result in impacts to and the loss of a small portion of the far western end of the seasonal wetland swale at the site. A formal wetland delineation will be performed at the site in the spring of 2022 to determine exact boundaries of seasonal wetlands at the site.

7.2 SPECIAL STATUS PLANT SPECIES

No special-status plant species were observed during the site visit. However, the site visit was performed outside of the flowering season, so it was not considered a formal survey for special-status plant species. The non-native grassland and valley oak woodland habitat provides potentially suitable habitat for bent-flowered fiddleneck (Ams*incika lunaris*), narrow-anthered brodiaea (*Brodiaea leptandra)*, fragrant fritillary (*Fritillaria liliacea*), congested-headed hayfield tarplant (*Hemizonia congesta ssp. congesta*).

The seasonal wetland depression at the eastern end of the site would be considered suitable habitat for federally endangered vernal pool plant species, including Burke's goldfields (*Lasthenia burkei*), Sonoma sunshine (*Blennosperma bakeri*) and to a much lesser extent Sebastopol meadowfoam (*Limnanthes vinculans*), although these species were not observed in 2006-2008 (Patterson, 2016). The seasonal wetland swale, is not considered a vernal pool, does not contain typically vernal pool plant species and does not have an outlet barrier. Therefore, it would not be considered suitable habitat for federally endangered vernal pool plant species. This site is not listed as a historic or known site for these species according to the Seasonal Wetland Baseline Report for the Santa Rosa Plain, Sonoma County (Patterson, *et. al*., 1994).

Protocol-level special-status plant species have not been performed at the site since 2008. If special-status plant species surveys in 2022 identify any special-status plant species, potential impacts to special-status plant species would need to be evaluated.

7.3 WILDLIFE

The non-native grassland, valley oak woodland and seasonal wetland habitats at the site provides moderate habitat suitability for wildlife. The habitat value is limited primarily because the site is surrounded by development and isolated from larger undeveloped properties and open spaces. Pocket gopher and California meadow vole burrows were observed, but they were low in density. Small urban mammals such as raccoon, opossum, jack rabbit and striped skunk may utilize the site at night for foraging and cover.

The trees at the site provides good nesting habitat for passerine birds and possibly raptor species. The larger trees at the site provides suitable bat roosting habitat in the form of cavities and exfoliating bark. The site most likely has some flowering forbs, which would provide a food base for insects and bees, but additional evaluation would be necessary to fully evaluate suitable habitat for special-status bumble bee species. The seasonal wetland swale appears to pond water and may provide suitable breeding habitat for pacific chorus frog and may provide suitable habitat for aquatic invertebrates.

The proposed project will result in the loss of an undetermined number of trees, which provides suitable nesting habitat for raptors and native birds. Based on this evaluation, it has been determined that there may be a significant impact to raptors and native birds as a result of the proposed project without appropriate avoidance and mitigation measures.

7.4 SPECIAL STATUS ANIMAL SPECIES

7.4.1 Birds

7.4.1.1 ***Cooper's Hawk***

Conservation Status: CDFW – Watch List

Cooper's hawk (*Accipiter cooperii*) occurs in dense stands of live oak, riparian deciduous, or other forest habitats near water. It nests in deciduous trees and in conifers, but usually in second-growth conifer stands or in deciduous riparian areas, usually near streams. The site provides very limited, but potentially suitable nesting habitat for this species. However, the lack of coniferous forest habitat or habitat near riparian areas greatly limits the suitability of the site for nesting and foraging habitat. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable nesting habitat. Tree removal and construction activities may disturb this species if it initiates nesting at the site. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

7.4.1.2 ***Burrowing Owl***

Conservation Status: CDFW - Species of Special Concern

Burrowing owl (*Athene cunicularia*) occurs in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Burrowing owl is a subterranean nester which is dependent upon burrowing mammals, most notably, the California ground squirrel. The site provides very limited, but suitable habitat for this species. No medium or large burrows were observed at the site, which significantly limits the suitability of the site for nesting. Surrounding developments and the lack of open grasslands greatly limits the suitability of the site for nesting and foraging habitat. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable habitat, but the lack of medium to large burrows at the site and surrounding developments greatly limits the likelihood that burrowing owls will initiate nesting at the site prior to site development. Based on this evaluation, it has been determined that there will be no significant impact to this species as a result of the proposed project.

7.4.1.3 ***White-tailed Kite***

Conservation Status: CDFW - Fully Protected

White-tailed kite (*Elanus leucurus*) is generally found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodlands. They typically nest in oak trees with dense tops. The non-native annual grassland provides suitable

foraging habitat for this species and the larger trees at the site provides potentially suitable nesting habitat. No large nests were observed at the site and this species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). It is unlikely that species utilizes habitats at the site for foraging and nesting, mostly because of surrounding site developments and the lack of open foraging habitat. Tree removal and construction activities may disturb this species if it initiates nesting at the site. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

7.4.2 Mammals

7.4.2.1 American Badger

Conservation Status: CDFW - Species of Special Concern

American badger (*Taxidea taxus*) generally occur in open pasture and grassland habitats and are most abundant in drier open stages of most shrub, forest and herbaceous habitats with friable soils on uncultivated ground. They dig their own burrows and prey primarily on burrowing rodents. The non-native annual grassland at the site provides very limited, but potentially suitable habitat for this species. However, there were no large burrows observed at the site which would greatly limit the likelihood that this species occurs at the site. This species was not observed at the site.

There are no CNDDB occurrences of this species within 5-miles of the site (Figure 5). The proposed project will impact potentially suitable habitat, but the lack of large burrows at the site and surrounding developments greatly limits the likelihood that American badger utilize the site prior to site development. Based on this evaluation, it has been determined that there will be no significant impact to this species as a result of the proposed project.

7.4.2.2 ***Special-Status Bat Species***

All special-status bat species, including several bat species which do not have special status, but have potential to occur in habitats at the site, have been included in this evaluation of habitat suitability and discussion of potential impacts. All bat species have state protection during nesting and roosting seasons. The following bat species are included in this habitat assessment:

- **Pallid Bat** (*Antrozous pallidus*) - Conservation Status: CDFW – Species of Special Concern
  Day roost habitat requirements include caves, crevices, mines, tree/snag cavities, buildings and bridges.

- **Townsend's Big-Eared Bat** (*Corynorhinus townsendii*) - Conservation Status: State - Candidate Threatened; CDFW - Species of Special Concern
  Day roost habitat requirements include caves, mines, tunnels, buildings, rock crevices and large tree/snag cavities.

- **Big brown bat** (*Eptesicus fuscus*) - Conservation Status: None
  Day roost habitat requirements include buildings, bridges, caves, mines, rock crevices and large tree/snag cavities.

- **Western mastiff bat** (*Eumops perotis*) - Conservation Status: CDFW – Species of Special Concern
  Day roost habitat requirements include cliffs, rocky outcrops, rock crevices.

- **Western red bat** (*Lasiurus blossevillii*) – Conservation Status: CDFW – Species of Special Concern
  Day roost habitat requirements include foliage of trees and large shrubs, commonly in riparian corridors.

- **Hoary Bat** (*Lasiurus cinereus*) – Conservation Status: None
  Day roost habitat requirements include foliage of trees and tree/snag cavities.

- **Silver-haired bat** (*Lasionycteris noctivagans*) - Conservation Status: None
  Day roost habitat requirements include tree/snag cavities, buildings, rock crevices, caves, exfoliating bark of large diameter trees.

- **California myotis** (*Myotis californicus*) - Conservation Status: None
  Day roost habitat requirements include crevices of buildings, caves, mines, and exfoliating bark.

- **Western small-footed myotis** (*Myotis ciliolabrum*) - Conservation Status: None
  Day roost habitat requirements include crevices of buildings, caves, mines, and exfoliating bark.

- **Long-eared myotis** (*Myotis evotis*) - Conservation Status: None
  Day roost habitat requirements include exfoliating bark, tree/snag cavities, caves, mines, cliffs, and rocky outcrops.

- **Little brown bat** (*Myotis lucifugus*) - Conservation Status: None
  Day roost habitat requirements include buildings, trees/snag cavities, caves and rock crevices.

- **Fringed Myotis** (*Myotis thysanodes*) – Conservation Status: None
  Day roost habitat requirements include crevices in buildings, caves, mines, cliffs, rocks, bridges, exfoliating bark, and tree/snag cavities.

- **Long-legged myotis** (*Myotis volans*) – Conservation Status: None
  Day roost habitat requirements include rock crevices, buildings, caves, exfoliating bark, tree/snag cavities, mines and caves.

- **Yuma myotis** (*Myotis yumanensis*) – Conservation Status: None
  Day roost habitat requirements include rock crevices in buildings, caves, mines, cliffs, rocks, bridges, and tree/snag cavities.

- **Western canyon bat** (*Parastrellus hesperus*) - Conservation Status: None
  Day roost habitat requirements include rock crevices, rocky outcrops, cliffs, mines and caves.

- **Mexican free-tailed bat** (*Tadarida brasiliensis*) - Conservation Status: None
  Day roost habitat requirements include crevices in buildings, caves, mines and bridges.

Bats are known to utilize a vast variety of habitat types for foraging and several types of structures for nesting and roosting including trees and snags, cliffs, rock outcrops, foliage, buildings, bridges, caves and mines. The larger trees at the site provides suitable roosting habitat for bats as some of the trees exhibit cavities, fissures or exfoliating bark, foliage and/or snag cavities suitable to bat species. Those species which have more likelihood of occurring at the site include those species which utilize these microhabitats commonly associated with woodland habitat.

The bat species most likely to roost at the site include most of those listed above. However, the spotted bat, Western mastiff bat, Western canyon bat and Mexican free-tailed bat tend to be more associated with rocky outcrops, buildings, caves, mines, cliffs, and/or bridges and are therefore less likely to roost in the larger trees at the site. No bat species were observed at the site.

There are two CNDDB occurrences of Townsend's big eared bat within 5-miles of the site (Figure 5). The proposed project is expected to result in the loss of several larger trees at the site that provides suitable roosting habitat for bat species. Based on this evaluation, it has been determined that there may be a significant impact to special-status bat species as a result of the proposed project without appropriate avoidance and mitigation measures.

7.4.3 Amphibians

7.4.3.1 ***Western Pond Turtle***

Conservation Status: CDFW - Species of Special Concern

Western pond turtle *(Emys marmorata*) occurs in reservoirs, ponds, vernal pools, brackish estuaries, sloughs, drainage ditches, and perennial streams. They require basking sites and suitable upland habitat adjacent to aquatic habitats for egg-laying. Basking sites are typically logs, small islands and docks. The upland areas typically used by this species include sandy banks or grassy open fields. The seasonal wetland swale at the site provides extremely limited habitat suitability for this species as it lacks deep, perennial pools and basking sites and is not adjacent to any suitable aquatic habitat that this species prefer.

The two nearest CNDDB occurrences of this species is approximately 0.6-miles to the northwest and 0.7-acres to the southwest of the site on the west side of Highway 101 (Figure 5). It is unlikely that this species utilizes the seasonal wetland swale at the site. This species was not observed at the site. The proposed project will impact a small portion of the western end of the seasonal wetland swale at the site. Based on this evaluation, it has been determined that there may be a significant impact to this species as a result of the proposed project without appropriate avoidance and mitigation measures.

7.4.4 Invertebrates

*7.4.4.1 **California Linderiella***

Conservation Status: None

California linderiella (*Linderiella occidentalis*) is a fairy shrimp that is known to occur in vernal pools, seasonal wetlands and swales. In addition to direct habitat loss, California fairy shrimp populations have declined because of a variety of activities that render existing vernal pools unsuitable for the species. Alteration of vernal pool hydrology, in particular, can dramatically degrade vernal pool habitats. Populations have also declined as a result of water contamination. In addition to altered hydrology and contamination, California fairy shrimp habitats have declined as a result of a variety of other incompatible land uses including off-road vehicle use, dumping, invasion of non-native species, vandalism, erosion and sedimentation.

The seasonal wetland depression at the eastern end of the site would be considered a vernal pool, but has been degraded from past land disturbances and altered hydrology, which has greatly limited the habitat suitability for this species.

There nearest CNDDB occurrence of this species approximately 0.8-miles to the northwest of the site (Figure 5). This species was not observed at the site. The proposed project will avoid impacts to the seasonal wetland depression at the eastern end of the site. Based on this evaluation, it has been determined that there will be no significant impact to this species as a result of the proposed project.

7.4.5 Insects

*7.4.5.1 **Special-Status Bees***

The following habitat assessment has been performed for the following special-status bees:

- **Blennosperma vernal pool andrenid bee** (*Andrena blennospermatis*); Conservation Status: None
- **Obscure bumble bee** (*Bombus caliginosus*); Conservation Status: None
- **Crotch bumble bee** (Bom*bus crotchii*); Conservation Status: State Candidate Endangered
- **Western bumble bee** (*Bombus ocidentalis*); Conservation Status: State Candidate Endangered

These special-status bee species all have similar habitat requirements. These species generally inhabit undisturbed prairies and meadows and requires floral resources and undisturbed underground nest sites, primarily in the form of small burrows. In general, bumble bees have three basic habitat requirements: suitable nesting sites for the colonies, nectar and pollen from floral resources available throughout the duration of the colony period (spring, summer and fall), and suitable overwintering sites for the queens. Nests occur primarily in underground cavities such as old squirrel or other animal nests. (Jepson et al. 2014). Threats facing bumblebees include habitat loss, pesticides, disease, invasive insects, and climate change, which influences the timing of when the flowers they depend on are available.

The blennosperma vernal pool andrenid bee specifically requires *Blennosperma* plant species as their food sources. Sonoma sunshine and other *Blennosperma* plant species have not been previously reported to occur at the site (Patterson, 2016).

The site is known to have some flowering species does have some limited burrows which could be used by bees as nesting sites. The habitat suitability for these special-status bee species is somewhat limited because the site is isolated from larger undeveloped grasslands with more diverse floral resources.

There are no CNDDB occurrences of these special-status bee species within 5-miles of the site (Figure 5). These special-status bee species were not observed at the site. The proposed project will result in the loss of potentially suitable habitat for obscure bumble bee, crotch bumble bee and western bumble bee. Spring time site evaluation is needed to better evaluate habitat suitability for floral resources and suitable nesting burrows for these bee species. Based on this initial evaluation, an evaluation of potential impact significance for these species has not been determined. A follow up habitat evaluation for special-status bee species will be performed in the spring of 2022.

8 IMPACTS TO BIOLOGICAL RESOURCES

The Hembree Lane Oaks project will result in the loss of non-native annual grassland, valley oak woodland and seasonal wetland habitat at the site. The project will have significant impacts to biological resources without appropriate mitigation measures decrease the loss to a less than significant level. The following is a list of impacts to biological resources as part of the Hembree Lane Oaks project.

Additional studies that are needed to be performed at the site include an updated wetland delineation, special-status plant species surveys, further special-status animal species habitat evaluations and nesting bird surveys. These studies are proposed to be performed in spring through early summer of 2022. An updated Biological Assessment will be prepared to report on these additional studies. Additional potentially significant impacts to biological resources may be identified after these biological studies are performed at the site in the spring and summer of 2020.

- The project will result in the loss of valley oak woodland habitat, which is a State Sensitive Natural Community. The removal of an undetermined number of trees has the potential to impact suitable habitat for roosting bats and native nesting birds.

- The project will result in the loss of non-native annual grassland habitat at the site which may have the potential to impact suitable habitat for special-status bee species and native nesting birds.

- The project will result in the loss of a small portion of the western end of the seasonal wetland swale. This seasonal wetland swale would be and "Waters of the State" and would be subject to Section 401 of the Clean Water Act and regulated by the State Water Resources Control Board (SWRCB). If the United States Army Corps of Engineers (USACE) exerts jurisdiction on the seasonal wetland swale, then it would be considered "Waters of the United States" and would be subject to Section 404 of the Clean Water Act. If the USACE considers the seasonal wetland swale "isolated", then it would not be subject to Section 404 of the Clean Water Act.

- The project will result in the loss of a small portion of the western end of the seasonal wetland swale, which has the potential to impact western pond turtle.

9 TOWN OF WINDSOR CEQA INITIAL STUDY QUESTIONNAIRE

1. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

Yes. The project would have a substantial adverse effect, either directly or through habitat modifications, or any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

The project will result in the loss of non-native annual grassland, valley oak woodland and seasonal wetland habitat at the site. Construction and tree removal activities have the potential to impact Cooper's hawk, white tailed hawk, other special-status raptors and native nesting birds. Tree removal activities have the potential to impact special-status bat species and other native roosting bats.

The seasonal wetland swale is not determined to be a seasonal drainage or stream. Therefore, it is unlikely that the California Department of Fish and Wildlife (CDFW) would take jurisdiction on this seasonal wetland swale.

2. *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S, Fish and Wildlife Service?*

Yes. The project will have a substantial adverse effect on valley oak woodland habitat which is a State Sensitive Natural Plant Community.

3. *Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, wetlands, etc.) through direct removal, filling hydrological interruption, or other means?*

Undetermined. If the United States Army Corps of Engineers (USACE) exerts jurisdiction on the seasonal wetland swale, then it would be considered "Waters of the United States" and would be subject to Section 404 of the Clean Water Act. If the USACE considers the seasonal wetland swale "isolated", then it would not be subject to Section 404 of the Clean Water Act. The seasonal wetland swale is not determined to be a seasonal drainage or stream. Therefore, it is unlikely that the California Department of Fish and Wildlife (CDFW) would take jurisdiction on this seasonal wetland swale.

4. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

No. The project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

The site would not be considered a migratory wildlife corridor because of substantial developments surrounding the site and the lack of significant undeveloped areas surrounding the site. No nursery sites (heron or egret rookery, etc.) were observed at the site.

5. *If the answers to questions 1-4 above identify potentially significant effects on biological resources, identify mitigation measures and monitoring actions to ensure compliance with CEQA and state and federal regulations. If the mitigation measures identified are typically required conditions of state and federal permits, then evidence of permit issuance by that agency may be identified as a measure of compliance. In the professional judgment of the biologist, will these mitigation measures reduce these identified impacts to less than significant levels?*

Mitigation measures and monitoring actions should consist of the following and would result in reducing identified impacts to biological resources to less than significant levels.

MITIGATION MEASURE 1:

Tree protection fencing shall be installed around any tree that is proposed to be preserved to avoid disturbance or impacts to these trees during construction activities.

MITIGATION MEASURE 2:

Habitat mitigation for the loss of trees, valley oak woodland habitat, and suitable habitat for special-status bat species at the site will consist of the dedication of 2.0-acres of valley oak woodland habitat to the Town of Windsor to be preserved in perpetuity. Additional requirements may be required by the Town of Windsor.

MITIGATION MEASURE 3:

In the event that construction activities are initiated (including land clearing, demolition, and/or tree removal) within the avian nesting season (February 1 – August 31), a preconstruction survey shall be performed by a qualified biologist on the site to locate any active nests on or immediately adjacent to the site. The preconstruction survey shall be performed within 5 days before initiation of site activities. If active nests are identified, protective measures shall be implemented. An appropriate non-disturbance buffer zone shall be established – typically up to 300 feet for raptors and 50 feet for passerines, or as otherwise recommended by the biologist.

These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active, as determined by the biologist. If land-

clearing activities (including all vegetation removal) can be performed outside of the nesting season (August 31 - January 31), no preconstruction surveys for nesting birds are warranted.

MITIGATION MEASURE 4:

To ensure that actively roosting bats are not disturbed as a result of tree trimming and tree removal, it is recommended that specific mitigation measures be implemented to avoid impacts to bat species.

1. The pruning or removal of living trees or snags must not occur during the maternity season between April 1 and September 1 to minimize the disturbance of young that may be present and unable to fly.

2. The pruning or removal of living trees or snags that provides suitable habitat for bats must occur between the hours of 12 pm and sunset on days after nights when low temperatures were 50° or warmer to minimize impacting bats that may be present in deep torpor. Sunset times shall be obtained from http://aa.usno.navy.mil/data/docs/RS_OneDay.php and temperatures for prior-work nights shall be obtained from http://www.wunderground.com/history/

3. When it is necessary to perform crown reduction on trees over 12 inches in diameter breast height or remove entire trees or branches over six inches in diameter there shall be preliminary pruning of small branches less than 2 inches in diameter performed the day before. The purpose of this is to minimize the probability that bats would choose to roost in those trees the night before the work is performed. A qualified biologist shall be present to oversee all tree trimming and tree removal activities.

4. Install a minimum of 6 bat boxes throughout the site in large trees that are to be preserved to provide compensation for the loss of potentially suitable bat roosting habitat as a result of tree removal.

If it is not possible to implement Measures 2 and/or 3, then a qualified bat biologist will be required in order to conduct tree cavity surveys and humanely evict roosting bats within 24 hours of vegetation management activities. Measure 1 (avoidance of maternity season is critical as young bats that are not able to fly cannot be humanely evicted.

MITIGATION MEASURE 5:

Site developments will results in the loss of a yet to be determined area of seasonal wetland habitat. The seasonal wetlands at the site would fall under the jurisdiction of the State Water Resources Control Board (SWRCB) under Section 401 of the Clean Water Act and may fall under the jurisdiction of the United States Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act.

Mitigation Measures

Mitigation 5.1. *If the USACE considers the seasonal wetland swale federally jurisdictional, obtain permit authorization from the USACE under the 404 Nationwide Permit Program for the loss of seasonal wetland habitat. Implement all agency permit conditions.*

Mitigation 5.2. *Obtain permit authorization from the SWRCB under the 401 Water Quality Certification Program for the loss of seasonal wetland habitat. Implement all agency permit conditions.*

Mitigation 5.3. *Mitigate for the loss of seasonal wetland habitat through the purchase of seasonal wetland habitat credits at a 1:1 ratio at an agency approved wetland mitigation bank.*

Mitigation 5.4. *To protect the seasonal wetland habitat to be preserved at the site during construction activities, orange construction fencing shall be installed around the seasonal wetland during all construction activities.*

MITIGATION MEASURE 6:

A pre-construction survey for western pond turtle shall be performed at the site by a qualified biologist to determine if western pond turtles occur in the seasonal wetland swale or adjacent areas at the site. If a western pond turtle is observed, it should be allowed to leave the construction area on its own. Construction activities will not commences until the western pond turtle has left the construction area.

MITIGATION MEASURE 7:

It is recommended that mitigation measures be incorporated during construction activities to avoid sedimentation and other potential pollutants from entering the seasonal wetlands. Appropriate mitigation measures should include an adequate erosion control plan and best management practices to minimize the amount of sediment and other pollutants leaving the site during construction activities. Because the project will disturb over 1.0 acre, a General Permit for Discharges of Storm Water Associated with Construction Activity must be obtained from the State Water Resources Control Board and a Construction Storm Water Pollution Prevention Plan must be prepared and implemented.

6. *Demonstrate how analysis and recommended mitigation measures comply with the requirements of the Santa Rosa Plain Conservation Strategy, and any subsequent Programmatic Opinion issued by the US Fish and Wildlife Service?*

Because the project will only impact a small portion of the seasonal wetland swale, which has been determined to not be considered suitable habitat for federally endangered vernal pool plant species, this evaluation does not apply to this project.

7. *Is it recommended by the professional biologist that the property owner apply for permits from the following regulatory agencies (specify permit type and description) in order to comply with State and Federal law:*

   - *California Department of Fish and Wildlife (CDFW)*
   - *California Water Quality Control Board: North Coast Region (NCRWQCB)*
   - *U.S. Army Corps of Engineers (USACE)*
   - *U.S. Fish and Wildlife Service (USFWS)*

Yes. The fill of a small portion of the seasonal wetland swale at the site will require the following regulatory permit authorizations:

- If the USACE considers the seasonal wetland swale federally jurisdictional, obtain permit authorization from the USACE under the 404 Nationwide Permit Program for the loss of seasonal wetland habitat. If the USACE considers the seasonal wetland swale "isolated", then it would not be subject to Section 404 of the Clean Water Act and permit authorization would not be required by the USACE.

- Obtain permit authorization from the SWRCB under the 401 Water Quality Certification Program for the loss of seasonal wetland habitat.

- Obtain a General Permit for Discharges of Storm Water Associated with Construction Activity from the State Water Resources Control Board.

10 REFERENCES

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FIGURES

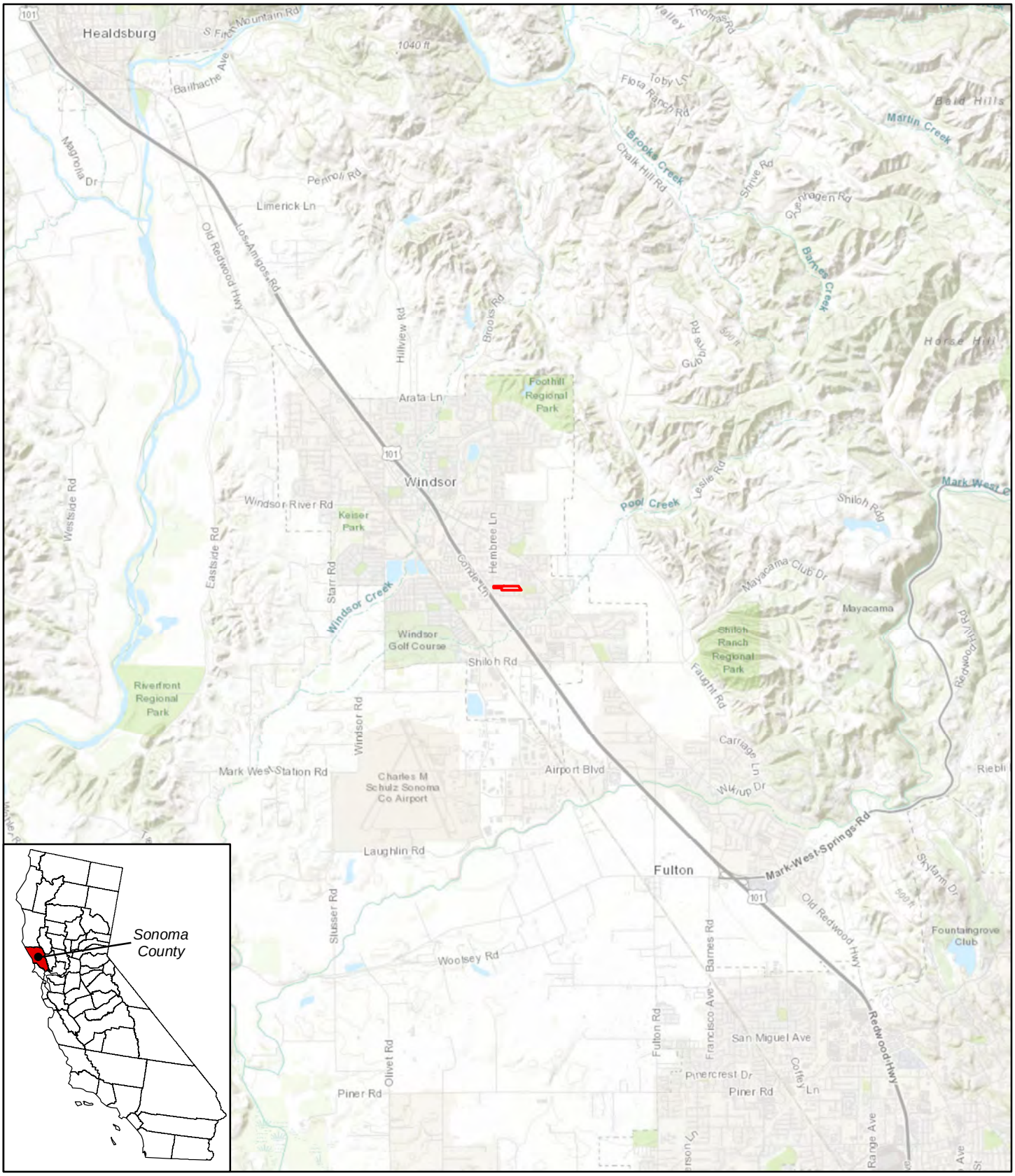
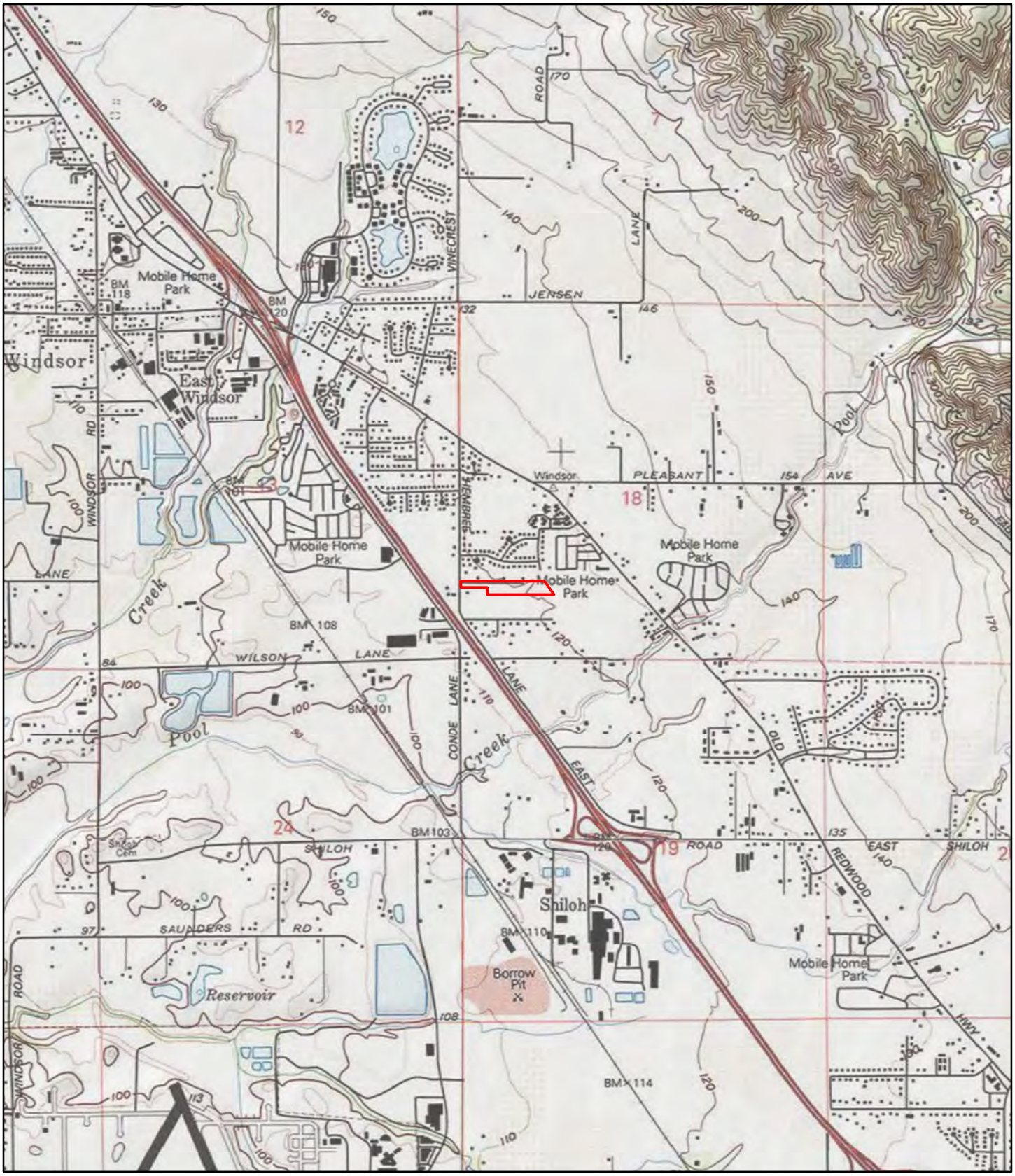


Figure 1 - Site Vicinity Map

4872 Hembree Ln
Windsor, CA
APN: 163-080-047

Wiemeyer Ecological Sciences
4527 Montgomery Drive, Suite J
Santa Rosa, CA 95409

Parcel boundary provided by Sonoma County
Map date: 8/2021



Site Boundary

0 0.5 1 2 Miles

Figure 2 - USGS Map	
4872 Hembree Ln Windsor, CA APN: 163-080-047	N Wiemeyer Ecological Sciences 4527 Montgomery Drive, Suite J Santa Rosa, CA 95409 Parcel boundary provided by Sonoma County Map date: 8/2021

Site Boundary

HwB - Huichica loam, shallow, ponded, 0 to 5 percent slopes (covers entire site)

Figure 3 - Soils Map	0 25 50 100 150 200 Feet
4872 Hembree Ln Windsor, CA APN: 163-080-047	N Wiemeyer Ecological Sciences 4527 Montgomery Drive, Suite J Santa Rosa, CA 95409
	Parcel boundary provided by Sonoma County Soils provided by NRCS Map date: 8/2021

Figure 4 - HABITAT MAP 4872 Hembree Ln Windsor, CA APN: 163-080-047	N Wiemeyer Ecological Sciences 4000 Montgomery Drive, Suite L-5 Santa Rosa, CA 95405	Parcel boundary provided by Sonoma County Map date: 8/2021 Aerial: NAIP (2020)	Site Boundary Seasonal Wetland (preliminary mapping) NAG - Non-native Annual Grassland VOW - Valley Oak Woodland 0 50 100 200 Feet

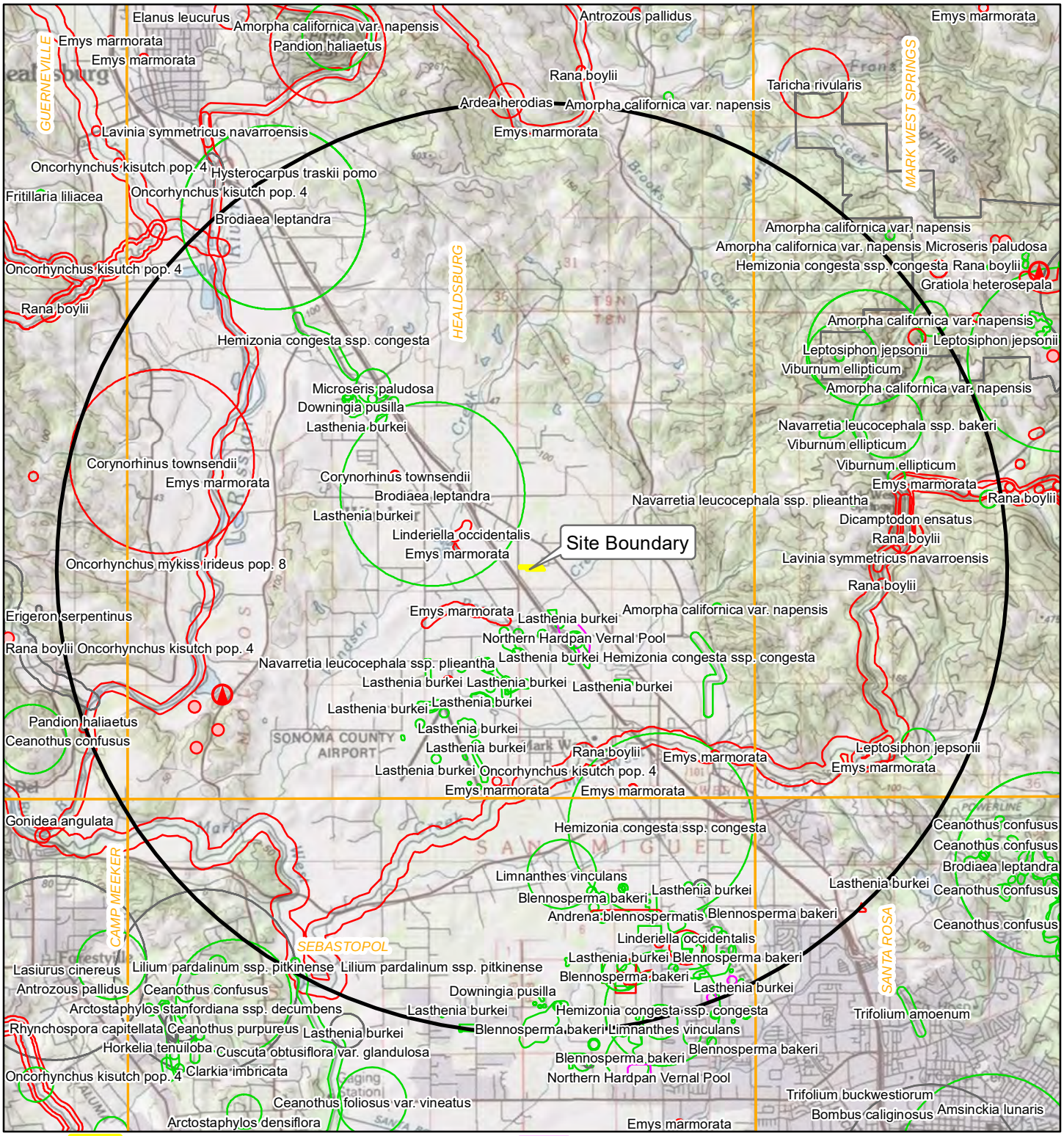


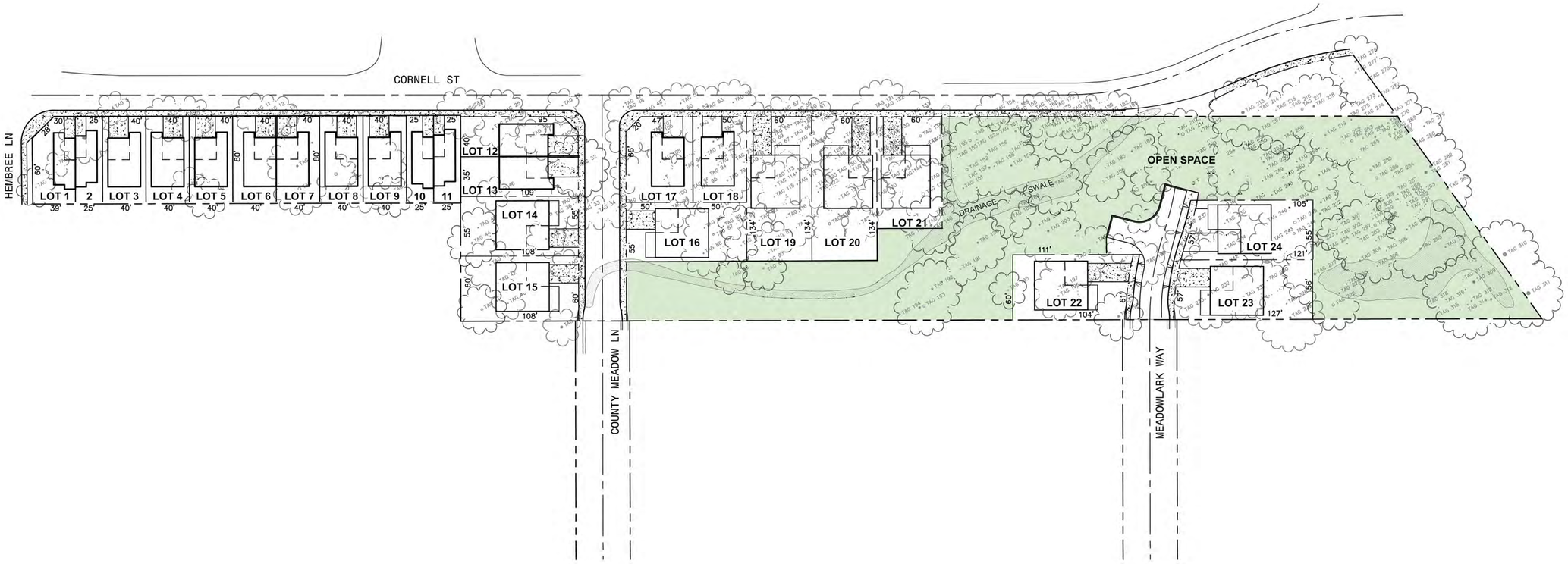
Figure 5 - CNDDB Occurrences

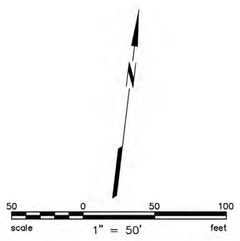
4872 Hembree Ln
Windsor, CA
APN: 163-080-047

N

Wiemeyer Ecological Sciences
4000 Montgomery Drive, Suite L-5
Santa Rosa, CA 95405

Parcel boundary provided by Sonoma County
CNDDB provided by CDFW (v. 6/2021)
Map date: 8/2021





DEVELOPABLE AREA = 3.2 AC
OPEN SPACE AREA = 2.0 AC
TOTAL = 5.2 AC

ALTERNATE 2

CONCEPTUAL SITE PLAN

HEMBREE LANE WINDSOR, CA

06/28/21

A-1: View east from western end of site of annual grasslands.

A-2: View west from western portion of site of annual grasslands.

A-3: View west from center of site of valley oak woodland.

A-4: View of seasonal wetland swale.

A-5: View of seasonal wetland swale.

A-6: View of seasonal wetland at eastern end of site.

Hembree Lane Oaks
7842 Hembree Lane
Windsor, CA

WIEMEYER ECOLOGICAL SCIENCES
4000 MONTGOMERY DRIVE, SUITE L-5
SANTA ROSA, CA 95405
(707) 573-1770

APPENDIX A

SPECIAL STATUS PLANT SPECIES

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	1B.1	G5T1	S1	None	FE	May-Jul	Marshes and swamps, Riparian scrub
Amorpha californica var. napensis	Napa false indigo	1B.2	G4T2	S2	None	None	Apr-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	G3	S3	None	None	Mar-Jun	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland
Anomobryum julaceum	slender silver moss	4.2	G5?	S2	None	None		Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest
Arctostaphylos bakeri ssp. bakeri	Baker's manzanita	1B.1	G2T1	S1	CR	None	Feb-Apr	Broadleafed upland forest, Chaparral
Arctostaphylos bakeri ssp. sublaevis	The Cedars manzanita	1B.2	G2T2	S2	CR	None	Feb-May	Chaparral, Closed-cone coniferous forest
Arctostaphylos densiflora	Vine Hill manzanita	1B.1	G1	S1	CE	None	Feb-Apr	Chaparral
Arctostaphylos hispidula	Howell's manzanita	4.2	G4	S3	None	None	Mar-Apr	Chaparral
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	1B.3	G5T3	S3	None	None	(Jan)Mar-May(Jul)	Chaparral, Cismontane woodland, Lower montane coniferous forest
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	1B.1	G3T1	S1	None	None	Feb-Apr(May)	Chaparral, Cismontane woodland
Asclepias solanoana	serpentine milkweed	4.2	G3	S3	None	None	May-Jul(Aug)	Chaparral, Cismontane woodland, Lower montane coniferous forest

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Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Astragalus breweri	Brewer's milk-vetch	4.2	G3	S3	None	None	Apr-Jun	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland
Astragalus claranus	Clara Hunt's milk-vetch	1B.1	G1	S1	CT	FE	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Astragalus clevelandii	Cleveland's milk-vetch	4.3	G4	S4	None	None	Jun-Sep	Chaparral, Cismontane woodland, Riparian forest
rattanii var. jepsonianus	Jepson's milk-vetch	1B.2	G4T3	S3	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	G2	S2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Blennosperma bakeri	Sonoma sunshine	1B.1	G1	S1	CE	FE	Mar-May	Valley and foothill grassland, Vernal pools
Brodiaea leptandra	anthered brodiaea	1B.2	G3?	S3?	None	None	May-Jul	woodland, Lower montane coniferous forest, Valley and foothill grassland
Calamagrostis bolanderi	Bolander's reed grass	4.2	G4	S4	None	None	May-Aug	Bogs and fens, Broadleafed upland forest, Closed-cone coniferous forest, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest
Calamagrostis crassiglumis	Thurber's reed grass	2B.1	G3Q	S2	None	None	May-Aug	Coastal scrub, Marshes and swamps
Calamagrostis ophitidis	serpentine reed grass	4.3	G3	S3	None	None	Apr-Jul	Chaparral, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland
Calandrinia breweri	Brewer's calandrinia	4.2	G4	S4	None	None	(Jan)Mar-Jun	Chaparral, Coastal scrub
Calochortus raichei	The Cedars fairy-lantern	1B.2	G2	S2	None	None	May-Aug	Chaparral, Closed-cone coniferous forest
Calochortus uniflorus	pink star-tulip	4.2	G4	S4	None	None	Apr-Jun	Coastal prairie, Coastal scrub, Meadows and seeps, North Coast coniferous forest
Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	4.2	G4T3	S3	None	None	Apr-Jun	Chaparral, Lower montane coniferous forest, Valley and foothill grassland

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Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Campanula californica	swamp harebell	1B.2	G3	S3	None	None	Jun-Oct	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Marshes and swamps, Meadows and seeps, North Coast coniferous forest
Carex comosa	bristly sedge	2B.1	G5	S2	None	None	May-Sep	Coastal prairie, Marshes and swamps, Valley and foothill grassland
Castilleja ambigua var. ambigua	johnny-nip	4.2	G4T4	S3S4	None	None	Mar-Aug	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools
Castilleja uliginosa	Pitkin Marsh paintbrush	1A	GXQ	SX	CE	None	Jun-Jul	Marshes and swamps
Ceanothus confusus	Rincon Ridge ceanothus	1B.1	G1	S1	None	None	Feb-Jun	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Ceanothus divergens	Calistoga ceanothus	1B.2	G2	S2	None	None	Feb-Apr	Chaparral
Ceanothus foliosus var. vineatus	Vine Hill ceanothus	1B.1	G3T1	S1	None	None	Mar-May	Chaparral
Ceanothus gloriosus var. exaltatus	glory brush	4.3	G4T4	S4	None	None	Mar-Jun(Aug)	Chaparral
Ceanothus purpureus	holly-leaved ceanothus	1B.2	G2	S2	None	None	Feb-Jun	Chaparral, Cismontane woodland
Ceanothus sonomensis	Sonoma ceanothus	1B.2	G2	S2	None	None	Feb-Apr	Chaparral
Centromadia parryi ssp. parryi	pappose tarplant	1B.2	G3T2	S2	None	None	May-Nov	Chaparral, Coastal prairie, Marshes and swamps, Meadows and seeps, Valley and foothill grassland
Chorizanthe valida	Sonoma spineflower	1B.1	G1	S1	CE	FE	Jun-Aug	Coastal prairie

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Clarkia imbricata	Vine Hill clarkia	1B.1	G1	S1	CE	FE	Jun-Aug	Chaparral, Valley and foothill grassland
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	4.3	G4G5T3	S3	None	None	Jul-Aug	Chaparral, Cismontane woodland, Closed-cone coniferous forest
Cordylanthus tenuis ssp. capillaris	Pennell's bird's-beak	1B.2	G4G5T1	S1	CR	FE	Jun-Sep	Chaparral, Closed-cone coniferous forest
Cryptantha dissita	serpentine cryptantha	1B.2	G3	S3	None	None	Apr-Jun	Chaparral
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	2B.2	G5T4?	SH	None	None	Jul-Oct	Marshes and swamps
Cypripedium montanum	mountain lady's-slipper	4.2	G4	S4	None	None	Mar-Aug	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest
Delphinium bakeri	Baker's larkspur	1B.1	G1	S1	CE	FE	Mar-May	Broadleafed upland forest, Coastal scrub, Valley and foothill grassland
Delphinium luteum	golden larkspur	1B.1	G1	S1	CR	FE	Mar-May	Chaparral, Coastal prairie, Coastal scrub
Delphinium uliginosum	swamp larkspur	4.2	G3	S3	None	None	May-Jun	Chaparral, Valley and foothill grassland
Downingia pusilla	dwarf downingia	2B.2	GU	S2	None	None	Mar-May	Valley and foothill grassland, Vernal pools
Elymus californicus	California bottle-brush grass	4.3	G4	S4	None	None	May-Aug(Nov)	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland
Erigeron biolettii	streamside daisy	3	G3?	S3?	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest
Erigeron greenei	Greene's narrow-leaved daisy	1B.2	G3	S3	None	None	May-Sep	Chaparral

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CNPS: HEALDSBURG 9-QUADS

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Erigeron serpentinus	serpentine daisy	1B.3	G2	S2	None	None	May-Aug	Chaparral
Eriogonum nervulosum	Snow Mountain buckwheat	1B.2	G2	S2	None	None	Jun-Sep	Chaparral
Eriogonum umbellatum var. bahiiforme	bay buckwheat	4.2	G5T3	S3	None	None	Jul-Sep	Cismontane woodland, Lower montane coniferous forest
Eriophorum gracile	slender cottongrass	4.3	G5	S4	None	None	May-Sep	Bogs and fens, Meadows and seeps, Upper montane coniferous forest
Erythronium helenae	St. Helena fawn lily	4.2	G3	S3	None	None	Mar-May	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
Fritillaria liliacea	fragrant fritillary	1B.2	G2	S2	None	None	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland
Fritillaria purdyi	Purdy's fritillary	4.3	G4	S4	None	None	Mar-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest
Gilia capitata ssp. tomentosa	woolly-headed gilia	1B.1	G5T2	S2	None	None	May-Jul	Coastal bluff scrub, Valley and foothill grassland
Gratiola heterosepala	Boggs Lake hedge-hyssop	1B.2	G2	S2	CE	None	Apr-Aug	Marshes and swamps, Vernal pools
Harmonia nutans	nodding harmonia	4.3	G3	S3	None	None	Mar-May	Chaparral, Cismontane woodland
Helianthus exilis	serpentine sunflower	4.2	G3	S3	None	None	Jun-Nov	Chaparral, Cismontane woodland
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	1B.2	G5T2	S2	None	None	Apr-Nov	Valley and foothill grassland
Hesperevax caulescens	hogwallow starfish	4.2	G3	S3	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools

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Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Hesperolinon bicarpellatum	two-carpellate western flax	1B.2	G2	S2	None	None	(Apr)May-Jul	Chaparral
Horkelia parryi	Parry's horkelia	1B.2	G2	S2	None	None	Apr-Sep	Chaparral, Cismontane woodland
Horkelia tenuiloba	thin-lobed horkelia	1B.2	G2	S2	None	None	May-Jul(Aug)	Broadleafed upland forest, Chaparral, Valley and foothill grassland
Hosackia gracilis	harlequin lotus	4.2	G3G4	S3	None	None	Mar-Jul	Broadleafed upland forest, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest, Valley and foothill grassland
Iris longipetala	coast iris	4.2	G3	S3	None	None	Mar-May(Jun)	Coastal prairie, Lower montane coniferous forest, Meadows and seeps
Kopsiopsis hookeri	small groundcone	2B.3	G4?	S1S2	None	None	Apr-Aug	North Coast coniferous forest
Lasthenia burkei	Burke's goldfields	1B.1	G1	S1	CE	FE	Apr-Jun	Meadows and seeps, Vernal pools
Lasthenia californica ssp. bakeri	Baker's goldfields	1B.2	G3T1	S1	None	None	Apr-Oct	Closed-cone coniferous forest, Coastal scrub, Marshes and swamps, Meadows and seeps
Layia septentrionalis	Colusa layia	1B.2	G2	S2	None	None	Apr-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Legenere limosa	legenere	1B.1	G2	S2	None	None	Apr-Jun	Vernal pools
Leptosiphon acicularis	bristly leptosiphon	4.2	G4?	S4?	None	None	Apr-Jul	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland
Leptosiphon jepsonii	Jepson's leptosiphon	1B.2	G2G3	S2S3	None	None	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
Leptosiphon latisectus	broad-lobed leptosiphon	4.3	G4	S4	None	None	Apr-Jun	Broadleafed upland forest, Cismontane woodland
Lessingia arachnoidea	Crystal Springs lessingia	1B.2	G2	S2	None	None	Jul-Oct	Cismontane woodland, Coastal scrub, Valley and foothill grassland

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Lessingia hololeuca	woolly-headed lessingia	3	G2G3	S2S3	None	None	Jun-Oct	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland
Lilium pardalinum ssp. pitkinense	Pitkin Marsh lily	1B.1	G5T1	S1	CE	FE	Jun-Jul	Cismontane woodland, Marshes and swamps, Meadows and seeps
Lilium rubescens	redwood lily	4.2	G3	S3	None	None	Apr-Aug(Sep)	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest
Limnanthes vinculans	Sebastopol meadowfoam	1B.1	G1	S1	CE	FE	Apr-May	Meadows and seeps, Valley and foothill grassland, Vernal pools
Lomatium repostum	Napa lomatium	1B.2	G3	S3	None	None	Mar-Jun	Chaparral, Cismontane woodland
Lupinus sericatus	Cobb Mountain lupine	1B.2	G2?	S2?	None	None	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest
Microseris paludosa	marsh microseris	1B.2	G2	S2	None	None	Apr-Jun(Jul)	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland
Monardella viridis	green monardella	4.3	G3	S3	None	None	Jun-Sep	Broadleafed upland forest, Chaparral, Cismontane woodland
Navarretia cotulifolia	cotula navarretia	4.2	G4	S4	None	None	May-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	G4T2	S2	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools
Navarretia leucocephala ssp. plieantha	many-flowered navarretia	1B.2	G4T1	S1	CE	FE	May-Jun	Vernal pools
Penstemon newberryi var. sonomensis	Sonoma beardtongue	1B.3	G4T3	S3	None	None	Apr-Aug	Chaparral

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	4.2	G5T3T4	S3S4	None	None	Jun-Oct	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools
Piperia candida	white-flowered rein orchid	1B.2	G3	S3	None	None	(Mar)May-Sep	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest
Pleuropogon hooverianus	North Coast semaphore grass	1B.1	G2	S2	CT	None	Apr-Jun	Broadleafed upland forest, Meadows and seeps, North Coast coniferous forest
Ranunculus lobbii	Lobb's aquatic buttercup	4.2	G4	S3	None	None	Feb-May	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools
Rhynchospora alba	white beaked-rush	2B.2	G5	S2	None	None	Jun-Aug	Bogs and fens, Marshes and swamps, Meadows and seeps
Rhynchospora californica	California beaked-rush	1B.1	G1	S1	None	None	May-Jul	Bogs and fens, Lower montane coniferous forest, Marshes and swamps, Meadows and seeps
Rhynchospora capitellata	brownish beaked-rush	2B.2	G5	S1	None	None	Jul-Aug	Lower montane coniferous forest, Marshes and swamps, Meadows and seeps, Upper montane coniferous forest
Rhynchospora globularis	round-headed beaked-rush	2B.1	G4	S1	None	None	Jul-Aug	Marshes and swamps
Sidalcea oregana ssp. valida	Kenwood Marsh checkerbloom	1B.1	G5T1	S1	CE	FE	Jun-Sep	Marshes and swamps
Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	1B.2	G2T2	S2	None	None	May-Jul	Chaparral, Cismontane woodland
Stuckenia filiformis ssp. alpina	northern slender pondweed	2B.2	G5T5	S2S3	None	None	May-Jul	Marshes and swamps
Trifolium amoenum	two-fork clover	1B.1	G1	S1	None	FE	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland
Trifolium buckwestiorum	Santa Cruz clover	1B.1	G2	S2	None	None	Apr-Oct	Broadleafed upland forest, Cismontane woodland, Coastal prairie

APPENDIX A: SPECIAL-STATUS PLANT SPECIES
CNPS: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Rare Plant Rank	Global Rank	State Rank	State Listing	Federal Listing	Blooming Period	Habitat
Trifolium hydrophilum	saline clover	1B.2	G2	S2	None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland, Vernal pools
Triquetrella californica	coastal triquetrella	1B.2	G2	S2	None	None		Coastal bluff scrub, Coastal scrub
Triteleia lugens	dark-mouthed triteleia	4.3	G4?	S4?	None	None	Apr-Jun	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest
Usnea longissima	Methuselah's beard lichen	4.2	G4	S4	None	None		Broadleafed upland forest, North Coast coniferous forest
Viburnum ellipticum	oval-leaved viburnum	2B.3	G4G5	S3?	None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest

APPENDIX B

SPECIAL STATUS ANIMAL SPECIES

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Accipiter cooperii	Cooper's hawk	None	None	G5	S4	Watch List	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest
Agelaius tricolor	tricolored blackbird	None	Threatened	G1G2	S1S2	Species of Special Concern	Freshwater marsh | Marsh & swamp | Swamp | Wetland
Ambystoma californiense pop. 3	California tiger salamander - Sonoma County DPS	Endangered	Threatened	G2G3	S2S3	Watch List	Cismontane woodland | Meadow & seep | Riparian woodland | Valley & foothill grassland | Vernal pool | Wetland
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	None	None	G2	S2	None	Vernal pool
Antrozous pallidus	pallid bat	None	None	G4	S3	Species of Special Concern	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland
Arborimus pomo	Sonoma tree vole	None	None	G3	S3	Species of Special Concern	North coast coniferous forest | Oldgrowth | Redwood
Ardea herodias	great blue heron	None	None	G5	S4	None	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland
Athene cunicularia	burrowing owl	None	None	G4	S3	Species of Special Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland
Bombus caliginosus	obscure bumble bee	None	None	G4?	S1S2	None	Habitat types not provided
Bombus occidentalis	western bumble bee	None	Candidate Endangered	G2G3	S1	None	Habitat types not provided

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Corynorhinus townsendii	Townsend's big-eared bat	None	None	G4	S2	Species of Special Concern	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojavean desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland
Coturnicops noveboracensis	yellow rail	None	None	G4	S1S2	Species of Special Concern	Freshwater marsh | Meadow & seep
Dicamptodon ensatus	California giant salamander	None	None	G3	S2S3	Species of Special Concern	Aquatic | Meadow & seep | North coast coniferous forest | Riparian forest
Dubiraphia giulianii	Giuliani's dubiraphian riffle beetle	None	None	G1G3	S1S3	None	Aquatic
Elanus leucurus	white-tailed kite	None	None	G5	S3S4	Fully Protected	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland
Emys marmorata	western pond turtle	None	None	G3G4	S3	Species of Special Concern	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Erethizon dorsatum	North American porcupine	None	None	G5	S3	None	Broadleaved upland forest | Cismontane woodland | Closed-cone coniferous forest | Lower montane coniferous forest | North coast coniferous forest | Upper montane coniferous forest
Gonidea angulata	western ridged mussel	None	None	G3	S1S2	None	Aquatic

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Hysterocarpus traskii pomo	Russian River tule perch	None	None	G5T4	S4	Species of Special Concern	Aquatic | Klamath/North coast flowing waters
Lasiurus blossevillii	western red bat	None	None	G4	S3	Species of Special Concern	Cismontane woodland | Lower montane coniferous forest | Riparian forest | Riparian woodland
Lasiurus cinereus	hoary bat	None	None	G3G4	S4	None	Broadleaved upland forest | Cismontane woodland | Lower montane coniferous forest | North coast coniferous forest
Lavinia symmetricus navarroensis	Navarro roach	None	None	G4T1T2	S2S3	Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters
Linderiella occidentalis	California linderiella	None	None	G2G3	S2S3	None	Vernal pool
Mylopharodon conocephalus	hardhead	None	None	G3	S3	Species of Special Concern	Klamath/North coast flowing waters | Sacramento/San Joaquin flowing waters
Myotis thysanodes	fringed myotis	None	None	G4	S3	None	Habitat types not provided
Oncorhynchus kisutch pop. 4	coho salmon - central California coast ESU	Endangered	Endangered	G5T2T3Q	S2	None	Aquatic
Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threatened	None	G5T2T3Q	S2S3	None	Aquatic | Sacramento/San Joaquin flowing waters
Pandion haliaetus	osprey	None	None	G5	S4	Watch List	Riparian forest
Pekania pennanti	Fisher	None	None	G5	S2S3	Species of Special Concern	North coast coniferous forest | Oldgrowth | Riparian forest

APPENDIX B: SPECIAL-STATUS ANIMALS
CNDDB: HEALDSBURG 9-QUADS

Scientific Name	Common Name	Federal List	State List	Global Rank	State Rank	CDFW Status	Habitats
Rana boylii	foothill yellow-legged frog	None	Endangered	G3	S3	Species of Special Concern	Aquatic | Chaparral | Cismontane woodland | Coastal scrub | Klamath/North coast flowing waters | Lower montane coniferous forest | Meadow & seep | Riparian forest | Riparian woodland | Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Threatened	None	G2G3	S2S3	Species of Special Concern	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Stygobromus cherylae	Barr's amphipod	None	None	G1	S1	None	Aquatic
Syncaris pacifica	California freshwater shrimp	Endangered	Endangered	G2	S2	None	Aquatic | Sacramento/San Joaquin flowing waters
Taricha rivularis	red-bellied newt	None	None	G2	S2	Species of Special Concern	Broadleaved upland forest | North coast coniferous forest | Redwood | Riparian forest | Riparian woodland
Taxidea taxus	American badger	None	None	G5	S3	Species of Special Concern	Only regional habitat types: Bog & fen | Broadleaved upland forest | Chaparral | Cismontane woodland | Closed-cone coniferous forest | Freshwater marsh | Marsh & swamp | Meadow & seep | North coast coniferous forest | Redwood | Riparian forest | Riparian scrub | Riparian woodland | Upper montane coniferous forest | Valley & foothill grassland
Trachykele hartmani	serpentine cypress wood-boring beetle	None	None	G1	S1	None	Habitat types not provided

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE INVENTORY REPORT

7842 Hembree Lane
Cornell Street Extension
Windsor, CA

Prepared for:

DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasant Hill, CA 94523

Prepared by:

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

October 3, 2022

HORTICULTURAL Associates
Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

October 3, 2022

Mr. Doyle Heaton
DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasanton, CA 94523

Re: Completed supplemental *Tree Inventory Report*, 7842 Hembree Lane in Windsor, California

Doyle,

Attached you will find our completed supplemental *Tree Inventory Report* for the above noted site in Windsor. A total of 34 additional trees were evaluated, and this includes all trees that are greater than 6 inches in trunk diameter and located in the area where Cornell Street will be extended.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also provides an assessment of expected impact for each tree based on the plan that was provided, as well as recommendations for preservation or removal. A *Tree Location Plan* shows the location and numbering sequence of all trees that were included.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. No other trees are included in this report. If other trees need to be included it your responsibility to provide that direction to us.

EXISTING SITE CONDITION SUMMARY

Many trees at this site have already been documented in previous surveys. This specific area where Cornell Street will be extended has been included in this supplemental study.

EXISTING TREE SUMMARY

Tree species present in this area of the site include Valley Oak and Coast Live Oak.

~ Voice 707-935-3911 Fax 707-935-7103 ~

CONSTRUCTION IMPACT SUMMARY

The following summary of expected development impacts is provided:

(2) Trees near the construction footprint appear to be preservable

(32) Trees need to be removed due to expected construction impacts

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

TREE INVENTORY
Cornell Street Extension
7842 Hembree Lane
Windsor, CA

October 3, 2022

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
401	*Quercus lobata*	Valley Oak	6+7+7+9	40	18	3	3	3	2
402	*Quercus lobata*	Valley Oak	4+7	30	14	3	3	3	2
403	*Quercus lobata*	Valley Oak	7+8.5	40	16	3	3	3	2
404	*Quercus lobata*	Valley Oak	5+5+5+6.5+8	40	18	3	3	3	2
405	*Quercus lobata*	Valley Oak	6	35	15	3	3	3	2
406	*Quercus lobata*	Valley Oak	5+7	30	14	3	3	3	2
407	*Quercus lobata*	Valley Oak	7	35	15	16	3	3	2
408	*Quercus lobata*	Valley Oak	7.5	35	16	3	3	3	2
409	*Quercus lobata*	Valley Oak	7	35	16	3	3	3	2
410	*Quercus lobata*	Valley Oak	13	40	18	3	3	3	2
411	*Quercus lobata*	Valley Oak	6	14	15	3	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
412	*Quercus lobata*	Valley Oak	6	30	12	3	3	3	2
413	*Quercus lobata*	Valley Oak	13	40	15	3	3	3	2
414	*Quercus lobata*	Valley Oak	13	35	18	3	3	3	2
415	*Quercus lobata*	Valley Oak	17.5	40	18	3	3	3	2
416	*Quercus agrifolia*	Coast Live Oak	6	12	8	3	3	3	2
417	*Quercus lobata*	Valley Oak	4+7	25	16	3	3	3	2
418	*Quercus lobata*	Valley Oak	6	18	15	3	3	3	2
419	*Quercus lobata*	Valley Oak	7	35	14	3	3	3	2
420	*Quercus lobata*	Valley Oak	5+7+9.5	40	18	3	3	3	2
421	*Quercus lobata*	Valley Oak	4+5+5+5	25	15	3	3	3	2
422	*Quercus lobata*	Valley Oak	3+5+6	30	14	3	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
423	*Quercus lobata*	Valley Oak	6.5	35	12	3	3	3	2
424	*Quercus lobata*	Valley Oak	5+6	40	12	3	3	3	2
425	*Quercus lobata*	Valley Oak	5+8.5	40	14	3	3	3	2
426	*Quercus lobata*	Valley Oak	6	25	10	3	3	3	2
427	*Quercus lobata*	Valley Oak	6+13	40	15	3	3	3	2
428	*Quercus lobata*	Valley Oak	7	40	12	3	3	3	2
429	*Quercus lobata*	Valley Oak	6	22	10	3	3	3	2
430	*Quercus lobata*	Valley Oak	6+6.5	35	16	3	3	3	2
431	*Quercus lobata*	Valley Oak	5+9+9.5	35	18	3	3	3	2
432	*Quercus lobata*	Valley Oak	7+8	35	18	3	3	3	2
433	*Quercus lobata*	Valley Oak	6+13	40	18	3	3	2	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
434	*Quercus lobata*	Valley Oak	9+9	40	20	3	3	2	1, 6, 7, 8, 9

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level. The *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured or estimated, in inches, to document its diameter, at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Construction Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0). No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible.

(2) Removal is required due to significant development impacts.

(3) Removal is required due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean the canopy, per International Society of Arboriculture pruning standards.

(10) This trunk is located off site, but the canopy overhangs the project site.

(11) Excavation may be required within the TPZ and the dripline for development. Excavation within the TPZ of any type must adhere to the following guidelines:

All roots encountered that are 2 inches or larger in diameter must be cleanly cut as they are encountered by excavating equipment.

Roots may not be ripped from the ground and then trimmed. They must be trimmed as encountered and this will require the use of a ground man working with a suitable power tool.

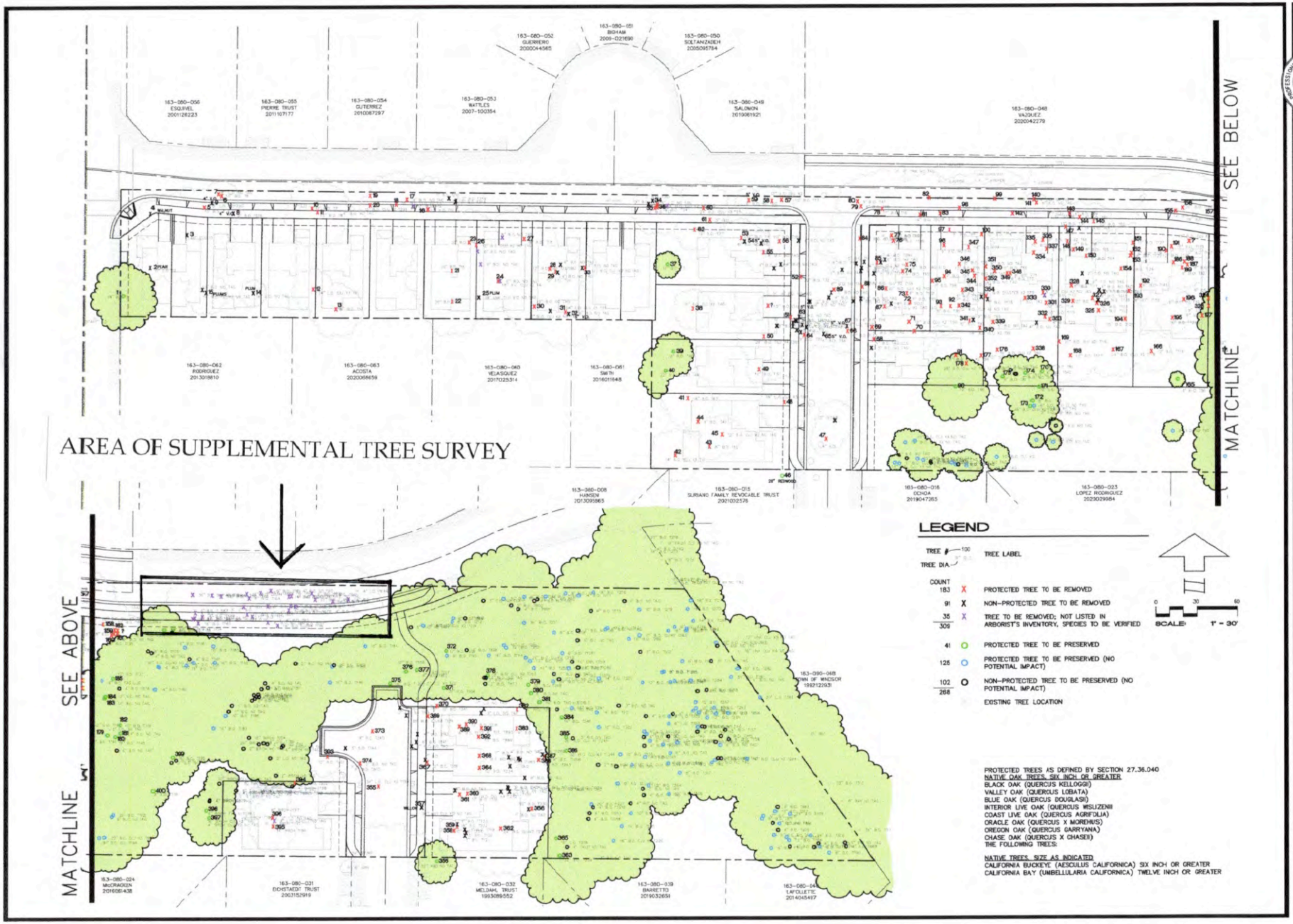
Pruned and exposed roots greater than 2 inches in diameter must be protected from desiccation if left exposed for more than 24 hours. Cover cut roots with heavy cloth, burlap, used carpeting, or similar material that has been soaked in water, until trench or excavation has been backfilled.

If excavation impacts more than 20% of the defined TPZ then supplemental irrigation may be required to offset loss of roots. Excavation in this case should be directed by the project arborist who will determine whether excavation is required, when, and how.

Any excavation within the defined TPZ will require that the tree be monitored on a monthly basis by the project arborist for the duration of construction and for one year beyond completion of construction. Monitoring may determine other mitigation measures that may be required to offset root loss or damage.

(13) This species is exempt from mitigation, per the tree ordinance

TREE LOCATION PLAN



CML DESIGN CONSULTANTS, INC.
2200 Range Avenue, Suite 204
Santa Rosa, CA 95403
(707) 542-4830

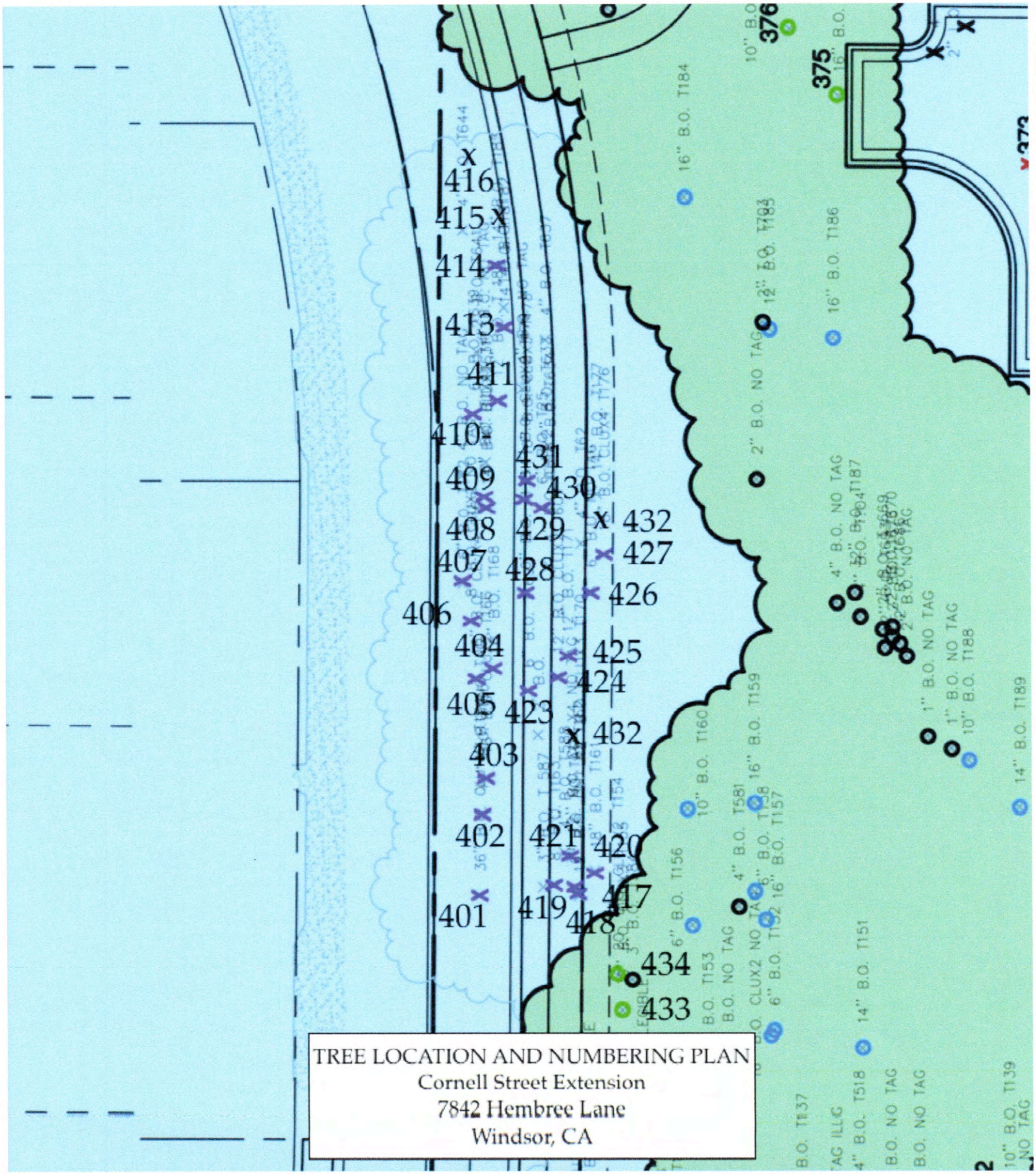
ANDREW BORDERRA
RCE 34368
DATE

TREE PRESERVATION PLAN
HEMBREE LANE
7842 HEMBREE LANE
WINDSOR, CALIFORNIA
DOC.NO. 2012067749
APN 163-080-047

5.10 ACRES
1 PARCEL
SEPTEMBER 2022

JOB NO.
21-107

SHEET NO.
1
OF 1 SHEETS


TREE LOCATION AND NUMBERING PLAN
Cornell Street Extension
7842 Hembree Lane
Windsor, CA

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE INVENTORY REPORT

7842 Hembree Lane
Undeveloped Areas
Windsor, CA

Prepared for:

DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasant Hill, CA 94523

Prepared by:

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

October 12, 2022

HORTICULTURAL Associates
Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

October 12, 2022

Mr. Doyle Heaton
DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasanton, CA 94523

Re: Completed supplemental *Tree Inventory Report*, 7842 Hembree Lane in Windsor, California

Doyle,

Attached you will find our completed supplemental *Tree Inventory Report* for the above noted site in Windsor. The area that has been included in this study is shown on the development plan to remain in a natural condition and will not be developed as part of this project. A total of 107 additional trees were evaluated, and this includes all trees that are 6 inches or greater in trunk diameter.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* identifies all trees in this area to be preserved and without any development impact. A *Tree Location Plan* shows the location and numbering sequence of all trees that were included.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. No other trees are included in this report. If other trees need to be included it your responsibility to provide that direction to us.

EXISTING SITE CONDITION SUMMARY

Many trees at this site have already been documented in previous surveys. This specific area will remain undeveloped.

EXISTING TREE SUMMARY

Tree species present in this area of the site include Valley Oak, Black Oak, and Coast Live Oak.

CONSTRUCTION IMPACT SUMMARY

All 107 trees in this study area will be preserved. It is my understanding that this portion of the land, and the trees it contains, has been designated for preservation in exchange for the mitigation replacement trees that would be required for removal of trees in the developed areas of the site

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

TREE INVENTORY
7842 Hembree Lane
Undeveloped Areas
Windsor, CA

October 12, 2022

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
435	*Quercus lobata*	Valley Oak	34	50	30	4	3	0	No action required
436	*Quercus lobata*	Valley Oak	6	14	12	4	3	0	No action required
437	*Quercus kellogii*	Black Oak	21	45	24	4	3	0	No action required
438	*Quercus lobata*	Valley Oak	28	40	30	3	3	0	No action required
439	*Quercus lobata*	Valley Oak	9	25	20	4	3	0	No action required
440	*Quercus lobata*	Valley Oak	13	35	21	4	3	0	No action required
441	*Quercus lobata*	Valley Oak	12+15	40	25	4	3	0	No action required
442	*Quercus lobata*	Valley Oak	5+14	18	16	4	3	0	No action required
443	*Quercus lobata*	Valley Oak	6	12	1	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
444	*Quercus lobata*	Valley Oak	5+12	15	20	4	3	0	No action required
445	*Quercus lobata*	Valley Oak	31	40	30	4	3	0	No action required
446	*Quercus lobata*	Valley Oak	20	40	30	4	3	0	No action required
447	*Quercus lobata*	Valley Oak	5+10	30	15	4	3	0	No action required
448	*Quercus lobata*	Valley Oak	18.5	45	30	4	3	0	No action required
449	*Quercus lobata*	Valley Oak	14	40	18	4	3	0	No action required
450	*Quercus lobata*	Valley Oak	12	40	15	4	3	0	No action required
451	*Quercus lobata*	Valley Oak	6	12	18	4	3	0	No action required
452	*Quercus agrifolia*	Coast Live Oak	6	25	14	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
453	*Quercus lobata*	Valley Oak	6	22	14	4	3	0	No action required
454	*Quercus agrifolia*	Coast Live Oak	40	40	25	4	3	0	No action required
455	*Quercus lobata*	Valley Oak	27	45	30	4	3	0	No action required
456	*Quercus lobata*	Valley Oak	29	45	30	4	3	0	No action required
457	*Quercus lobata*	Valley Oak	6	25	14	4	3	0	No action required
458	*Quercus lobata*	Valley Oak	6	14	4	0	0	0	No action required
459	*Quercus lobata*	Valley Oak	15	25	18	0	0	0	No action required
460	*Quercus lobata*	Valley Oak	11	30	15	4	3	0	No action required
461	*Quercus lobata*	Valley Oak	7.5	20	14	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
462	*Quercus lobata*	Valley Oak	4+6	22	12	4	3	0	No action required
463	*Quercus lobata*	Valley Oak	8	25	12	4	3	0	No action required
464	*Quercus lobata*	Valley Oak	6+12	40	16	3	3	0	No action required
465	*Quercus lobata*	Valley Oak	19	40	18	4	3	0	No action required
466	*Quercus lobata*	Valley Oak	7	10	10	2	3	0	No action required
467	*Quercus agrifolia*	Coast Live Oak	8	25	12	4	3	0	No action required
468	*Quercus lobata*	Valley Oak	6	20	12	4	3	0	No action required
469	*Quercus lobata*	Valley Oak	6	35	12	4	3	0	No action required
470	*Quercus agrifolia*	Coast Live Oak	17	40	20	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
471	*Quercus lobata*	Valley Oak	6	25	12	4	3	0	No action required
472	*Quercus lobata*	Valley Oak	9	32	18	3	3	0	No action required
473	*Quercus lobata*	Valley Oak	6	22	20	2	3	0	No action required
474	*Quercus lobata*	Valley Oak	9	20	14	4	3	0	No action required
475	*Quercus lobata*	Valley Oak	12	35	18	3	3	0	No action required
476	*Quercus lobata*	Valley Oak	5+6	20	15	3	3	0	No action required
477	*Quercus lobata*	Valley Oak	12	35	15	3	3	0	No action required
478	*Quercus lobata*	Valley Oak	10	30	14	4	3	0	No action required
479	*Quercus lobata*	Valley Oak	13	35	15	3	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
480	*Quercus lobata*	Valley Oak	8	35	15	4	3	0	No action required
481	*Quercus lobata*	Valley Oak	6	32	14	3	3	0	No action required
482	*Quercus lobata*	Valley Oak	14	34	15	3	3	0	No action required
483	*Quercus lobata*	Valley Oak	14	40	15	2	3	0	No action required
484	*Quercus kelllogii*	Black Oak	6+10+18	40	18	4	3	0	No action required
485	*Quercus lobata*	Valley Oak	28	45	18	4	3	0	No action required
486	*Quercus lobata*	Valley Oak	13	40	16	4	3	0	No action required
487	*Quercus lobata*	Valley Oak	15	45	18	4	3	0	No action required
488	*Quercus lobata*	Valley Oak	6+9	40	14	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
489	*Quercus lobata*	Valley Oak	21	45	25	4	3	0	No action required
490	*Quercus lobata*	Valley Oak	10+15	40	25	3	2	0	No action required
491	*Quercus lobata*	Valley Oak	8+9	25	15	4	3	0	No action required
492	*Quercus lobata*	Valley Oak	19	40	30	4	3	0	No action required
493	*Quercus lobata*	Valley Oak	6+10	35	14	3	3	0	No action required
494	*Quercus lobata*	Valley Oak	15	45	22	4	3	0	No action required
495	*Quercus agrifolia*	Coast Live Oak	13	40	15	4	3	0	No action required
496	*Quercus lobata*	Valley Oak	6	30	10	4	3	0	No action required
497	*Quercus lobata*	Valley Oak	18	40	18	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
498	*Quercus lobata*	Valley Oak	18	40	18	4	3	0	No action required
499	*Quercus lobata*	Valley Oak	7+10	25	15	4	3	0	No action required
500	*Quercus lobata*	Valley Oak	7+17	45	16	3	3	0	No action required
501	*Quercus lobata*	Valley Oak	6	15	12	4	3	0	No action required
502	*Quercus lobata*	Valley Oak	6	22	15	4	3	0	No action required
503	*Quercus lobata*	Valley Oak	31	50	30	4	3	0	No action required
504	*Quercus lobata*	Valley Oak	16	40	18	4	3	0	No action required
505	*Quercus lobata*	Valley Oak	13	45	12	4	3	0	No action required
506	*Quercus agrifolia*	Coast Live Oak	19	35	18	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
507	*Quercus lobata*	Valley Oak	14	40	16	3	3	0	No action required
508	*Quercus kellogii*	Black Oak	14+18	45	22	4	3	0	No action required
509	*Quercus lobata*	Valley Oak	6	25	12	4	3	0	No action required
510	*Quercus lobata*	Valley Oak	7	20	22	4	3	0	No action required
511	*Quercus lobata*	Valley Oak	11+11	40	16	4	3	0	No action required
512	*Quercus lobata*	Valley Oak	7+7	35	14	4	3	0	No action required
513	*Quercus lobata*	Valley Oak	12	40	14	4	3	0	No action required
514	*Quercus lobata*	Valley Oak	12+12	40	16	4	3	0	No action required
515	*Quercus lobata*	Valley Oak	11+11	40	20	3	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
516	*Quercus lobata*	Valley Oak	6	18	12	2	3	0	No action required
517	*Quercus lobata*	Valley Oak	9	35	14	3	3	0	No action required
518	*Quercus lobata*	Valley Oak	6	30	12	3	3	0	No action required
519	*Quercus lobata*	Valley Oak	10	30	15	3	3	0	No action required
520	*Quercus lobata*	Valley Oak	15	40	16	3	3	0	No action required
521	*Quercus lobata*	Valley Oak	6	12	20	3	3	0	No action required
522	*Quercus lobata*	Valley Oak	16	35	18	2	3	0	No action required
523	*Quercus lobata*	Valley Oak	6	30	12	3	3	0	No action required
524	*Quercus lobata*	Valley Oak	8	35	14	4	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
525	*Quercus lobata*	Valley Oak	4+6+6+8	30	15	3	3	0	No action required
526	*Quercus lobata*	Valley Oak	13	40	16	3	3	0	No action required
527	*Quercus lobata*	Valley Oak	15	40	18	3	3	0	No action required
528	*Quercus lobata*	Valley Oak	12	45	16	3	3	0	No action required
529	*Quercus lobata*	Valley Oak	6+6+9	40	16	3	3	0	No action required
201A	*Quercus lobata*	Valley Oak	14+18	50	25	3	3	0	No action required
202A	*Quercus lobata*	Valley Oak	8	40	14	3	3	0	No action required
203A	*Quercus lobata*	Valley Oak	6+11	40	16	3	3	0	No action required
204A	*Quercus lobata*	Valley Oak	14	40	18	3	3	0	No action required

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
205A	*Quercus lobata*	Valley Oak	24	45	30	3	3	0	No action required
206A	*Quercus lobata*	Valley Oak	18	45	24	3	3	0	No action required
207A	*Quercus lobata*	Valley Oak	12+16	45	24	3	3	0	No action required
208A	*Quercus lobata*	Valley Oak	23	45	22	3	3	0	No action required
209A	*Quercus lobata*	Valley Oak	6	15	6	3	3	0	No action required
210A	*Quercus lobata*	Valley Oak	5+6	30	10	4	3	0	No action required
211A	*Quercus lobata*	Valley Oak	6+7	35	12	4	3	0	No action required
212A	*Quercus lobata*	Valley Oak	3+6	35	12	4	3	0	No action required

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level. The *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured or estimated, in inches, to document its diameter, at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Construction Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0). No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible.

(2) Removal is required due to significant development impacts.

(3) Removal is required due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean the canopy, per International Society of Arboriculture pruning standards.

(10) This trunk is located off site, but the canopy overhangs the project site.

(11) Excavation may be required within the TPZ and the dripline for development. Excavation within the TPZ of any type must adhere to the following guidelines:

All roots encountered that are 2 inches or larger in diameter must be cleanly cut as they are encountered by excavating equipment.

Roots may not be ripped from the ground and then trimmed. They must be trimmed as encountered and this will require the use of a ground man working with a suitable power tool.

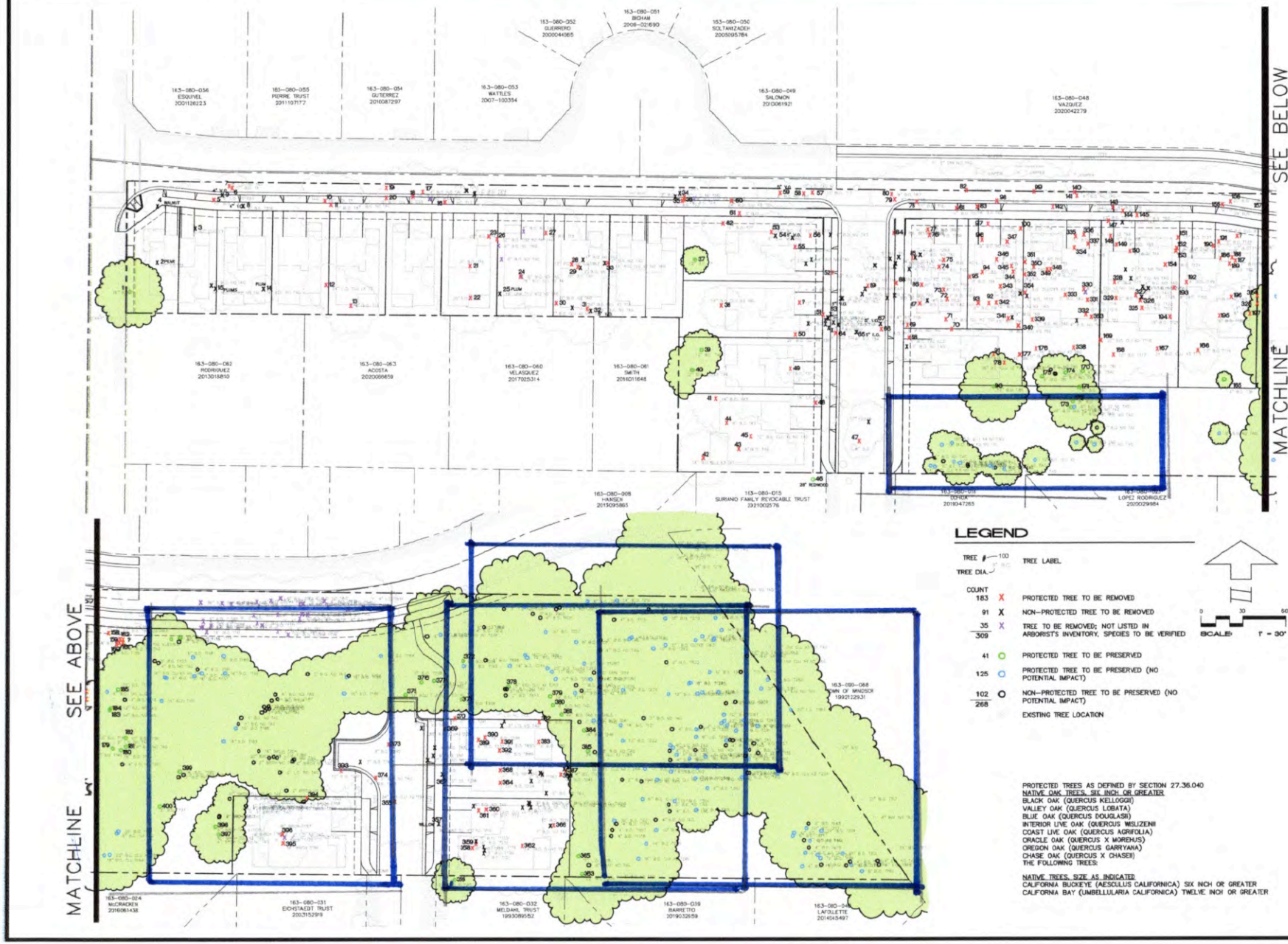
Pruned and exposed roots greater than 2 inches in diameter must be protected from desiccation if left exposed for more than 24 hours. Cover cut roots with heavy cloth, burlap, used carpeting, or similar material that has been soaked in water, until trench or excavation has been backfilled.

If excavation impacts more than 20% of the defined TPZ then supplemental irrigation may be required to offset loss of roots. Excavation in this case should be directed by the project arborist who will determine whether excavation is required, when, and how.

Any excavation within the defined TPZ will require that the tree be monitored on a monthly basis by the project arborist for the duration of construction and for one year beyond completion of construction. Monitoring may determine other mitigation measures that may be required to offset root loss or damage.

(13) This species is exempt from mitigation, per the tree ordinance

TREE LOCATION PLAN



DATE

ANDREW BORDERUD
RCE 34308

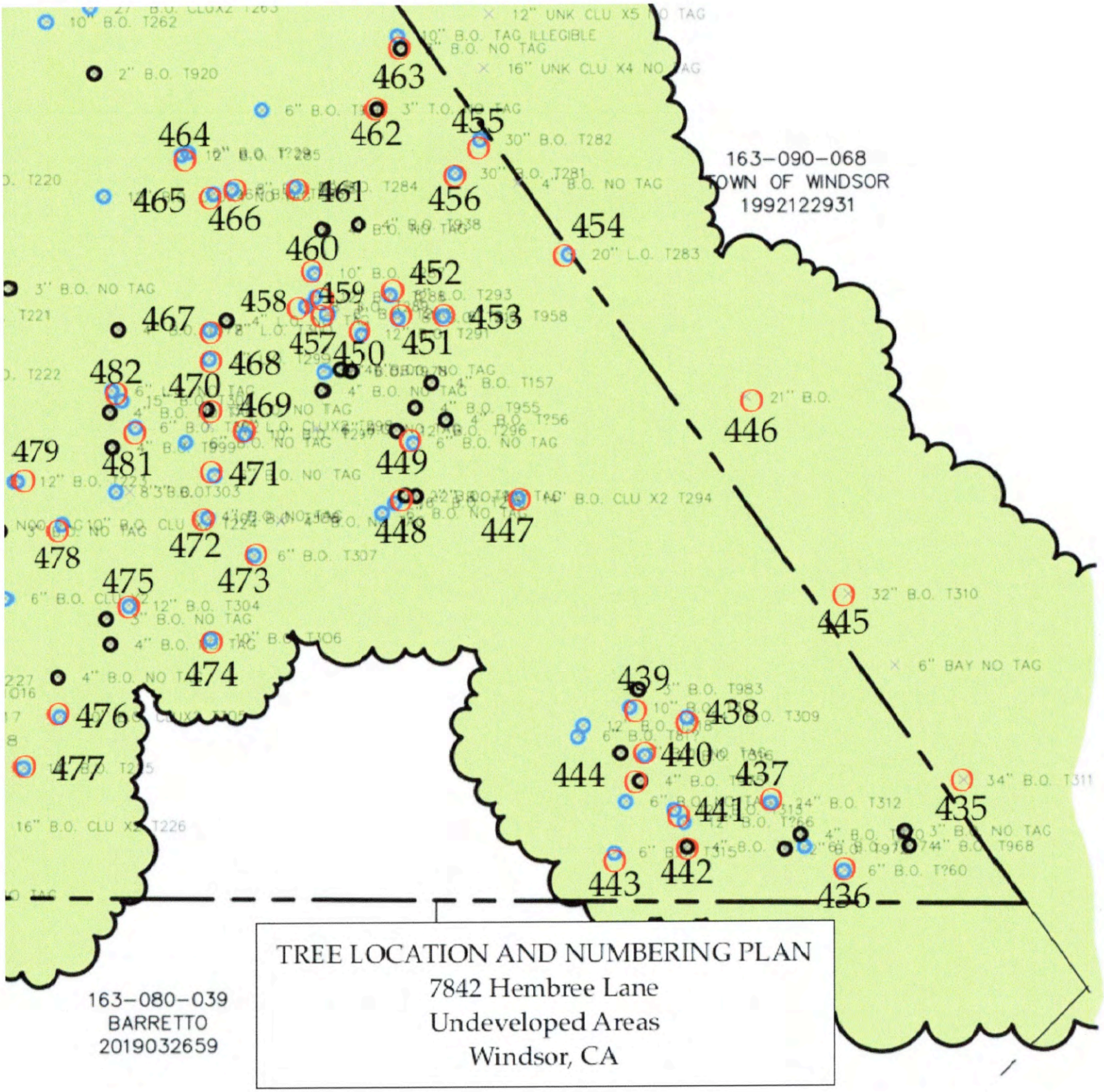
CML DESIGN CONSULTANTS, INC.
2200 Range Avenue, Suite 204
Santa Rosa, CA 95403
(707) 542-4820

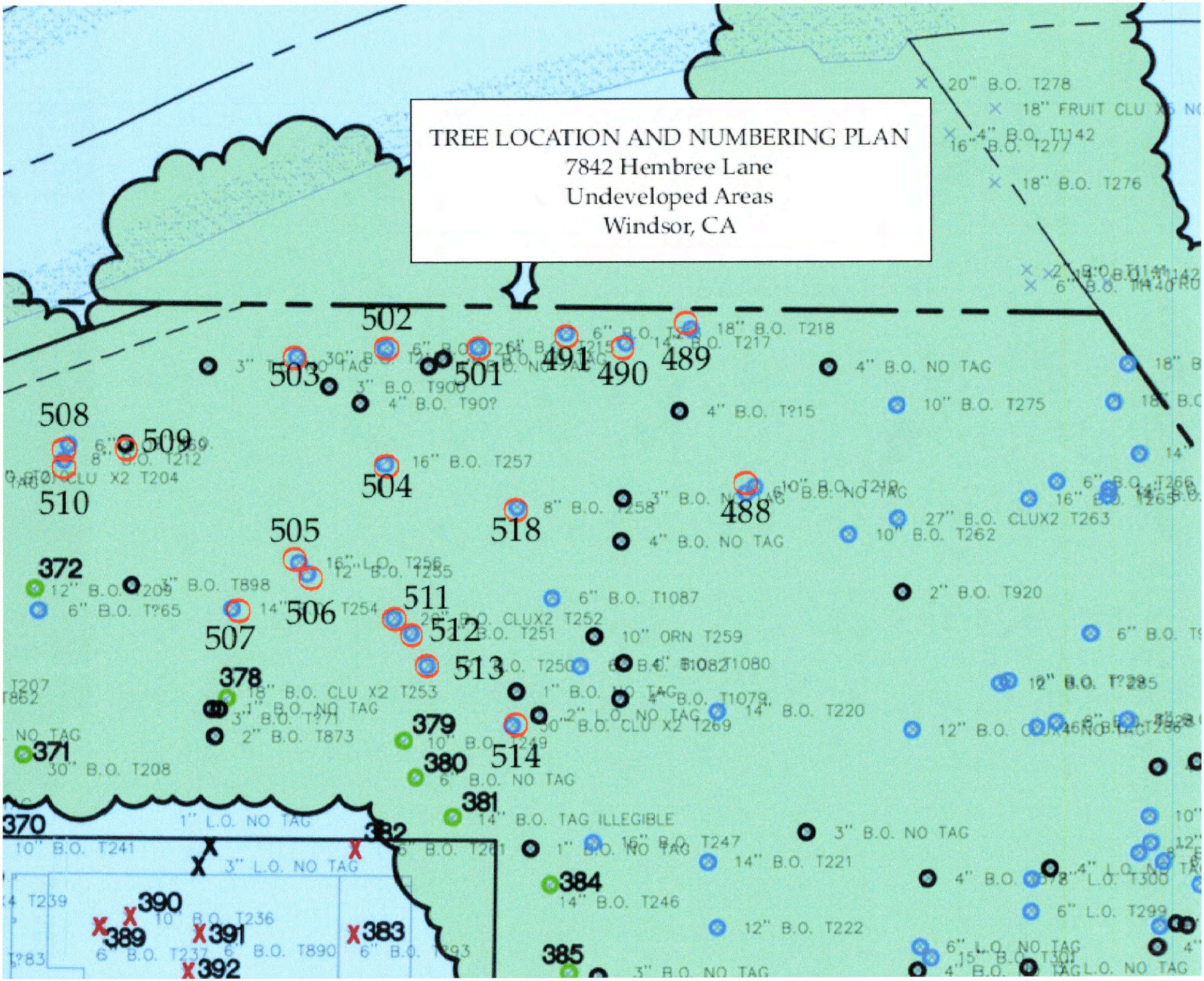
TREE PRESERVATION PLAN
HEMBREE LANE
7942 HEMBREE LANE
WINDSOR, CALIFORNIA
DOC.NO. 2012067749
APN 163-080-047

5.10 ACRES
54 LOTS
1 PARCEL
SEPTEMBER 2022

JOB NO.
21-197

SHEET NO.
1
OF 1 SHEETS


163-090-068
TOWN OF WINDSOR
1992122931
163-080-039
BARRETTO
2019032659
TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Undeveloped Areas
Windsor, CA


TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Undeveloped Areas
Windsor, CA
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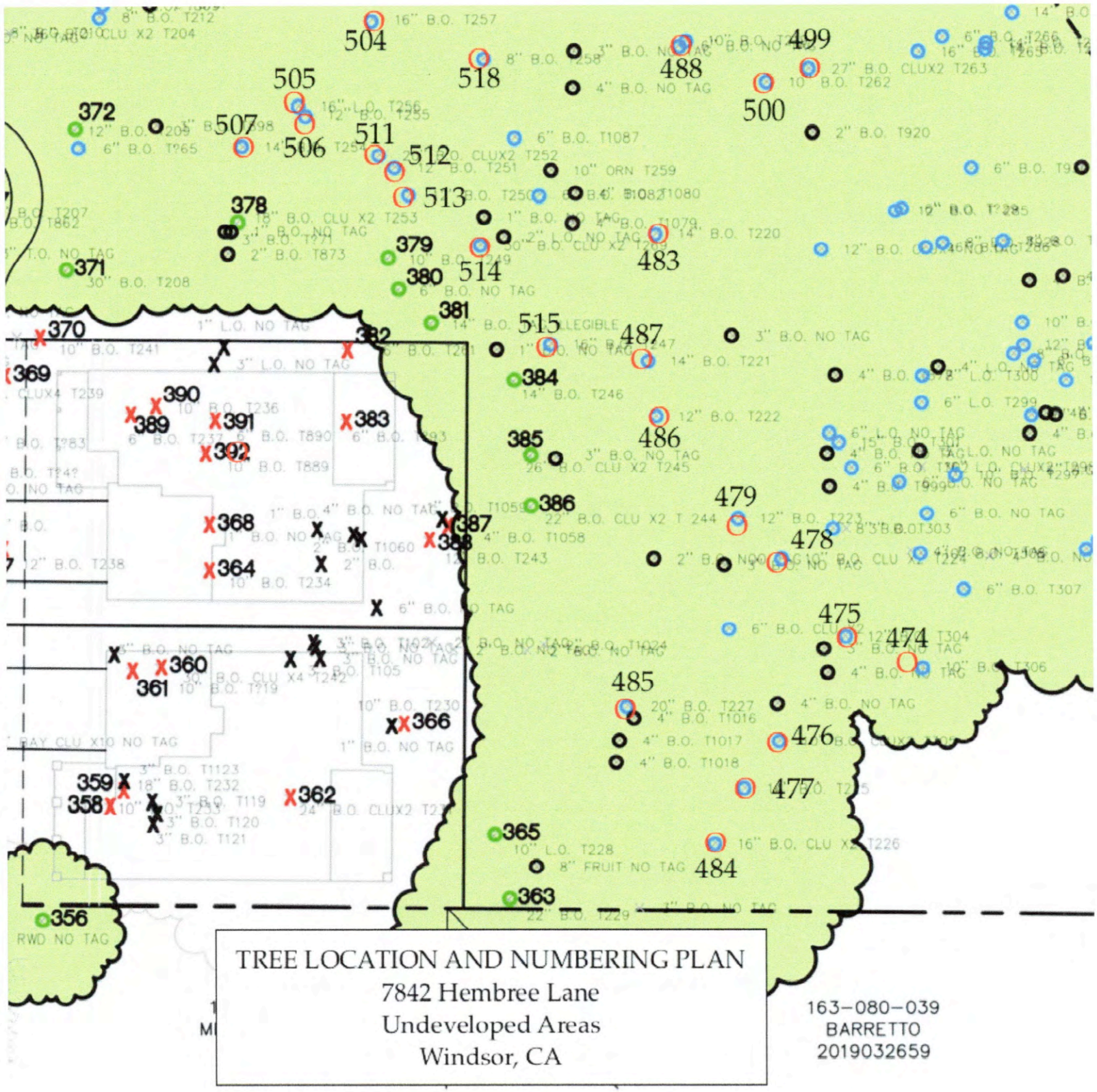
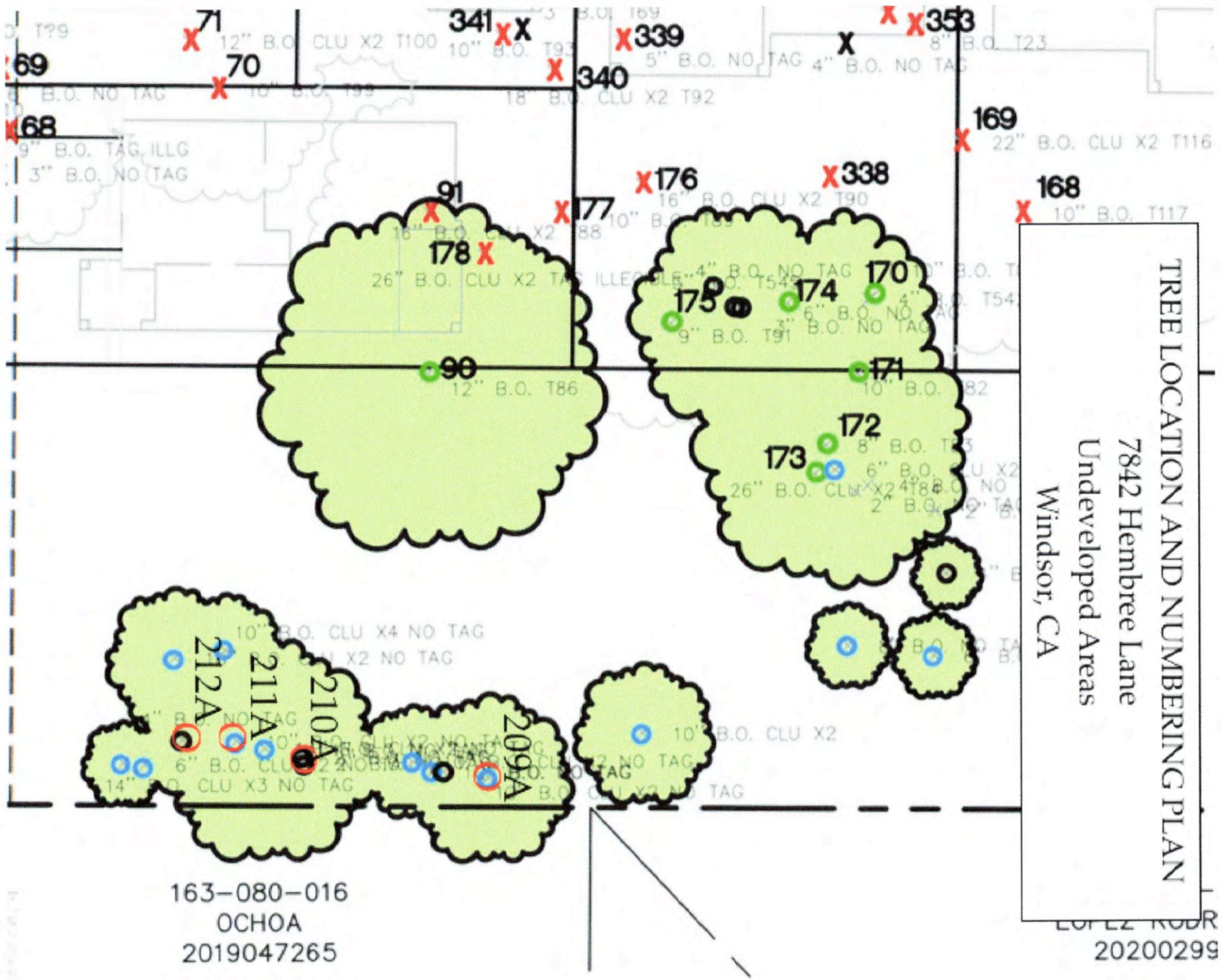


TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Undeveloped Areas
Windsor, CA

163-080-039
BARRETTO
2019032659


TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Undeveloped Areas
Windsor, CA
163-080-016
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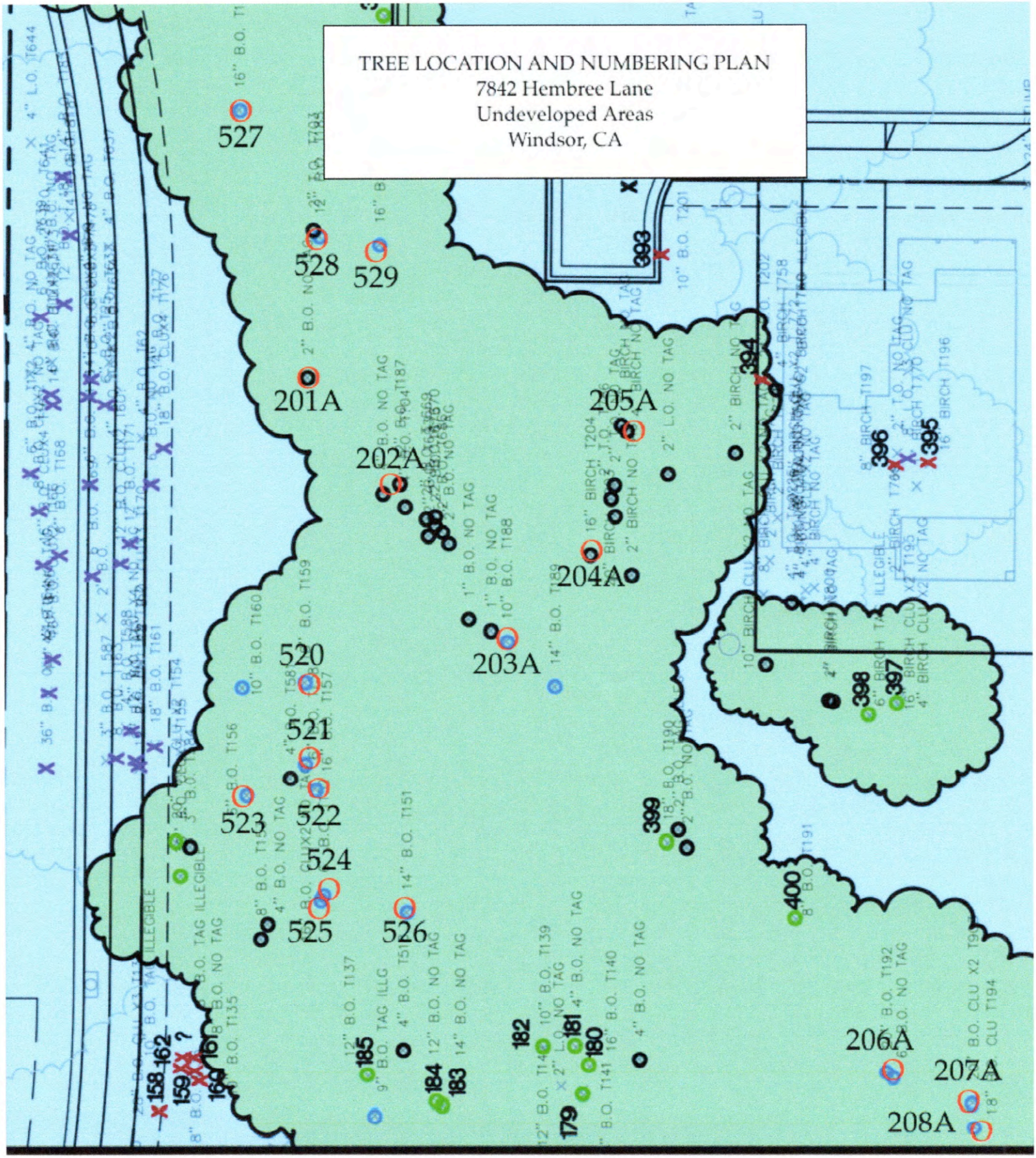
LEGEND


TREE LOCATION AND NUMBERING PLAN
7842 Hembree Lane
Undeveloped Areas
Windsor, CA
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Charles A. Patterson
Plant Ecologist
1806 Ivanhoe Avenue, Lafayette, CA 94549
ph: (925) 938-5263 email: cpwetguy@sbcglobal.net

December 7, 2016

Craig Lawson
CAL Custom Building Services, Inc.
P.O. Box 3597
Santa Rosa, CA 95402

Re: Updated biotic surveys and findings for 7842 Hembree Lane, Windsor

Dear Craig:

As requested, I have completed a recent re-visit to the subject property (approximately 5.19 acres) at 7842 Hembree Lane in Windsor, and have made an updated evaluation of its wetland and other biological resources. I had conducted numerous site visits (including rare plant surveys and wetland mapping) over past years, initially in 2005, with a formal "Jurisdictional Determination" (JD) confirmed by the U. S. Army Corps of Engineers (Corps) by letter dated May 18, 2007. This letter summarizes my past investigations, updated by my recent site visit.

Baseline Conditions

Specific field dates have included the following:

2005:		
	October 7	general reconnaissance and vegetation survey
2006:		
	January 26	hydrology check and preliminary wetland mapping
	March 31	plant survey
	April 26	plant survey
	May 18	plant survey
	June 16	plant and wetland surveys; data collection for JD
2007:		
	April 11	plant survey and JD confirmation visit with Corps
	August 1	general site check, vegetation surveys
2008:		
	March 3	rare plant survey
	April 3 and 23	plant surveys, hydrology check
	May 8	plant survey
2016:		
	September 22	general conditions check

Based on these detailed surveys, the site can be described as being dominated by regionally typical non-native annual grassland with numerous young oak saplings, several small man-made, seasonally wet depressions and a ditch. The bulk of the site is common annual grassland composed largely of introduced grasses (*Avena, Bromus, Lolium, Hordeum, Cynodon, Phalaris*) and weeds (*Brassica, Hypocheris, Vicia,*

Carduus, Sonchus, Lactuca, etc.), plus scattered individuals of a few native grasses (*Danthonia, Stipa*) and a few common native herbs (*Lupinus, Hemizonia, Eschscholzia, Danthonia*). There are a significant number of native oak trees (*Quercus lobata, Q. agrifolia*), most of which are relatively young (10 to 20 years old); these have been cataloged and identified in a separate report.

There is a straightened ditch that runs roughly east-west across the middle of the site, entering from the northeast and exiting to the south into a buried storm drain beneath the adjoining residential neighborhood. This feature is generally ephemeral, but typically carries some intermittent summer flow related to nearby urban watering and miscellaneous yard and street runoff. This ditch is dominated by the non-native Himalaya blackberry (*Rubus discolor*), cattails (*Typha latifolia*), and numerous other common seasonal wetland species (*Rumex, Epilobium, Cyperus, Paspalum, Polygonum, Cynodon, Polypogon, Xanthium*), most of which are not native. The extreme western end also supports a small clump of native (but very common, and even aggressive) arroyo willow (*Salix lasiolepis*).

This ditch represents seasonal "wetland" subject to the jurisdiction of and regulation by the Corps, as well as by the California Regional Water Quality Control Board (RWQCB). Fill or alteration of this feature would require permits from these agencies, including a requirement for compensatory mitigation, and would probably also require a Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW).

There is also a highly degraded (man-made) shallow pool in the extreme southeastern corner of the site. This seasonal pool is apparently the unintended result of constructing a nearby elevated walking path in the adjacent park, which has become a 'dam' to the previous flow of runoff southeastward from the eastern part of the Hembree Lane site. This pool feature is highly tannic because of dense oak canopy and leaf litter, but does foster some regionally common wetland vegetation (*Eryngium, Rumex, Mentha, Pleuropogon, Eleocharis, Ranunculus*), in addition to dense Himalaya blackberry and coyote brush (*Baccharis*) around the edges.

There are also five very small isolated seasonally wet depressions toward the western end of the site. These are shallow depressions (less than one foot deep) that occur in the nearly level grassland, some of which appear to be man-made, including tire ruts and small 'borrow' areas. These pockets total approximately 0.05 acre (2040 square feet), and support common seasonal wetland species of plants (i.e., *Pleuropogon, Plagiobothrys, Downingia, Juncus bufonius, Veronica, Lythrum*). Because of their very small size, these features tend to be highly ephemeral with regard to hydrology (sometimes drying completely on the surface between storms). These five small features (as well as the larger seasonal pool in the site's southeastern corner) have all been deemed "Isolated" by the Corps, and are hence not regulated by the Corps. Figure 1 shows the approximate locations of the site's wetlands.

Sensitive Species

Based on my surveys and records from the California Natural Diversity Data Base, the site does not support any rare, endangered, or otherwise sensitive species of plants or animals, nor does it contain particularly suitable habitat for same. Several years of spring plant surveys have resulted in no rare, endangered, or otherwise unusual plants being found, and based on the site's disturbed condition and largely man-made wetlands, is not likely to support any such species. There are no historic records of rare plants here or immediately nearby, and most of the surrounding landscape has already been fully developed for urban neighborhoods. The onsite wetlands include small man-made depressions with common weeds and a few common native seasonal wetland species, but these small features are apparently man-made and are shallow and ephemeral enough to support only non-native grasses and upland weeds in drier years.

= Corps confirmed wetlands (0.38 acre total)
(locations approximate)

Figure 1. Site Setting and Wetland Conditions

7842 Hembree Lane, Windsor, Calif.

NORTH ↑	**Source/Prepared by:** C. Patterson; December, 2016	**Applicant:** CAL Custom Building Services, Inc., Santa Rosa, CA	**Sonoma County A. P. Number 163-080-047**
	Basemap: 2015 Google Earth satellite image **No Scale**		Approx. 5.19 ac

Biological Baseline Update report

The larger pool in the SE corner appears to be wholly man-made and supports common weeds and seasonal wetland herbs. It does not represent particularly suitable potential habitat for sensitive species because of its thick bed of oak litter, highly tannic water quality, invasion by exotics (*Rubus, Mentha, Rumex*), and dense overhead shading. The linear ditch contains occasional summer runoff and does not represent good or even suitable habitat for the region's sensitive plants. This feature is dominated by common seasonal wetland and semi-riparian vegetation such as dock, cattails, mint, and willows, plus numerous weedy seasonal wetland species (*Rumex, Polypogon, Polygonum, Agrostis, Paspalum*). No listed or otherwise highly sensitive plant species have been encountered or reported from this site, and based on the marginal conditions, none are expected. One plant of minor interest that is present is Lobb's aquatic buttercup (*Ranunculus lobbii*), which occurs as a small colony in the man-made pool in the southeastern corner of the site. This regionally common aquatic plant is listed by the California Native Plant Society on their List 4 ("A Watch List"), but it has no state or federal protection. This pool is to be avoided by the development plan.

With regard to sensitive wildlife, the site occurs near the outermost northeastern corner of the historic known or suspected range of the state and federally listed California tiger salamander (CTS), and based on this, plus the marginal suitability of the habitats present (mostly man-made, mostly very ephemeral, extremely isolated and fragmented), no CTS are likely here. The Santa Rosa Plain Conservation Strategy shows the Hembree Lane site white on the Strategy's Figure 2, designated as "Out of Potential Range for CTS", and the site is shown as pale yellow ("Presence of CTS is not likely...") on the Strategy's Figure 3, with the surrounding area generally being mapped as "Already Developed (no potential for CTS)". Based on this and the fact that there are no known suitable natural breeding pools in this general area, plus all the surrounding development and other barriers (freeway, residential neighborhoods, buried storm drains, other major roads), the conclusion here is that CTS do not occur here and should not be an issue.

The general lack of any suitable natural habitats or resources that could support or attract any of the region's known sensitive wildlife species, plus the surrounding areas' near full existing urban development, renders this site's resource potential for such species as extremely low. The older trees may provide some minor roosting or resting opportunities, but they do not represent (nor does the site overall) the type of habitat and setting that the region's sensitive wildlife species prefer.

Agency Involvement and Permitting

With regard to wetlands, the site contains a total of approximately 0.38 acre of "wetland", although the small divots in the western part and the SE pool were all deemed "Isolated" by the Corps (Bryan Matsumoto, project manager) and are hence, not regulated by the Corps. The main ditch contains a total of 0.13 acre of ("Adjacent") "jurisdictional wetland", which is regulated by the Corps. All of the site's wetlands, both "Adjacent" and "Isolated" will be regulated at the state level by the RWQCB. The Corps JD was valid until May 18, 2010, at which time it expired. Under recent drought conditions, the Corps has had a policy of simply re-confirming old JDs rather than accepting new wetland mapping for sites that did have prior JDs. It can be assumed that this site's JD would be re-confirmed by the Corps if requested.

While there would be some standard mitigation requirements for any significant impacts to any of the onsite wetlands (if not by the Corps, then certainly by the RWQCB), it should be relatively straightforward to obtain fill authorization for any amount of onsite wetland fill. Agencies always tend to prefer avoidance as the first means of reducing impacts to wetlands, but any wetland(s) that cannot easily be avoided here should be eligible for the Corps' "Nationwide" (fill) permit program (NWP) for minor impacts less than 0.5 acre. Authorization could be obtained using a strong argument against avoidance of certain specific features, plus some onsite avoidance and adequate compensatory mitigation. No portion or feature on the site is highly significant for its direct resource values. All features here represent very minor (degraded, remnant, man-

made) wetland resources, and virtually any onsite layout that cannot avoid any/all/some of the wetlands would most likely be able to easily obtain the necessary permits and clearances to fill any/all onsite wetlands. In fact, it would be to the applicant's advantage to include at least a small area of fill in the ditch, as this feature was not deemed "Isolated" and would be regulated by the Corps. Without Corps regulation (as would be the case for the smaller 'isolated' wetland features), the applicant would need to complete "Section 10 Consultation" with the US Fish and Wildlife Service, a process that is much more cumbersome and expensive than the more typical "Section 7 Consultation" process that occurs if the Corps is involved.

While the Corps has deemed the six independent features "Isolated", the RWQCB would still regulate all onsite "wetlands", requiring adequate mitigation for all onsite acreage to be filled or otherwise adversely affected.

Mitigation for wetland impacts can be provided in any of several forms, ranging from onsite or offsite (in-kind) habitat replacement, mitigation bank credits, and/or various wetland habitat restoration and enhancement measures. Regional wetland credits are selling currently for roughly $200,000 per acre of wetland fill, but pricing can vary dramatically week to week. Onsite habitat replacement is feasible here, requiring at least equal (likely 1.5:1) acreage of similar seasonal wetland habitat to be created (in currently non-wetland ground).

Details (plant list, habitat mapping, field notes) of the botanical surveys are available upon request. Also, detailed potential impacts and alternative mitigations have been discussed briefly for this site, but expanded discussions of these issues are not included here. Additional baseline information and/or expanded discussions of the regulatory processes are available on request. I hope this report helps in planning for this site/project.

Sincerely,

Charles A. Patterson