Appendix C

Botanical Memo

Memorandum

10 May 2015

To	Willow Creek Community Service District		
Copy to	Patrick Kaspari, Senior Project Manager, GHD Inc.		
From	Cara Scott, Botanist, GHD Inc.	Tel	707.443.8326
Subject	Special-Status Plant Species Survey and Mapping for the Downtown Wastewater Development Project, Willow Creek, CA	Job no.	8410746.05

1 Introduction

On April 10 and May 8, 2015, special-status plant surveys and mapping were conducted for the proposed Downtown Wastewater Development Project in Willow Creek, Humboldt County, California .

This survey attempted to identify all vascular plants within the project boundary and to document the presence of special-status plants. The purpose of these surveys was to map presence of special-status plant species and to document the approximate number of individuals and percent cover for each occurrence observed. The results will be used to reduce impacts associated with project construction and to avoid special-status plant populations

1.1 Location

The unincorporated community of Willow Creek is located in Humboldt County approximately 45 miles northeast of Eureka, California as shown in Figure 1, Attachment 1. Willow Creek is situated along the Trinity River, which is part of the Klamath River Basin. The Willow Creek Community Services District (WCCSD or District) service area or district boundary is shown on Figure 2 and primarily consists of properties along State Highways 299 and 96. The Pacific Ocean is located approximately 26 miles to the west. The site corresponds to portions of Sections 32 and 33, Township 7 North, Range 5 East on the USGS 7.5 Minute Willow Creek and Salyer quadrangles. The coordinates for the Stockel property where the filtration system installation will occur are 40.942351 North and -123.625392 West.

1.2 Environmental Setting

The general area is characterized by high rainfall and summer fog supporting coastal vegetation including mixed coniferous forests, and occurs primarily within the Northwestern California Region (NW) and North Coast Subregion (NCo) (Baldwin et al. 2012). The undeveloped project area generally consists of Douglas fir-tan oak forests (*Pseudotsuga menziesii-Notholithocarpus densiflorus* Forest Alliance) and riparian seeps

consistent with the water parsley marsh (*Oenanthe sarmentosa* Herbaceous Alliance). The climate is typical of inland northern California with warm, dry summers, and cool, wet winters. Annual average precipitation is approximately 51 inches per year. The topography of the Sewered Area is a mildly sloping valley, generally sloping towards Highway 96. The highest point within the project area is near the intersection of Highway 299 and Roth Road (633 feet elevation), and the lowest point is near the intersection of Highway 96 and Mayfair Street (575 feet elevation).

1.3 Regulatory Setting

Special-status plant species include those listed as endangered, threatened, or as candidate species by U.S. Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act (ESA) or by the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA). Plant species on the California Native Plant Society's (CNPS) California Rare Plant Ranking (CRPR) lists 1A, 1B, 2A, and 2B are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code and CDFW has oversight of these special-status plant species as a trustee agency of CEQA. CRPR list 1A, 1B, 2A, and 2B species should be considered as part of the CEQA process as they meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California Fish and Game Code. CRPR List 3 and 4 plants do not have formal protection under CEQA. CDFW publishes and periodically updates lists of special plants which include for the most part the CNPS-listed species.

2 Methodology

2.1 Pre-Survey Investigations

Prior to field surveys, a scoping list of CRPR plant species and habitats with recorded occurrences in the project vicinity was compiled by consulting the *California Natural Diversity Database* (CNDDB) [CDFW 2015] and the CNPS *Inventory of Rare and Endangered Vascular Plants* (CNPS 2015) (Table 1). Relevant literature was also reviewed, including recovery plans, status reports, published articles, and previous regulatory review documents, when available. The Consortium of California Herbaria database was consulted for site specific species cross reference of rare plant occurrences documented in the project vicinity. Topographic maps and aerial photography were also consulted prior to and during the survey to determine potential habitats for target special-status plant species occurrence.

The scoping list includes special-status plants that occur in habitat similar to the project site with documented occurrences on the Willow Creek and Salyer USGS 7.5' quadrangle or adjacent quadrangles. The CDFW and the CNPS recommend the assessment area be a minimum of nine USGS quadrangles with the survey area located in the central quad. The assessment area is a general term used to describe the vicinity/setting of the project site while the project study boundary (PSB) is the actual limits surveyed. The scoping list also contains other taxa that may occur in the project area whose habitat is suitable if the project is within or near the known range of the species. The assessment area was defined as the USGS 7.5' minute quadrangles in which the project is located (Willow Creek and Salyer) and the nine surrounding quads (Hupa Mountain, Hoopa, Tish Tang Point, Trinity Mountain, Denny, Ironside Mountain, Hennessy Peak, Grouse Mountain, and Maple Creek). The CNPS Inventory was also queried for CRPR List 3 and 4 species known to occur within the county and these species were considered while conducting surveys, although those species lists are not presented here. The queries yielded 24 special-status plant species previously documented in the assessment area. Of these listed plant species, four were determined to have a moderate probability of

occurring within the PSB (Table 1). Within the assessment area, no sensitive plant communities are documented according to the CNDDB (CDFW 2015).

2.2 Field Survey Methods

Surveys to determine the presence of special-status plant species (listed as rare, threatened, endangered, or candidate for rare, threatened, or endangered species listing under the State or Federal Endangered Species Acts, CNPS, or species of local importance) were conducted at the appropriate blooming or active period for each species. Field visits were by Cara Scott (GHD Botanist). U.S. Fish & Wildlife Service (USFWS) and/or other resources agencies and local experts were contacted to verify that botanical surveys were being conducted at an appropriate time of year to allow for climatic micro-variations and bloom period for each species on a year-to-year basis. Additionally, reference site(s) were viewed if possible, where target plant species are known to occur in the project vicinity to verify the species was visible and blooming at the time of surveys. It was determined that one seasonally-appropriate focused botanical survey should be conducted in the spring (May or June). Suitable habitat for the late-blooming coast sidalcea (June-August) was not located during these surveys; thus, an additional late-season botanical survey was necessary.

The surveys were floristic in nature following *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* by the California Natural Resource Agency (CDFW 2009) and *General Rare Plant Survey Guidelines by the Endangered Species Recovery Program* (USFWS 2002). An intuitively controlled survey was conducted that sampled and identified potential habitat(s). Plants were identified to the lowest taxonomic level (genus or species) necessary for rare plant identification. Nomenclature follows *The Jepson Manual* (Baldwin et al 2012). Species surveys were conducted by walking the site for target species and recording extent, approximate number, and percent cover of special-status plant species observed. A total of 2.5 field person hours were spent surveying the PSB.

3 Results

On April 10 and May 8, 2015, the project study boundary was surveyed in an effort to identify presence and location of special-status plant species. CRPR plants were not observed during the protocol level survey. . Suitable habitat for the late-blooming coast sidalcea (June-August) was not located during these surveys; thus, an additional late-season botanical survey was not conducted.

4 Conclusion

The purpose of this survey was to identify and map California Rare Plant Rank (CRPR) plants within the project boundary. This survey did not identify any CRPR species.

5 References

Baldwin, B. D. 2012. *The Jepson Manual*, *Second Edition*. University of California Press. Berkeley, CA.

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California Department of Fish and Wildlife. 2015. California Natural Diversity Database (CNDDB). Willow Creek and Salyer USGS 7.5 Minute Quadrangles. California Department of Fish and Game (CDFG). Sacramento, California. Accessed April, 2015.

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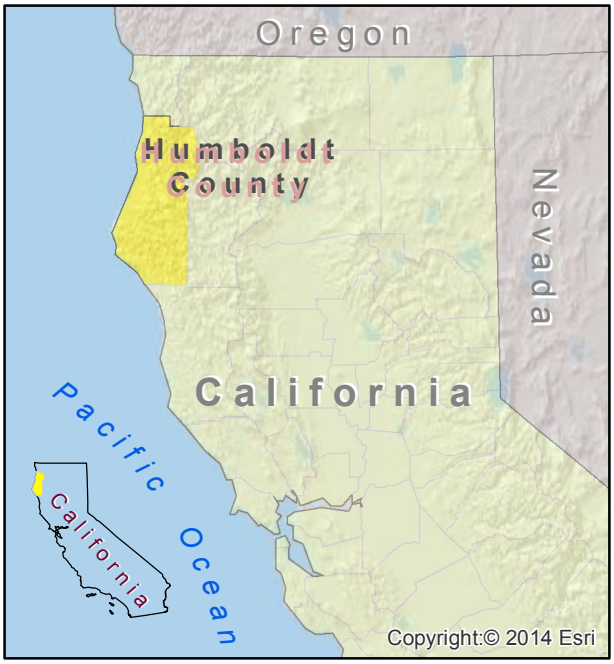
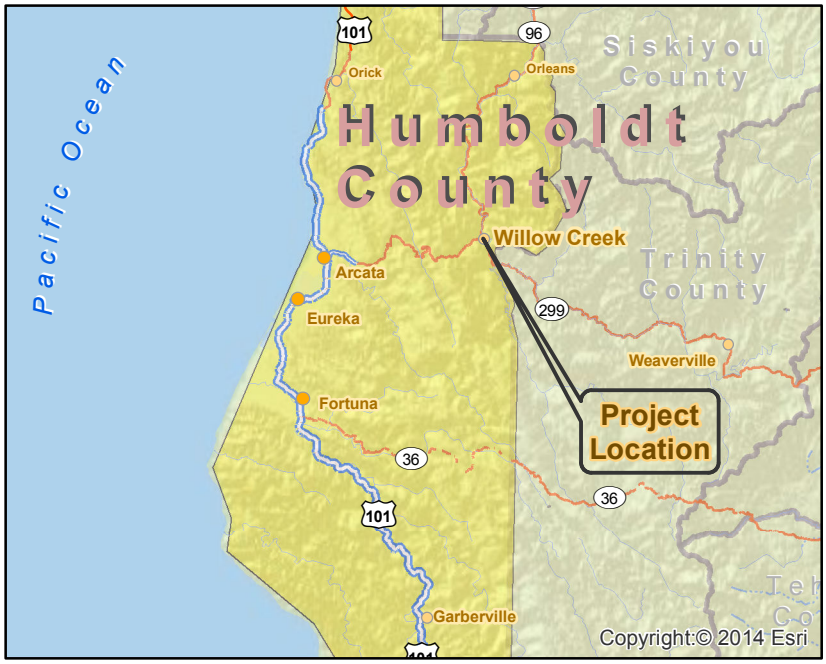
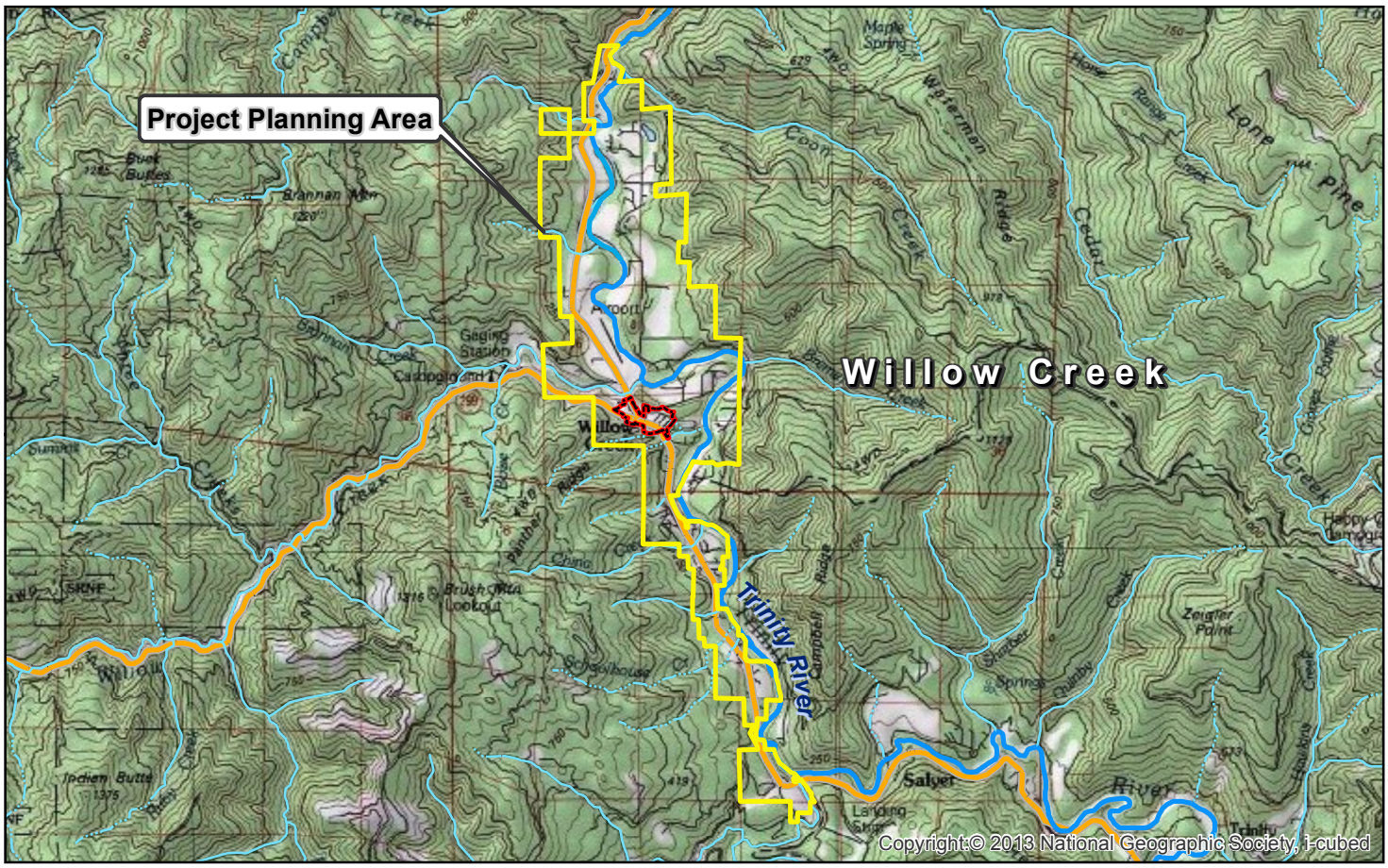
Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, CA.

USFWS, 2015. Listed/Proposed Threatened and Endangered Species for the Crescent City Quads. FWS Arcata Field Station, U. S. Fish and Wildlife Service (USFWS).Accessed April 2015.

6 Attachment A. Figures







U.S. Highway
California State Highway
Sewered Area
WCCSD Boundary
Perennial Stream
Intermittent Stream
Trinity River

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Map Projection: Mercator Auxiliary Sphere
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GHD

Willow Creek Community Services District
Downtown Wasterwater Development Project
Botanical Memo

Job Number 8410746.05
Revision A
Date 11 May 2015

Vicinity Map

Figure 1

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

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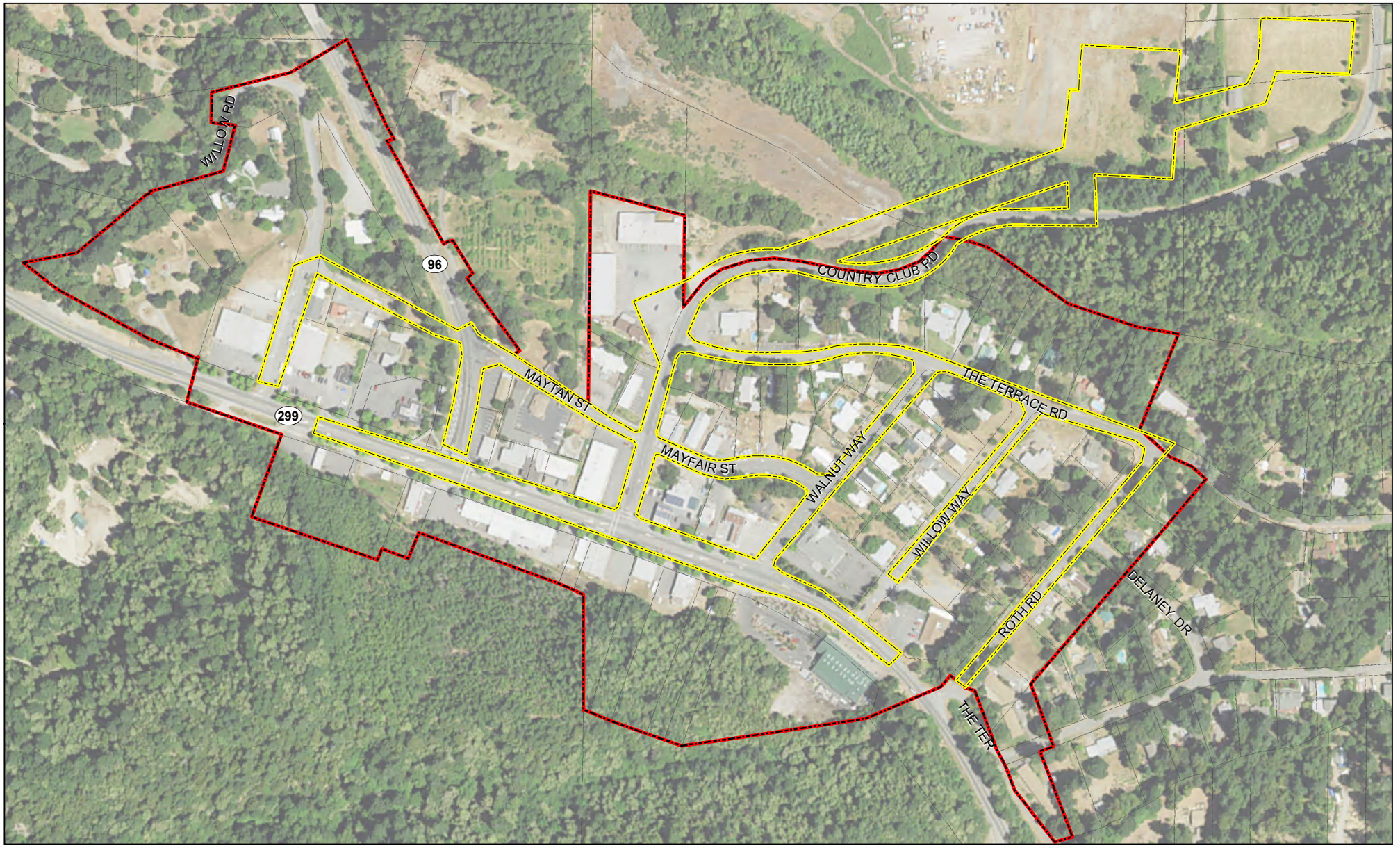
Data source: ESRI Street Map. Created by:gldavidson



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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Project Study Boundary

Sewered Area

Parcel Boundaries

Willow Creek Community Services District
Downtown Wasterwater Development Project
Botanical Memo

Job Number 8410746
Revision A
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Project Study Area

Figure 2

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180 Lonsdale Street Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com **W** www.ghd.com

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:gldavidson

Table 1. Special-status plant species with potential to occur in the project study boundary

Taxa/Common Name	Listing Status: Federal/ State/CRPR	Habitat and Elevation	Blooming Period	Potential Occurrence	Survey Results
Astragalus umbraticus/Bald Mountain milk-vetch	--/--/2B.3	Cismontane woodland, lower montane coniferous forest. Dry open oak and pine woodlands; sometimes on roadsides. 150-1250 m.	May-August	Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality.	**Not Present**
Bensoniella oregona/bensoniella	--/SR/1B.1	Bogs and fens, lower montane coniferous forest, meadows and seeps. Wet meadows and openings in forest. 915-1400 m.	May-July	Absent. Suitable habitat is not present in the study area.	**Not Present**
Botrypus virginianus/rattlesnake fern	--/--/2B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, riparian forest. 715-1355 m.	June-September	Absent. Suitable habitat is not present in the study area.	**Not Present**
Carex arcta/northern clustered sedge	--/--/2B.2	Bogs and fens, north coast coniferous forest. Mesic sites. 60-1400 m.	June-September	Absent. Suitable habitat is not present in the study area.	**Not Present**
Carex praticola/northern meadow sedge	--/--/2B.2	Meadows. Moist to wet meadows. 0-3200m.	May-July	Absent. Suitable habitat is not present in the study area.	**Not Present**
Cornus canadensis/bunchberry	--/--/2B.2	North coast coniferous forest, bogs and fens, meadows and seeps. 60-1920 m.	May-July	Absent. Suitable habitat is not present in the study area.	**Not Present**
Epilobium oreganum/Oregon fireweed	--/--/1B.2	Bogs and fens, lower montane coniferous forest, upper montane coniferous forest. In and near springs and bogs; at least sometimes on serpentine. 500-2240 m.	June-September	Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality.	**Not Present**

Taxa/Common Name	Listing Status: Federal/ State/CRPR	Habitat and Elevation	Blooming Period	Potential Occurrence	Survey Results
Erythranthe trinitiensis/pink-margined monkeyflower	--/--/1B.3	Lower montane coniferous forest, upper montane coniferous forest, cismontane woodland, meadows and seeps. Often on serpentine and roadsides. 400-2285 m.	Jun-Jul	Absent. Suitable habitat is not present in the study area.	**Not Present**
Erythronium oregonum/giant fawn lily	--/--/2B.2	Cismontane woodland, meadows and seeps. Openings. Sometimes on serpentine; rocky sites. 100-1150 m.	March-June	Absent. Suitable habitat is not present in the study area.	**Not Present**
Erythronium revolutum/coast fawn lily	--/--/2B.2	Bogs and fens, broad-leafed upland forest, North Coast coniferous forest. 0-1065m.	March-July	Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.	**Not Present**
Eucephalus vialis/wayside aster	--/--/1B.2	Lower montane coniferous forest, upper montane coniferous forest. Gravelly substrates. 910-1545 m.	June-September	Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality.	**Not Present**
Gilia capitata ssp. *pacifica*/Pacific gilia	--/--/1B.2	Coastal bluff scrub, chaparral, coastal prairie, valley and foothill grassland. 5-1330 m.	April-August	Absent. Suitable habitat is not present in the study area.	**Not Present**
Glyceria grandis/American manna grass	--/--/2B.3	Bogs and fens, meadows and seeps, marshes and swamps. Wet meadows, ditches, streams, and ponds in valleys and lower elevations in the mountains. 15-1980 m.	June-August	Moderate Potential. Some of the habitat components meeting the speices requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.	**Not Present**

Taxa/Common Name	Listing Status: Federal/ State/CRPR	Habitat and Elevation	Blooming Period	Potential Occurrence	Survey Results
Iliamna latibracteata/California globe mallow	--/--/1B.2	North Coast coniferous forest, chaparral, lower montane coniferous forest, riparian scrub (streambanks). Seepage areas in silty clay loam. 60-2000 m.	June-August	Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality.	**Not Present**
Kopsiopsis hookeri/small groundcone	--/--/2B.3	North Coast coniferous forest. Open woods, shrubby places, generally on *Gaultheria shallon*. 90-885m.	April-August	Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.	**Not Present**
Microseris borealis/northern microseris	--/--/2B.1	Bogs and fens, meadows and seeps, lower montane coniferous forest. 1000-2000 m.	June-September	Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality.	**Not Present**
Montia howellii/Howell's montia	--/--/2B.2	Meadows, north coast coniferous forest, vernal pools. Vernally wet sites; often on compacted soil. 0-835 m.	March-May	Absent. Suitable habitat is not present in the study area.	**Not Present**
Piperia candida/white-flowered rein orchid	--/--/1B.2	North coast coniferous forest, lower montane coniferous forest, broad-leafed upland forest. Coast ranges from Santa Cruz County north; on serpentine. Forest duff, mossy banks, rock outcrops & muskeg. 0-1200m.	May-September	Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.	**Not Present**
Ramalina thrausta/angel's hair lichen	--/--/2B.1	North coast coniferous forest. On dead twigs and other lichens. 75-430 m.	Fruticose lichen epiphytic. Not applicable.	Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.	**Not Present**

Taxa/Common Name	Listing Status: Federal/ State/CRPR	Habitat and Elevation	Blooming Period	Potential Occurrence	Survey Results
Rosa gymnocarpa var. *serpentina*/Gasquet rose	--/--/1B.3	Chaparral, cismontane woodland. Serpentinite. Often on roadsides, sometime on ridges, streambanks, and in openings. 400-1500 m.	April-June	Absent. Suitable habitat is not present in the study area.	**Not Present**
Sanguisorba officinalis/great burnet	--/--/2B.2	Bogs & fens, meadows & seeps, broad-leafed upland forest, marshes & swamps, north coast coniferous forest, riparian forest. Rocky serpentine seepage areas and along stream borders. 60-1400 m.	July-October	Absent. Suitable habitat is not present in the study area.	**Not Present**
Sidalcea malviflora ssp. *patula*/Siskiyou checkerbloom	--/--/1B.2	Coastal prairie, broad-leafed upland forest. Open coastal forest. 15-65m.	May-August	Absent. Suitable habitat is not present in the study area.	**Not Present**
Sidalcea oregana ssp. *eximia*/coast sidalcea	--/--/1B.2	Meadows and seeps, North Coast coniferous forest, lower montane coniferous forest. Nears meadows, in gravelly soil. 5-1340 m.	June-August	Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.	**Not Present**
Thermopsis robusta/robust false lupine	--/--/1B.2	North Coast coniferous forest, broad-leafed upland forest. Ridgetops; sometimes on serpentine. 150-1500 m.	May-July	Absent. Suitable habitat is not present in the study area.	**Not Present**

Table 2. Species list of plants within the potential project boundary

Taxa	Common Name
Trees:	
Acer macrophyllum	big leaf maple
Alnus rubra	red alder
Arbutus menziesii	madrone
Notholithocarpus densiflorus var. *densiflorus*	tan oak
Pinus ponderosa	ponderosa pine
Platanus racemosa	western sycamore
Populus trichocarpa	black cottonwood
Prunus (cultivar)	plum
Pseudotsuga menziesii	Douglas fir
Quercus chrysolepis	canyon live oak
Quercus garryana var. *garryana*	Oregon white oak
Quercus kelloggii	black oak
Shrubs:	
Baccharis pilularis ssp. *consanguinea*	coyote brush
Ceanothus integerrimus	deer brush
Salix lasiolepis	arroyo willow
Herbs:	
Acmispon americanus	deervetch
Agrostis stolonifera	creeping bent
Aira caryophyllea	silver hair grass
Allium triquetrum	wild onion
Avena barbata	slender wild oat
Bellis perennis	English daisy
Bromus carinatus var. *carinatus*	California brome
Bromus diandrus	ripgut grass
Bromus hordeaceus	soft chess
Castilleja attenuata	valley tassels
Centaurea solstitialis	yellow star thistle
Cerastium glomeratum	mouse-ear chickweed
Cichorium intybus	chicory
Claytonia perfoliata	miner's lettuce
Cynosurus echinatus	bristly dogtail grass
Dactylis glomerata	orchard grass
Daucus carota	Queen Anne's lace
Dryopteris expansa	wood fern

Taxa	Common Name
Equisetum telmateia var. *braunii*	giant horsetail
Erodium cicutarium	redstem filaree
Eschscholzia californica	California poppy
Festuca arundinacea	tall fescue
Festuca californica ssp. *californica*	California fescue
Festuca myuros	sixweek rattail fescue
Fragaria vesca	wood strawberry
Galium aparine	cleavers
Geranium dissectum	cranesbill
Geranium molle	cranesbill
Hedera helix	English ivy
Heuchera micrantha	alum root
Holcus lanatus	common velvet grass
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley
Hypochaeris radicata	rough cat's-ear
Juncus ensifolius	rush
Lathyrus latifolius	perenial sweet pea
Linum bienne	flax
Lonicera hispidula	honeysuckle
Lupinus affinis	lupine
Lupinus nanus	lupine
Lythrum hyssopifolium	loosestrife
Monardella sp.	monardella
Nasturtium officinale	watercress
Navarretia leucocephala ssp. *leucocephala*	navarretia
Pedicularis densiflora	warrior's plume
Plantago lanceolata	English plantain
Poa annua	annual bluegrass
Poa bulbosa	bulbous blue grass
Polypodium glycyrrhiza	licorice fern
Ranunculus occidentalis	western buttercup
Raphanus sativus	wild radish
Rubus armeniacus	Himalayan blackberry
Rumex acetosella	sheep sorrel
Rumex conglomeratus	dock
Sanicula crassicaulis	sanicula
Satureja douglasii	yerba buena
Scirpus microcarpus	small fruited bulrush

Taxa	Common Name
Silene gallica	catchfly
Silybum marianum	milk thistle
Sonchus asper ssp. *asper*	prickly sow thistle
Stachys chamissonis	hedge nettle
Taraxacum officinale	common dandelion
Toxicodendron diversilobum	poison oak
Trifolium dubium	clover
Trifolium hirtum	rose clover
Trifolium repens	white clover
Vicia hirsuta	vetch
Vicia sativa ssp. *sativa*	common vetch
Vitis californica	California wild grape
Zantedeschia x hybrid	calla lily