

July 8, 2022

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Mr. Miller,

The following summarizes the findings from a protocol-level late-season rare plant survey site visit conducted June 24, 2022 at the approximately 11.2-acre Oyster Cove Mixed Use Development Project located at 100 and 310 East D Street, (APN 007-700-003-000, 007-700-006-000 and 007-700-005-000) in the City of Petaluma, Sonoma County, California.

Introduction and Site Description

WRA, Inc. (WRA) conducted a biological resources assessment within the Study Area on January 11, and January 21, 2022 (WRA 2022). The purpose of the biological resources assessment was to assess the Study Area for: (1) the potential to support special-status plant and wildlife species; (2) the potential presence of sensitive biological communities such as wetlands or riparian habitats; and (3) the potential presence of other sensitive biological resources protected by local, state, and federal laws and regulations.

Based upon a review of resources conducted during the assessment, 99 special-status plant species have been documented in the vicinity of the Study Area. Of the 99 special-status plant species known from the region, only one was determined to have a moderate or high potential to occur based on habitat suitability and availability, namely: pappose tarplant (*Centromadia parryi* ssp. *parryi*), CNPS Rank 1B. Due to the timing of the original site visit, outside of the documented bloom period of the species, a follow-up protocol-level rare plant survey was recommended during the bloom period, listed as May to November (CNPS 2022).

On June 24, 2022, Scott Yarger, botanist with WRA, Inc. (WRA), visited the Study Area to perform a targeted rare plant survey for pappose tarplant. In addition to the rare plant survey, the site was assessed for potential to support other special-status plant species.

The Study Area consists of an approximately 11.2 acres of primarily developed/landscaped/disturbed land that does not contain suitable habitat for special-status plant species. However, the site contains approximately 3.75 acres of ruderal herbaceous grassland that could potentially support disturbance-tolerant rare plant species such as pappose tarplant. The approximately 11.2-acre Study Area is located in downtown Petaluma, Sonoma County, California. The Study Area parcels are situated between the Petaluma River to the south, the Sonoma-Marin Area Rapid Transit (SMART) tracks to the north, McNear Channel and McNear Peninsula to the east, and East D Street to the west. Public access parcels extend further southeast from the Study Area along McNear peninsula, designated as Steamer Landing Park. The Study Area is accessed from East D Street onto Copeland Street, which intersects the parcels and ends in a public parking lot along the shore of McNear Channel.

The overall topography of the Study Area is flat, with slopes of less than one percent, and elevations ranging from approximately 12 to 16 feet above sea level. According to the *Soil Survey of Sonoma County* (USDA 1972), the Study Area is underlain by two mapping units consisting of one soil type, Clear Lake clay, sandy substratum, drained, 0 to 2 percent slope; and tidal marsh.

The Study Area is located within the valley fog incursion zone of Sonoma County where summer temperatures are buffeted by fog and fog drip contributes to annual rainfall totals. Winter “tule” fog is common, and summer “coastal” fog emerges with increased interior temperatures. The average monthly maximum temperature of Petaluma (047965) is 70.4 degrees Fahrenheit, while the average monthly minimum temperature is 44.9 degrees Fahrenheit. Predominantly, precipitation falls as rainfall with an annual average of 24.9 inches. Precipitation-bearing weather systems are predominantly from the west and south with the majority of rain falls between November and March, with a combined average of 20.9 inches (USDA 2022a).

Rare Plant Survey

Background Literature Search

Prior to the rare plant survey, a database query of the California Natural Diversity Database (CNDDDB) and the California Native Plant Society (CNPS) Electronic Inventory of the Two Rock, Cotati, Glen Ellen, Point Reyes NE, Petaluma River, Inverness, San Geronimo, and Novato 7.5-minute U.S. Geological Survey (USGS) 7.5-minute quadrangles, was conducted to assess special-status plant species documented within the vicinity of the Study Area.

Field Survey Method

Following the background database search, a targeted rare plant survey was conducted within the Study Area on June 24, 2022. A documented reference site was visited for pappose tarplant the day prior to the survey to confirm target species phenology was appropriate for accurately identifying these species. Dozens of individuals of pappose tarplant were observed on June 23, 2022, at a documented reference site near Calistoga, approximately 24 miles north of the Study Area. Pappose tarplant was observed in full bloom at the time of the reference site visit, indicating that the species would be in bloom during the time of the survey.

Following the reference site visit, the entire Study Area was traversed on foot, and each observed plant species was identified to a taxonomic level sufficient to determine rarity. The surveys followed the protocol for rare plant surveys described by CNPS and the California Department of Fish and Wildlife (CDFW). The plant surveys were floristic in nature with all observed species recorded and included as a species list provided in Attachment A.

Site Assessment and Survey Results

No special-status plants including pappose tarplant were observed within the Study Area. Sixty-two species were observed within the Study Area, of which 18 are considered native to California, and the rest are considered non-native (Attachment A).

Of the 99 special-status plant species documented to occur in the vicinity of the Study Area, only pappose tarplant was determined to have a moderate potential to occur within the Study Area based on the initial biological resources assessment conducted by WRA. The Study Area contains potentially suitable ruderal herbaceous grassland habitat underlain which could support this species, and it is within close proximity to several documented occurrences of the species. The remaining 98 species documented from the greater vicinity are unlikely or have no potential to occur for one or more of the following:

- Edaphic (soil) conditions (e.g., volcanic tuff, serpentine) necessary to support the special-status plant species are not present in the Study Area;
- Topographic conditions (e.g., north-facing slope, montane) necessary to support the special-status plant species are not present in the Study Area;
- Unique pH conditions (e.g., alkali scalds, acidic bogs) necessary to support the special-status plant species are not present in the Study Area;
- Associated natural communities (e.g., chaparral, cismontane woodland) necessary to support the special-status plant species are not present in the Study Area;
- The Study Area is geographically isolated (e.g. below elevation, coastal environ) from the documented range of the special-status plant species;
- The historical landscape and/or habitat(s) of the Study Area were not suitable habitat prior to land/type conversion (e.g., reclaimed shoreline) to support the special-status plant species;
- Land use history and contemporary management (e.g., compacted soils, grading, intensive grazing) has degraded the localized habitat necessary to support the special-status plant species.

Summary and Recommendations

WRA, Inc. conducted a protocol-level rare plant survey in the Study Area on June 24, 2022. The survey coincided with the documented bloom period of the species determined to have a moderate potential to occur in the Study Area: pappose tarplant. The survey resulted in negative findings for special-status plant species within the Study Area. No further surveys or actions are recommended for rare plant species associated with the Project.

Should you have any questions or concerns, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Yarger", with a long horizontal flourish extending to the right.

Scott Yarger
Associate Biologist, Botanist
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Attachment A: List of Observed Plant Species

Literature Cited:

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Attachment A –
Plant Species Observed in the Study Area

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Attachment A– Plant species observed in Study Area, January 11 and 21, and June 24, 2022.

SCIENTIFIC NAME	COMMON NAME	ORIGIN	FORM	RARITY STATUS ¹	CAL-IPC STATUS ²	WETLAND STATUS ³ (AW 2016)
Plants						
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
<i>Baccharis pilularis</i>	Coyote brush	native	shrub	-	-	-
<i>Brassica nigra</i>	Black mustard	non-native (invasive)	annual herb	-	Moderate	-
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
<i>Calendula officinalis</i>	Pot marigold	non-native	annual herb	-	-	-
<i>Carduus pycnocephalus ssp. pycnocephalus</i>	Italian thistle	non-native (invasive)	annual herb	-	Moderate	-
<i>Cirsium occidentale</i>	Western thistle	native	perennial herb	-	-	-
<i>Conium maculatum</i>	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW
<i>Convolvulus arvensis</i>	Field bindweed	non-native	perennial herb, vine	-	-	-
<i>Cotula coronopifolia</i>	Brass buttons	non-native (invasive)	perennial herb	-	Limited	OBL
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Distichlis spicata</i>	Salt grass	native	perennial grass	-	-	FAC
<i>Dittrichia graveolens</i>	Stinkwort	non-native (invasive)	annual herb	-	Moderate	-
<i>Epilobium brachycarpum</i>	Willow herb	native	annual herb	-	-	FAC
<i>Erodium cicutarium</i>	Red stemmed filaree	non-native (invasive)	annual herb	-	Limited	-
<i>Erodium moschatum</i>	White stem filaree	non-native	annual herb	-	-	-
<i>Eschscholzia californica</i>	California poppy	native	annual, perennial herb	-	-	-

SCIENTIFIC NAME	COMMON NAME	ORIGIN	FORM	RARITY STATUS ¹	CAL-IPC STATUS ²	WETLAND STATUS ³ (AW 2016)
<i>Festuca brachyphylla</i> ssp. <i>breviculmis</i>	Short leaved fescue	native	perennial grass	-	-	-
<i>Foeniculum vulgare</i>	Fennel	non-native (invasive)	perennial herb	-	High	-
<i>Fraxinus</i> sp.	Ash	non-native	-	-	-	-
<i>Galium aparine</i>	Cleavers	native	annual herb	-	-	FACU
<i>Geranium dissectum</i>	Wild geranium	non-native (invasive)	annual herb	-	Limited	-
<i>Geranium molle</i>	Crane's bill geranium	non-native	annual, perennial herb	-	-	-
<i>Grindelia stricta</i>	Gumweed	native	perennial herb	-	-	FACW
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
<i>Hirschfeldia incana</i>	Short-podded mustard	non-native (invasive)	perennial herb	-	Moderate	-
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU
<i>Hypochaeris radicata</i>	Hairy cats ear	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Juglans hindsii</i>	Northern California black walnut	native	tree	-	-	FAC
<i>Jaumea carnosa</i>	Marsh jaumea	native	perennial herb	-	-	OBL
<i>Malacothrix sonchoides</i>	Sow thistle malacothrix	native	annual herb	-	-	-
<i>Malva parviflora</i>	Cheeseweed	non-native	annual herb	-	-	-
<i>Medicago polymorpha</i>	Bur clover	non-native (invasive)	annual herb	-	Limited	FACU
<i>Nasturtium officinale</i>	Watercress	native	perennial herb (aquatic)	-	-	OBL
<i>Oxalis pes-caprae</i>	Bermuda buttercup	non-native (invasive)	perennial herb	-	Moderate	-
<i>Phalaris aquatica</i>	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU

SCIENTIFIC NAME	COMMON NAME	ORIGIN	FORM	RARITY STATUS ¹	CAL-IPC STATUS ²	WETLAND STATUS ³ (AW 2016)
<i>Plantago coronopus</i>	Cut leaf plantain	non-native	annual herb	-	-	FAC
<i>Plantago lanceolata</i>	Ribwort	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Platanus xhispanica</i>	London plane tree	non-native	tree	-	-	-
<i>Poa annua</i>	Annual blue grass	non-native	annual grass	-	-	FAC
<i>Polygonum aviculare</i>	Prostrate knotweed	non-native	annual, perennial herb	-	-	FAC
<i>Populus fremontii ssp. fremontii</i>	Cottonwood	native	tree	-	-	FAC
<i>Quercus agrifolia</i>	Coast live oak	native	tree	-	-	-
<i>Quercus lobata</i>	Valley oak	native	tree	-	-	FACU
<i>Quercus suber</i>	Cork oak	non-native	tree	-	-	-
<i>Raphanus sativus</i>	Wild radish	non-native (invasive)	annual, biennial herb	-	Limited	-
<i>Rosa sp.</i>	Rose	non-native	-	-	-	-
<i>Rubus armeniacus</i>	Himalayan blackberry	non-native (invasive)	shrub	-	High	FAC
<i>Rubus ursinus</i>	California blackberry	native	vine, shrub	-	-	FAC
<i>Salicornia pacifica</i>	Pickleweed	native	perennial herb	-	-	OBL
<i>Salix babylonica</i>	Weeping willow	non-native	tree	-	-	FAC
<i>Salix laevigata</i>	Red willow	native	tree	-	-	FACW
<i>Senecio vulgaris</i>	Common groundsel	non-native	annual herb	-	-	FACU
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-
<i>Soliva sessilis</i>	South American soliva	non-native	annual herb	-	-	FACU
<i>Sonchus oleraceus</i>	Common sow thistle	non-native	annual herb	-	-	UPL
<i>Spartina sp.</i>	Cord grass	native	-	-	-	-
<i>Spergularia rubra</i>	Purple sand spurry	non-native	annual, perennial herb	-	-	FAC

SCIENTIFIC NAME	COMMON NAME	ORIGIN	FORM	RARITY STATUS ¹	CAL-IPC STATUS ²	WETLAND STATUS ³ (AW 2016)
<i>Taraxacum officinale</i>	Red seeded dandelion	non-native	perennial herb	-	-	FACU
<i>Vicia sativa</i>	Spring vetch	non-native	annual herb, vine	-	-	FACU
<i>Vicia villosa</i>	Hairy vetch	non-native	annual herb, vine	-	-	-

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012) and *A Flora of Sonoma County* (Best et al. 1996); nomenclature follows *The Jepson Flora Project* (eFlora 2020) unless otherwise noted. Sp.: “species”, intended to indicate that the observer was confident in the identity of the genus but uncertain which species Cf.: intended to indicate a species appeared to the observer to be specific, but was not identified based on diagnostic characters

¹Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2020)

FE: Federal Endangered
 FT: Federal Threatened
 SE: State Endangered
 ST: State Threatened
 SR: State Rare

Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
 Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
 Rank 2A: Plants presumed extirpated in California, but more common elsewhere
 Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
 Rank 3: Plants about which we need more information – a review list
 Rank 4: Plants of limited distribution – a watch list

²Invasive Status: California Invasive Plant Inventory (Cal-IPC 2020)

High: Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
 Moderate: Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited- moderate distribution ecologically
 Limited: Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
 Assessed: Assessed by Cal-IPC and determined to not be an existing current threat

³Wetland Status: National List of Plant Species that Occur in Wetlands, Arid West Region (Lichvar et al. 2016)

OBL: Almost always a hydrophyte, rarely in uplands
 FACW: Usually a hydrophyte, but occasionally found in uplands
 FAC: Commonly either a hydrophyte or non-hydrophyte
 FACU: Occasionally a hydrophyte, but usually found in uplands
 UPL: Rarely a hydrophyte, almost always in uplands
 NL: Rarely a hydrophyte, almost always in uplands
 NI: No information; not factored during wetland delineation