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ARBORIST REPORT

Date: 3/25/24
Submitted to: Comari, Inc.
Submitted by: L. Costello, Consulting Arborist, Oracle Oak LLC (WE-9026B)
Re: Dominican Project (APN 015-163-03)

Assignment

A housing development is being planned at the above referenced property in San Rafael, CA (Fig.1). I was asked to assess the stand of trees in the project areas. Specifically, the assignment was two-fold: 1) identify species, estimate canopy cover for each species, identify the distribution of species relative to project areas, and assess the general condition of trees; 2) locate, number, measure, and assess CA native species in project areas. This survey/assessment was limited to trees with trunk diameters (DBH) greater than 12 inches – as per City of San Rafael guidelines for significant trees (see Appendix 1).

Fig. 1. The subject parcel is located adjacent to Dominican University and is bordered by Deer Park Ave., Gold Hill Grade, and Margarita Dr. Approximately 85% of the site has tree cover – mostly Eucalyptus species.

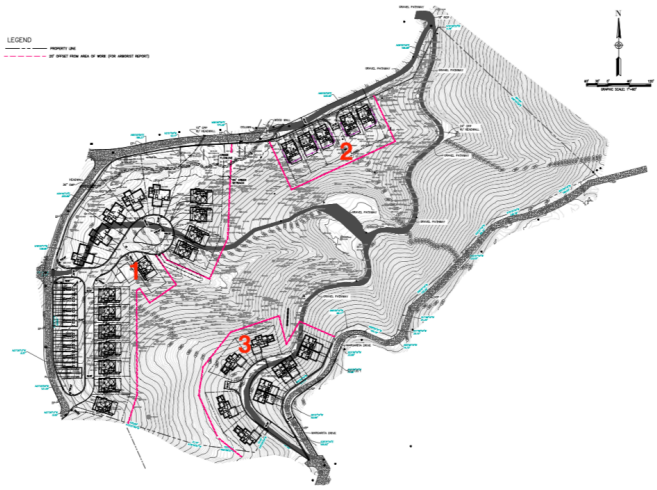

Fig. 2. The 3 project areas are delineated by red lines. Area 1 is bordered by Deer Park Ave. and Gold Hill Grade, while Area 2 is adjacent to Gold Hill Grade, and Area 3 lies to the west of Margarita Dr.

Findings

Site

The subject property (20.79 acres) is located adjacent to Dominican University in San Rafael, CA (Fig. 1). It is bordered by Deer Park Ave to the west, Gold Hill Grade to the north, and Margarita Dr. to the southeast. Generally, the terrain is hilly, with the lower half of the property being gently sloping, while the upper half is more severely sloped. Approximately 85% of the parcel has tree cover, with the remainder being open grassland and scrub. The project areas are delineated by red lines in Fig. 2. Areas 1 and 2 are located on the lower half of the parcel near Deer Park Ave and Gold Hill Grade, while Area 3 is located on the upper half near Margarita Dr. (Fig. 2).

Tree Cover

Principal species include *Eucalyptus spp*., blackwood acacia (*Acacia melanoxylon*), coast live oak (*Quercus agrifolia*), CA bay (*Umbellularia californica*), and Pacific madrone (*Arbutus menzesii*). In the project areas, Eucalyptus species are by far the dominant species, constituting approximately 90% of the canopy cover. Coast live oak and blackwood acacia make up approximately 4% each, while the remainder is CA bay. Only two madrone were found: one dead and the other in poor condition.

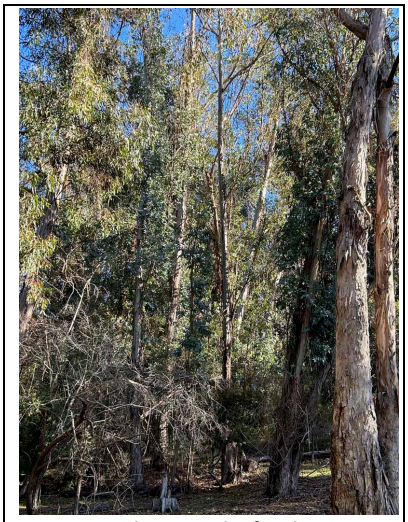

Fig. 3. Eucalypts are by far the dominant species in the parcel, constituting approximately 90% of the tree canopy cover.

Eucalyptus species

Various species of Eucalyptus occur on the parcel, including *E. globulus*, *E. polyanthemos*, and *E. sideroxylon*. It is unclear when they were planted, but some have grown to be very large – many 100+ feet in height and having trunk diameters up to 65 inches (measured at 4.5 feet above ground). Due to their height and planting density, they have severely limited the growth development of other species, particularly the oaks. In general, their health is assessed as being poor to good, with many in the moderate category. Notably, a number of Eucalypts have died or severely declined, likely due to recent drought conditions. The structural condition of most of the Eucalypts is assessed as being poor with multiple defects being evident: decay pockets and cavities in the trunks, exposed roots due to soil erosion, weak branch attachments, over-extended branches with large end weights, top-heavy crowns, and leaning trunks. As a result, many structural failures (branch breaks, trunk breaks, and uprootings) have

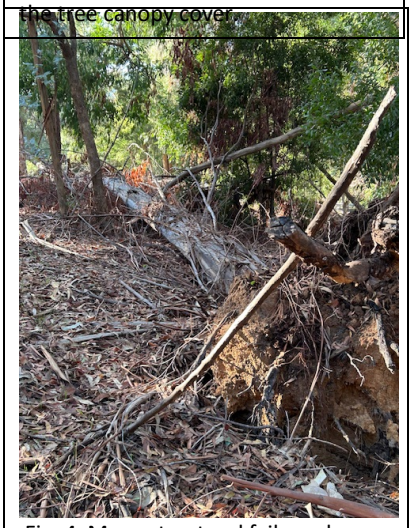

Fig. 4. Many structural failures have occurred in the Eucalyptus stands. Here a Eucalypt uprooted during the storms of 2022-23.

occurred (Fig. 4). Collectively, the stand is assessed as being unstable and future structural failures are probable. In addition to health and structural issues, the Eucalypts are viewed as being a fire hazard due to their size, stand density, combustibility, and proximity to power lines and homes. Due to their fire hazard potential, the San Rafael Fire Department classifies *E. globulus* as "combustible vegetation" that should be removed within 100 feet of structures (https://www.cityofsanrafael.org/protecting-your-home-from-wildfire/).

Coast Live Oak

A relatively small percentage of the parcel canopy cover (~4%) is made up of coast live oaks (Fig. 5). Historically, the hills and valleys in this area were largely oak woodland, composed of coast live oak, CA bay, Pacific madrone, and Douglas fir, with associated understory plants (e.g., toyon). After the Eucalypts were planted, it is most likely that the coast live oaks were shaded out by the larger-crowned Eucalyptus species. The remaining coast live oaks are located largely on the edges of Eucalyptus stands, where they have reasonably good light exposure (Figs. 3&5). The health of these oaks is assessed as being moderate to good, while their structure is assessed as moderate (largely due to their multi-stem architecture). A small number of coast live oaks (~ 8) are located in project area 1 (Fig. 6), while none were located in Project Areas 2 and 3. It is expected that removing Eucalypts adjacent to coast live oaks (in the project area and elsewhere in the parcel) will result in a strong and positive growth response (i.e., of the oaks).

Fig. 5. Coast live oak represents less than 4% of the canopy cover at the site. The stand here occurs at the edge of a Eucalyptus stand and near a grassy opening.

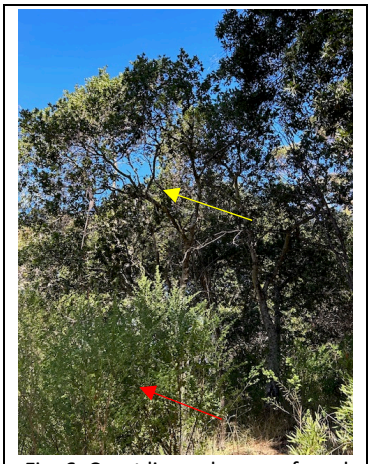

Fig. 6. Coast live oaks were found only in Project Area 1 (yellow arrow). Most were suppressed by adjacent Eucalypts, with additional competition for water resources from Scotch broom (red arrow), an invasive species.

CA Bay

Prior to the introduction of Eucalypts, CA bay likely occurred in substantial numbers in the subject area. Now, very few CA bay are found – and most are very small (Fig. 7). Similar to coast live oak, many of the CA bay likely were suppressed by Eucalypts. Approximately 3 CA bay were located in Project Area 1, while none were found in areas 2 and 3.

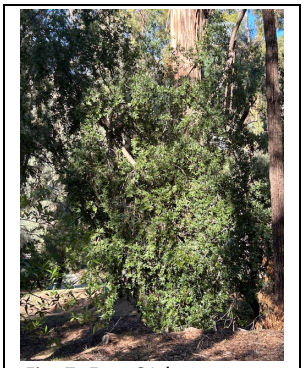

Fig. 7. Few CA bay were found in the Project Area 1, while none were evident in Areas 2 and 3.

Blackwood Acacia

Occurring in similar numbers as coast live oak, blackwood acacia was found scattered through Project Area 1, with fewer in area 2, and very few in Area 3 (Fig. 8). Being an invasive species, blackwood acacia may either have been planted (along with Eucalypts) or they grew as volunteers from seeds that were introduced into the area. In general, the blackwood acacias are in moderately good health, while their structure is assessed as being poor, with multiple stem architecture, weak branch attachments, and top-heavy crowns.

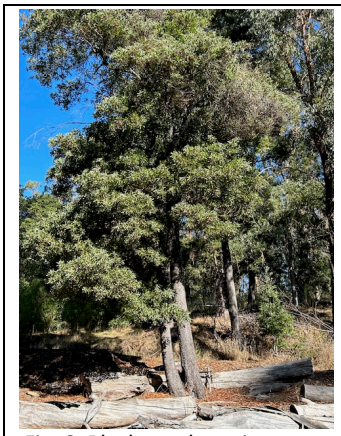

Fig. 8. Blackwood acacia were largely located in Project Areas 1 and 2, while very few were in Area 3. Being an invasive tree, blackwood acacia may have become established by seed.

Assessment of CA Native Trees in Project Areas

On Feb. 28, 2024, I conducted survey of all CA native trees greater than 12 inches in diameter (DBH) within the project areas (i.e., significant trees as per City of San Rafael). Distances from roadways to rear boundaries of project areas were derived from site map scales. Five measurements were taken (A-F) and marking flags were placed at the rear boundaries (Fig 9).

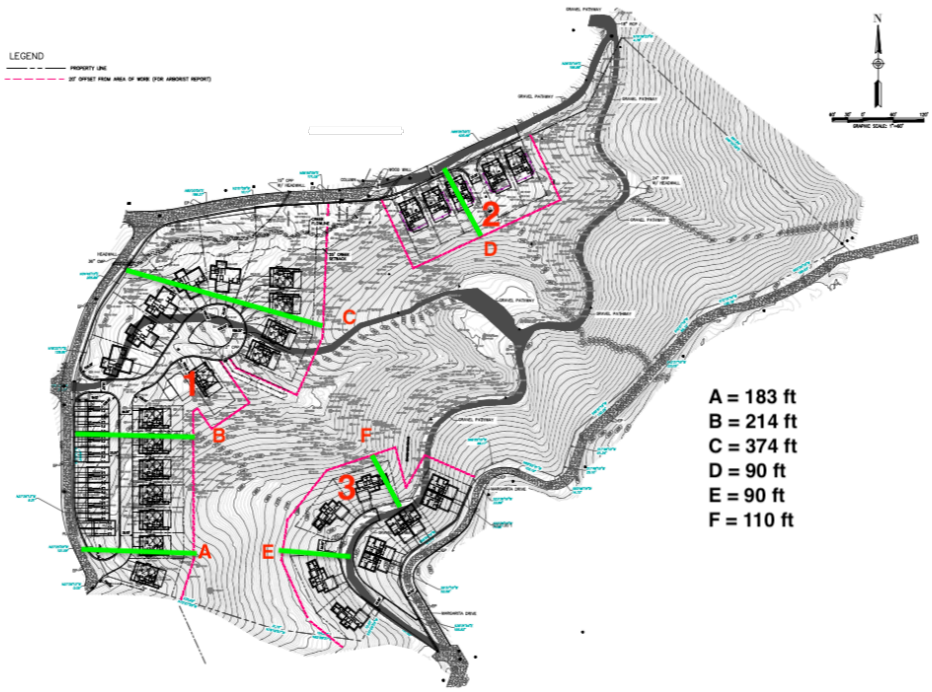

Fig. 9. Locations of measurements of project areas (green lines, A - F) and distances (ft) from roadways to rear of project areas.

A numbered aluminum tag was attached to each tree – and species was noted. Trunk diameter measurements were taken with a D-tape (diameter tape) and height was estimated. Tree condition was rated as good (G), moderate (M), fair (F), or poor (P). Specific comments were noted for each tree (see Table 1).

Table 1. Description and assessment of CA native trees within project areas (significant trees). Nonnative trees and trees with DBH (diameter at 4.5 feet from ground level) less than 12 inches were not included. Height was estimated. CLO = coast live oak (*Quercus agrifolia*). Condition ratings of good (G), moderate (M), fair (F), and poor (P). A numbered aluminum tag was attached to each tree, starting with #20. See Fig. 12 for location of trees.

Tree No.	Tree tag no.	Species	DBH (inches)	Height (feet)	Condition (G,M,F,P)	Comments
1	20	CLO	17.8	30	M	One-sided, leans to southeast
2	21	CLO	11.3, 8.5	25	F	Codominant stems, shaded, leans to south
3	22	CLO	11.5	30	F	Small crown
4	23	CLO	12.2	25	M	Leans to southwest
5	24	CLO	12, 8.5	30	F	Two stems, thin crown, leans to east
6	25	CLO	16.1	30	F	Small and thin crown, leans to east
7	26	CLO	12.5	30	M	Top heavy, small crown, leans to east
8	27	CLO	11.7	30	F	Top heavy, shaded, bark crack at base of trunk (~ 2 feet in length)
9	28	CLO	13.8	25	G	Good form, on steep slope
10	29	CLO	13.5	25	G	Next to bay and some shading, decent form
11	30	CLO	17.7	20	G	Codominant stems, steep slope, some shading from adjacent trees

A cluster of coast live oaks (#1-8) were found on a slope in the southwest section of project area #1 (Fig. 10), while trees #9-11 were found in project area #3 approximately 21 feet downslope from Margarita Dr. (Fig. 11).

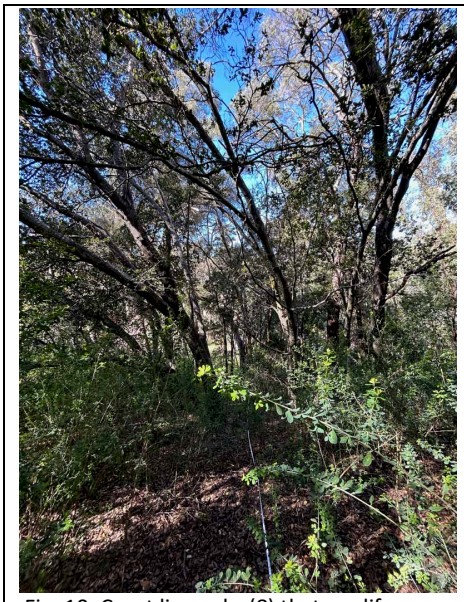

Fig. 10. Coast live oaks (8) that qualify as significant trees were located in the southwest section of project area #1.

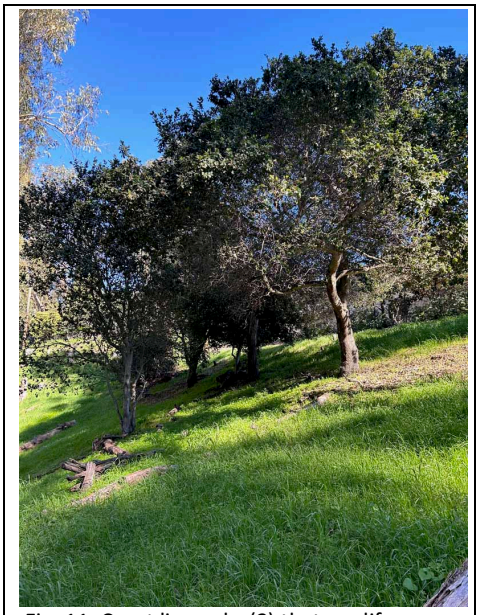

Fig. 11. Coast live oaks (3) that qualify as significant trees were located downslope from Margarita Dr in project area #3.

Coast live oaks that qualify as significant trees were located in project areas 1 and 3 (Figs. 12, 13,).

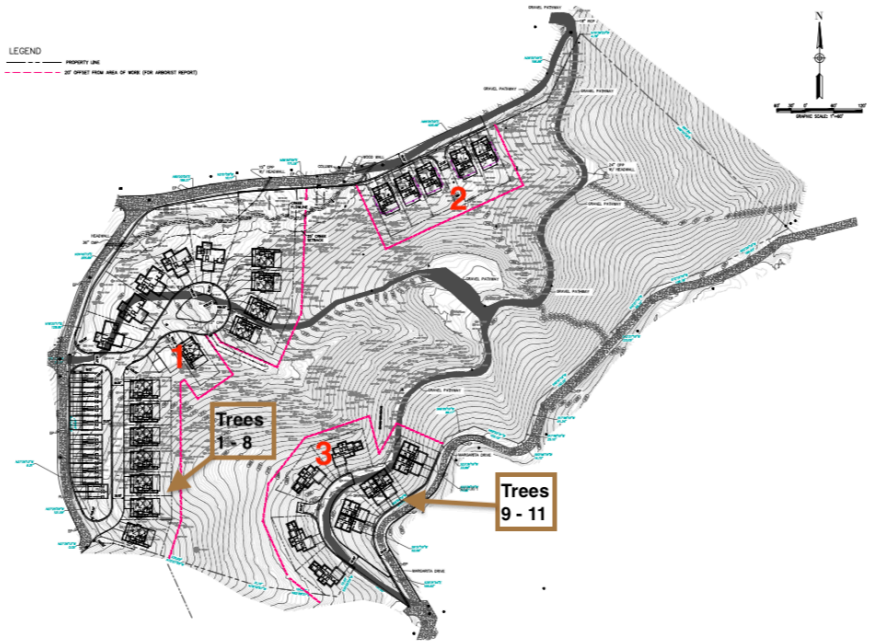

Fig. 12. Locations of significant trees in project areas 1 and 3. No significant trees were found in project area 2. A numbered aluminum tag was attached to each significant tree.

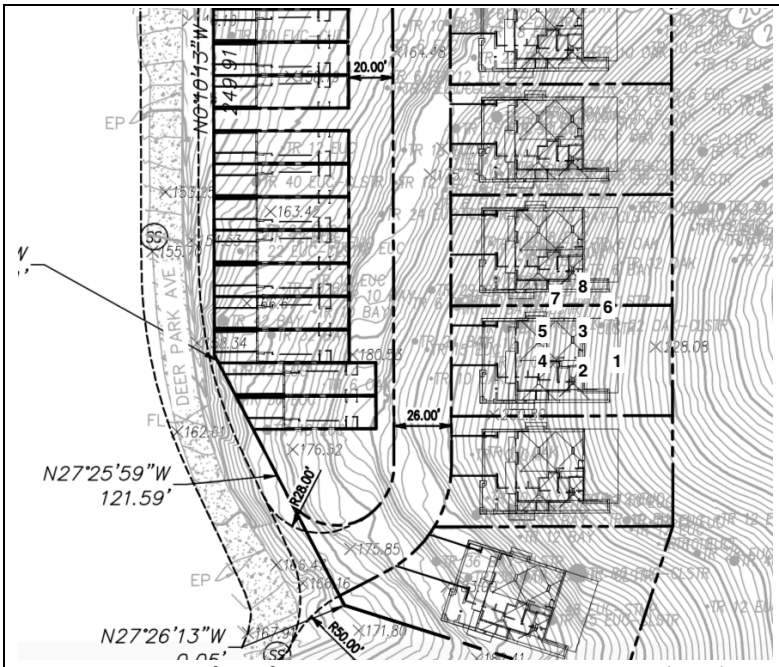

Fig. 13. Locations of significant trees #1-8 in project area 1. A numbered aluminum tag was attached to each significant tree.

Replacement Tree Recommendations
It is recommended that the following oak species be considered as replacement species in project areas: coast live oak (*Q. agrifolia*), island oak (*Q. tomentella*), and Oregon white oak (*Q. garryana*).

Submitted by:

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ISA Tree Risk Assessment Qualification
Member, American Society of
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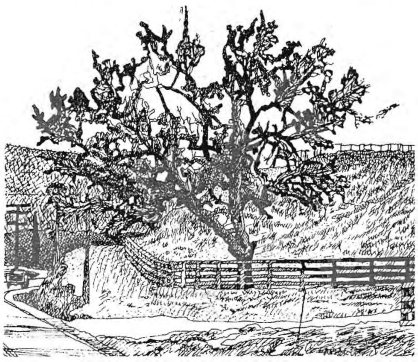
Appendix 1. City of San Rafael guidelines for significant trees

IV.A2. Preservation of Significant Trees

Significant Trees are important aesthetic and ecological resources that contribute to San Rafael's distinctive character.



1. Definitions

- "Significant Tree" shall mean any tree which is in good health and form and is more than 12 inches in diameter as measured 4 feet-6 inches above the root crown.

  Any tree of the Quercus (OAK) genus which is in good health and form and is more than 6 inches in diameter as measured 4 feet-6 inches above the root crown is considered a "significant tree."

2. Guidelines

- Site development plans should demonstrate that a diligent effort has been made to retain as many significant trees as possible.

29

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