

MACNAIR  
&  
ASSOCIATES  
CONSULTING ARBORISTS AND HORTICULTURISTS



November 1, 2022

David Wood  
Kortum Ranch Partners  
17 Corporate Plaza, Ste 200  
Newport Beach, CA 92660

RE: Kortum Canyon Arborist Report

Dear Mr. Wood:

According to your request, I have evaluated trees impacted by the proposed road improvements on the Kortum Canyon project site in Calistoga, CA. This evaluation identifies the trees within the roadway grading limits and assesses their health and structural condition. Also provided is an overview of general tree health on the project site.

### Report Summary

The project site is subdivided into 22 individual lots, as shown on the Kortum Ranch Overall Site Plan dated April 26, 2022, prepared by Adobe Associates. The project was a previous residential site with the original buildings now demolished and cleared. The site plan shows the proposed roadway that generally aligns with the original driveways.

Tree vegetation on the site is a mixed evergreen/ hardwood zone consisting primarily of Douglas fir (*Pseudotsuga menziesii*), black oak (*Quercus kelloggii*), coast live oak (*Quercus agrifolia*), with occasional valley oak (*Quercus lobata*), white oak (*Quercus garryana*), madrone (*Arbutus menziesii*), Pacific big-leaf maple (*Acer macrophyllum*), and bay laurel (*Umbellularia californica*). There are also numerous coast redwoods (*Sequoia sempervirens*) on the site that appear to be introduced and not native to the site.

In three areas, the roadway requires widening for two turnouts and another area of slope grading that will impact 20 native trees, including one black oak, four coast live oaks, 14 Douglas fir, and one coast redwood cluster. The turnouts and slope grading locations are shown on the attached site plan and designated by GPS Waypoints 001, 002, and 003. Also provided is a Google Earth aerial showing the same GPS Waypoints. All twenty trees are currently designated for removal, although the coast redwood cluster at GPS Waypoint 003 may be retained if the driveway can be narrowed at this location.

The health of the trees requiring removal is directly related to the specific tree species. The five oaks are rated in moderate health, with three trees having marginal structural conditions. The coast redwood is also in moderate condition. The 14 Douglas firs are in poor to marginal health with poor suitability for preservation ratings due to insect attack. The recent drought (2011-

2016), and subsequent low rainfall years, have significantly affected the woodland health, with the Douglas fir significantly impacted by attacks from boring insects.

Douglas fir mortality on the site is high, with numerous dead, standing trees in the area. Most of the Douglas firs have both drought and insect infestation symptoms, including low vigor (annual shoot growth), low crown density, poor foliage color, and branch and twig dieback. The insect pests identified as causing the Douglas fir's mortality throughout Northern California are the flat-headed fir borer (*Melanophila drummondii*) and Douglas fir engraver beetle (*Scolytus unispinosus*). In my experience with other Douglas fir populations in Sonoma County, most of the Douglas firs on this site will likely decline over the next three to five years.

The oak and other hardwood species are generally in moderate health, with no areas of significant decline observed. Likewise, the coast redwoods appear in moderate condition, with only a limited number of trees exhibiting drought stress or crown dieback.

The individual tree data matrix is provided in Appendix A with the data, including trunk diameters, approximate crown size, health and structural ratings, tree observations, suitability for preservation ratings, protected/native tree status, and a summary of construction impact. Appendix B is a compilation of the impacted tree images and general site/tree images.

### **Individual Tree Evaluations**

The impacted trees have been assigned a number with their locations shown on the attached site plan. Additionally, the trees have been rated for health and condition. Following is a description of the various data used in the evaluations:

#### Botanical and Common Names:

The botanical name and common name are provided for each tree.

#### DBH and # of Trunks:

DBH refers to the approximate measurement of the trunk diameter at 4.5 feet above grade. This measurement is helpful to arborists providing quotations for tree maintenance work and evaluating tree growth over time.

The # of trunks notes single or multiple trunk trees. Trunks should occur at or below 54 inches above grade to be considered a multiple-trunk structure.

#### Height and Canopy Spread:

These fields are approximate visual measurements of the tree's height and canopy spread. Accuracy is within plus or minus 20% of the indicated measurement.

#### Health and Structural Ratings and Descriptions:

The following chart describes the health and structural rating system used in the evaluation. It is a rating of relative conditions such as vigor, the extent of decay, structure, and insect or

disease problems. Good and moderate ratings indicate limited structural problems, sufficient vigor, and an absence of significant pest or disease problems. Poor and marginal ratings indicate severe health or structural problems, especially if the tree is situated near structures or public areas. Trees rated as poor or marginal are often hazardous.

Rating Chart:

3	Moderate or better condition	Normal and correctable problems of structure or pests and diseases.
2	Marginal condition	Indicates serious problems with structure, decay, or significant insect or disease problems.
1	Poor condition	Indicates very poor health, vigor, or hazardous structural condition

Trees may be rated between two conditions, such as 1.5 or 2.5. This indicates the tree does not precisely meet the criteria for either of the two categories and allows the rating system to be used as a continuum.

The Comments/Observation section describes the health and structural rating basis. The specific pests, diseases, and structural defects observed are described and identified if possible.

This evaluation is of the above-ground structure only, and additional defects may exist at the root collar. Many larger mature and over-mature trees require a root collar examination to evaluate the primary structural roots and root collar for decay and disease.

Comment/Observations:

A summary description of the tree, including health and structural observations.

Suitability for Preservation:

An assessment of health and structural conditions as an indication of tolerance to construction impacts and as criteria for preservation.

**Rating Factors:**

Tree Health: Vigorous and healthy trees are better able to tolerate construction impacts, including root loss or injury,

Structural Condition: Preserved trees should be structurally sound or have defects that can be effectively abated in areas near structures or high-use areas.

Tree Age and Species: Older trees may have a reduced ability to tolerate construction impacts and adapt to changed site conditions. Additionally, individual tree species have varying tolerances to environmental impacts and site changes.

**Rating Scale:**

Moderate: Trees in good health and structural condition with high potential for longevity.

Marginal to Fair: Trees in fair health and/or with structural defects that may be abated with management procedures. Trees in this category generally require more intense management and monitoring and may have shorter life spans.

Poor: Trees in poor health and/or structural condition that cannot be effectively abated with treatment. Regardless of management, these trees have a high risk of decline or structural failure. Also included in this category are trees that are undesirable in a landscape setting or inappropriate for high-use areas.

Native and Protected Tree Status:

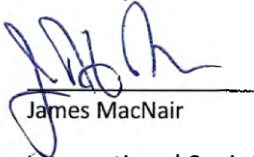
Status of the tree as defined by the tree ordinance based upon the species and trunk diameter.

Construction Impact:

The proposed project improvements' probable impact on the trees, including grading, drainage, and construction activities.

Please contact me with any questions or if additional information is required.

Sincerely,



James MacNair

International Society of Arboriculture Certified Arborist WC-0603A  
International Society of Arboriculture Qualified Tree Risk Assessor  
American Society of Consulting Arborists Qualified Plant Appraiser

## Appendix A

### Individual Tree Data Matrix

Kortum Canyon- Tree Evaluation and Construction Impact Assessment- Appendix A

Kortum Canyon

Tree Evaluation and Construction Impact Assessment

Health and Structural Rating Key: 3.0 = moderate or better condition

2.5 = marginal to moderate

2.0 = marginal condition

1.5 = poor to marginal condition

1.0 = poor condition

Suitability for Preservation Ratings:

**Good:** Trees in good health and structural condition with high potential for longevity.

**Moderate:** Trees in fair health and/or with structural defects that can be abated with treatment.

**Fair:** Trees in marginal health or structural condition that could possibly be mitigated or improved.

**Poor:** Trees in poor health and/or structural condition that probably cannot be effectively abated.

Tree # (GPS Waypoint)	Species	Trunk Diameter @ 54" (inches)	# of Trunks	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Native Tree	Protected Tree Status	Construction Impact Assessment
1 (001)	coast live oak ( <i>Quercus agrifolia</i> )	5"; 6" low	2	12'±	15'±	3.0	2.0	Low, two trunk structure. Pruned for overhead electrical line clearance. Moderate vigor and foliage density.	Fair to Moderate	Yes	Yes	Removal required for driveway turnout.
2 (001)	coast live oak	4"; 7"	2	12'±	15'±	3.0	2.0	Low, two trunk structure with included trunk attachment. Pruned for overhead electrical line clearance. Moderate vigor and foliage density.	Fair to Moderate	Yes	Yes	Removal required for driveway turnout.
3 (001)	Douglas fir ( <i>Pseudotsuga menziesii</i> )	20"	1	65'±	30'±	1.0	2.0	Mature fir in advanced decline due to flatheaded fir borer (FFB).	Poor	Yes	Yes	Removal required for driveway turnout.
4 (002)	Douglas fir	18"	1	65'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
5 (002)	Douglas fir	20"	1	65'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
6 (002)	Douglas fir	12"	1	45'-50'±	20'±	1.5	3.0	Tree has very low vigor and poor crown density. In decline.	Poor	Yes	Yes	Located within grading limits. Removal required.
7 (002)	Douglas fir	18"	1	65'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.

Kortum Canyon- Tree Evaluation and Construction Impact Assessment- Appendix A

Tree # (GPS Waypoint)	Species	Trunk Diameter @ 54" (inches)	# of Trunks	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Native Tree	Protected Tree Status	Construction Impact Assessment
8 (002)	Douglas fir	18"	1	65'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
9 (002)	coast live oak	4"	1	10'-12'±	8'-10'±	2.5	2.0	Young tree with moderately low vigor and leaning form due to shading.	Fair	Yes	Yes	Located within grading limits. Removal required.
10 (002)	Douglas fir	10"	1	45'-50'±	20'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
11 (002)	Douglas fir	15"	1	55'-60'±	25'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
12 (002)	black oak ( <i>Quercus kelloggii</i> )	10"	1	35'±	30	2.5	2.5	Semi-mature tree with leaning, asymmetrical form. Growing in shaded conditions with moderately low vigor and foliage density.	Fair to Moderate	Yes	Yes	Located within grading limits. Removal required.
13 (002)	coast live oak	9.5"	1	35'±	20'±	2.5	2.5	Semi-mature tree with high-branched structure. Shaded with moderately low vigor and foliage density.	Fair to Moderate	Yes	Yes	Located within grading limits. Removal required.
14 (002)	Douglas fir	18"	1	65'±	30'±	1.5	2.0	Tree has low vigor with thinning crown. Likely under attack by the FFB. Lower trunk canker.	Poor	Yes	Yes	Located within grading limits. Removal required.
15 (002)	Douglas fir	16"	1	65'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
16 (002)	Douglas fir	16"	1	65'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
17 (002)	Douglas fir	24"	1	65'-70'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB.	Poor	Yes	Yes	Located within grading limits. Removal required.
18 (002)	Douglas fir	36"	1	65'-70'±	30'±	2.0	3.0	Tree has low vigor with thinning crown. Likely under attack by the FFB. Located at edge of roadway.	Poor	Yes	Yes	Located within grading limits. Removal required.
19 (002)	Douglas fir	24"	1	45'-50'±	20'±	1.0	2.0	Leaning structure with top of trunk broken. Tree is in advanced decline.	Poor	Yes	Yes	Located within grading limits. Removal required.

Kortum Canyon- Tree Evaluation and Construction Impact Assessment- Appendix A

Tree # (GPS Waypoint)	Species	Trunk Diameter @ 54" (inches)	# of Trunks	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Native Tree	Protected Tree Status	Construction Impact Assessment
20 (003)	coast redwood ( <i>Sequoia sempervirens</i> )	15"; 17"; 18"; 32"±	4	70'±	35'±	3.0	2.5	Mature cluster with 18" and 32" trunks attached. Possible old trunk wound. Moderate vigor and foliage density. Located in grading limits.	Moderate	Yes	Yes	Located within grading limits. Removal required. May possibly be retained depending on roadway width requirement.



## Appendix B

Site and Tree Images



Tree #1, a coast live oak located in future road turnout. Located below electrical distribution lines and subject to clearance pruning.



Tree #2, a coast live oak located in future road turnout. Located below electrical distribution lines and subject to clearance pruning.



Tree #3, a Douglas fir, is in decline from boring insect attack. The tree is likely located in grading limits for road turnout.



View of trees located in roadway realignment grading limits. Sixteen trees will require removal. The Douglas firs are in marginal health due to drought and boring insect attacks (flatheaded fir borer).



View to the south with the arrow indicating approximate roadway grading limits extending upslope and impacting 16 trees (3 oaks and 13 Douglas fir). (GPS waypoint 002.)



View from the north with the arrow indicating tree #9, a small coast live oak growing on the cut slope and within the grading limits. Also, the thinning crowns of the Douglas fir are evident.



The red arrows indicate the bowed form of tree #12, a black oak. The tree is near the edge of the proposed grading limits and may require removal.



Tree #13, a coast live oak likely located in the road grading limits.





The south end of the roadway grading limits the area with trees #14 through #19. Trees #18 and #19 are on the left (arrow). Significant areas of the invasive French broom are present.



Numerous Douglas firs are either dead or in decline in this area from the FFB.



Tree #20, a coast redwood, is located in the road grading limits (GPS waypoint 003). Depending on the required minimum road width for fire equipment, efforts will be made to retain the tree.



View to the northwest from the central portion of the property. The dead firs tend to be in clusters because of the method of infestation from FFB.



There are numerous dead firs on the north downslope side of the property. Many are on the neighboring property.



Larval galleries of the flatheaded fir borer (Kenwood, CA)



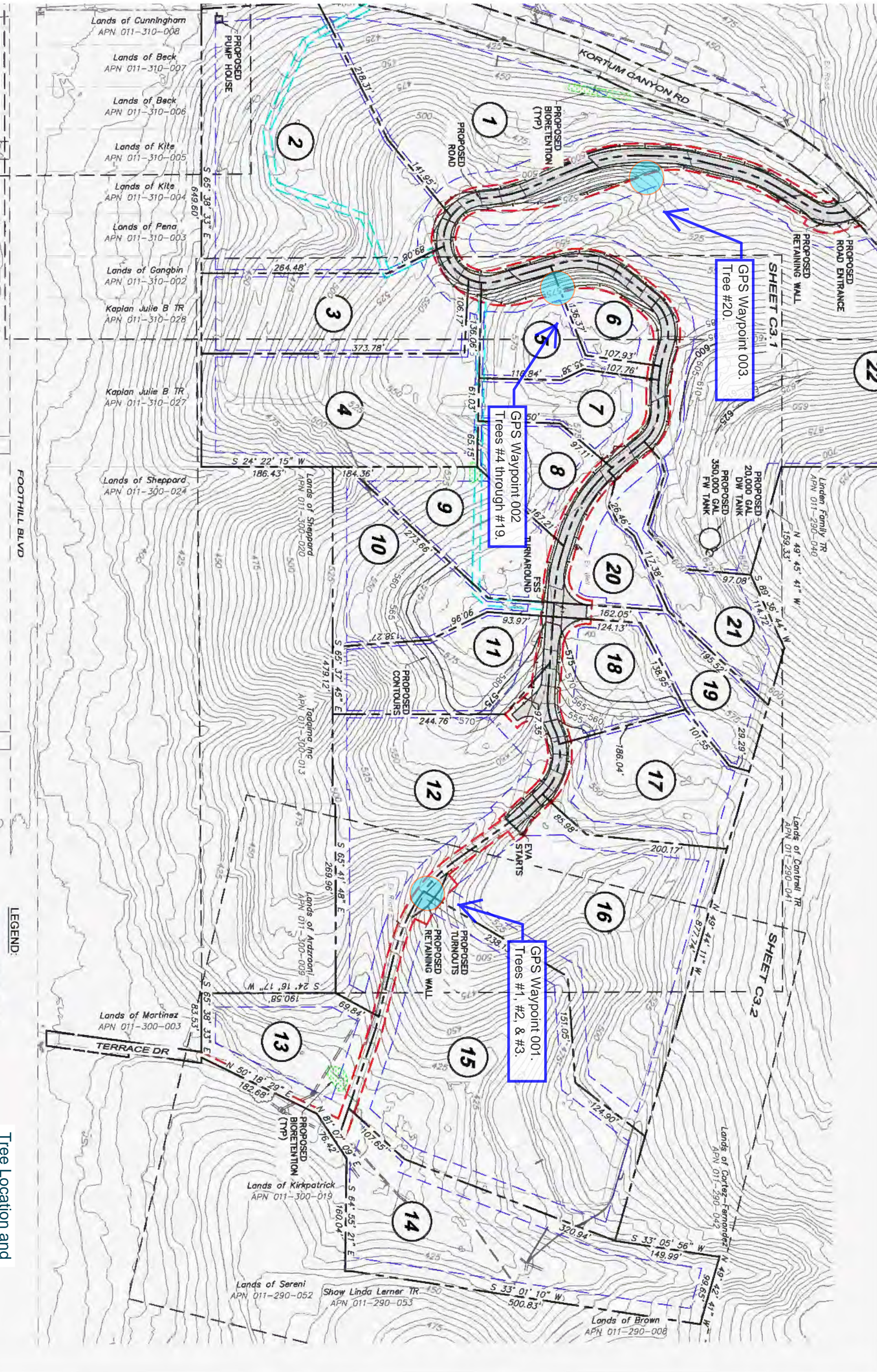
The various native oak species are generally in moderate condition despite the drought conditions.



The coast redwoods on the site are also generally in moderate health.

## Appendix C

Site Plan and Google Earth Aerial



**OVERALL SITE PLAN**



- LEGEND:**
- RIGHT OF WAY
  - UTILITY EASEMENT
  - BUILDING SETBACKS

Tree Location and Numbering Plan  
11-01-22  
Machair and Associates

SCALE: AS SHOWN	
Date:	April 26, 2022
Design by:	TLS
Drawn by:	RMS
Checked by:	TLS

**KORTUM RANCH  
OVERALL SITE PLAN**

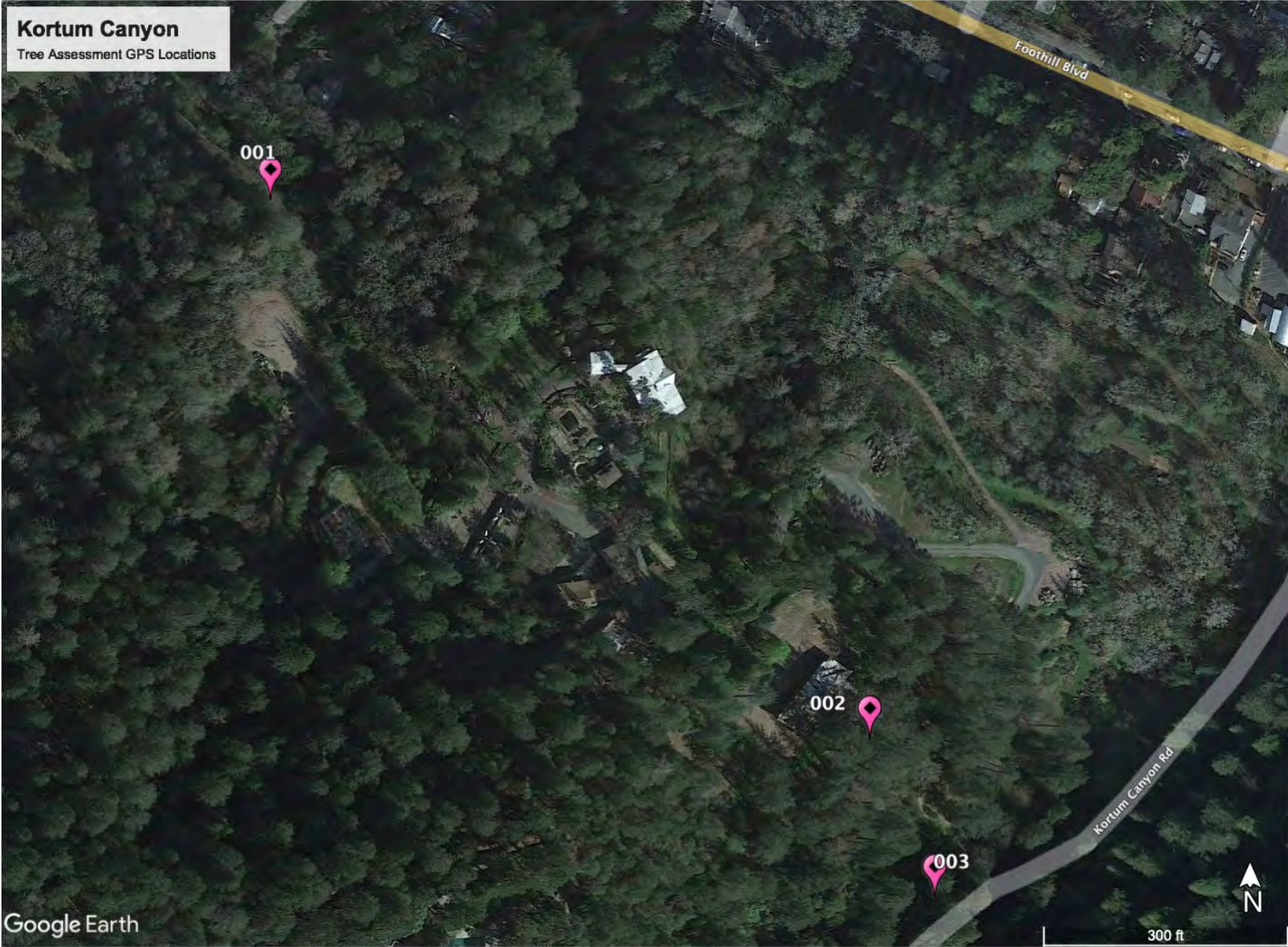
500 Kortum Canyon Road  
Calistoga, California  
APN 011-290-007, 038, 039 & 011-310-023



Timothy L. Schram, RCE 67890  
My license expires 6/30/2023

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Aerial showing roadway tree impact areas.