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Redwood Market Arborist Report

Windsor, California

April 14, 2021

PREFACE

This arborist report is an update to a previous report submitted in April 2018 and provided an evaluation of trees growing on and adjacent to the Redwood Market (Chevron Station) project site at 9120 and 9200 Old Redwood Highway in Windsor, CA. This updated report assesses potential construction tree impact and required mitigation calculations for removed protected status trees. Tree protection requirements and recommendations are provided within this report, and tree appraisal calculations for protected trees designated for preservation.

James MacNair, principal of MacNair and Associates, ISA Certified Arborist WE-0603A, ISA Tree Risk Assessment Qualified, and ASCA Tree and Plant Appraisal Qualified, prepared this evaluation and report.

Unless expressed otherwise, the information contained in this report covers only those items that were examined andreflects the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that the trees' problems or deficiencies in question may not arise in the future.

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Table of Contents

Redwood Market Arborist Report

Assignment 1
Site Description 1
Construction Impact and Mitigation Calculations 2
Appraisal Calculations (Monetary Value) 2
Individual Tree Evaluations 2
- Tree # 2
- Common and Botanical Name 2
- Trunk Diameter and # of Trunks 2
- Height and Crown Diameters 3
- Health and Structural Ratings and Descriptions 3
- Rating Chart 3
- Comments/Observations 3
- Construction Impact 3
- Suitability for Preservation 4
- Tree Protection Zone 4

Tree Management and Construction Protection Issues 4
Tree Protection Procedures 5
- Tree Protection Zone 5
- Construction Observation and Supervisions 5
- Tree Protection Fencing 5
- Demolition/Site Clearing 6
- Site Grading, Trenching, and Root Pruning 7
- Foundation and Wall Construction 7
- Site Drainage 7
- Pruning and Cabling 8

Post-Construction Recommendations 8

Appendix A- Tree Evaluation Data Matrix ..... Attached
Appendix B- Tree Mitigation Chart ..... Attached
Appendix C- Tree Images ..... Attached
Appendix D- Appraisal Calculation Worksheet ..... Attached

Assignment

This arborist report is an update to a previous report submitted in April 2018 and provided an evaluation of trees growing on and adjacent to the Redwood Market (Chevron Station) project site at 9120 and 9200 Old Redwood Highway in Windsor, CA. This updated report assesses potentialconstruction tree impact and required mitigation calculations for removed protected status trees. Tree protection requirements and recommendations are provided within this report and tree appraisal calculations for protected trees designated for preservation.

The project site was evaluated on March 28 and 30, 2018.The purpose of this evaluation is to:

- Identify the total number of trees greater than 6 inches in trunk diameter (at 4.5 feet above grade) present or near the proposed project limits;
- Assess the health and structural condition of the trees;
- Provide preliminary recommendations for construction protection procedures, including recommended Tree Protection Zones (TPZ);
- Calculate the required mitigation trees based upon estimated tree removals for the Redwood Market portion of the project.
- Calculate the trees' monetary value recommended for preservation using the Guide for Plant Appraisal 10th Edition (Current Edition).

Forty-nine (49) trees are evaluated as part of this report, with the tree's locations shown on the attached Tree Protection Zone Plan. The evaluative data for the trees is provided in Tree Data Matrix Appendix A.

Site Description:

The project site is a triangularly shaped property with the topography flat and adjacent to the Hwy 101 Caltrans right-of-way on the east side and a commercial warehouse to the north. The evaluated trees are located in the areas surrounding the Chevron gas station and in the parking lot and car wash areas. The current plans indicate that areas on the northwest, west, and east sides of the property will be Town of Windsor property for future public development.

The native trees growing on the site are valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*). These oaks range from young seedling trees to semi-mature in age and vary in health and structural condition. The numerous young oak seedlings form dense clusters on the northwest and north portions of the site. There is one mature valley oak located on the north property line adjacent to the commercial warehouse. The evaluated trees are the larger diameter trees with trunks close to or exceeding the six-inch trunk diameter threshold required for protected tree status.

The trees have not been maintained, with many having multiple trunk structures originating from sprouts from previously cut or mowed trees. Pit scale is attacking the valley oaks and affecting the overall health and vigor of the trees. The coast live oaks are generally in good health and vigor.

Construction Impact and Mitigation Calculations:

The proposed project is a retail site including a restaurant/market, retail building, gas station, and car wash. The preliminary grading and drainage plan indicate that most of the trees are located within the project construction and grading limits and require removal.

A total of 45 trees are designated for removal, with 17 trees having protected tree status. The tree mitigation calculations are provided in Appendix B. The mitigation requirements are ten 24-inch box and five 48-inch box trees. The landscape plan provides sufficient trees in 36 and 48-inch boxes so that there are no in-lieu fees required.

There are four protected trees identified as preserved with their respective tree protection zones as defined in Appendix A. All these trees appear to be located asufficient distance where tree protection fencing will be the primary requirement during the construction of the Redwood Market portion of the project. Certain trees near the future car wash will require pruning for clearance from the car wash.

Appraisal Calculations (Monetary Value)

Estimates of the monetary value of the trees designated for preservation have been prepared and are provided in Appendix D. The values established are intended as guide for value as defined in the Town of Windsor Tree Ordinance. The Guide for Plant Appraisal 10th Edition is used for the reproductive cost calculations.

Individual Tree Evaluations

Following is a description of the various datum used in the evaluations.

Tree #:

The trees have been assigned a number as indicated on the attached site plan excerpts.

Botanical and Common Names:

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

DBH and # of Trunks:

DBH refers to the measurement of the trunk diameter at breast height (54 inches above grade).This measurement is useful to arborists providing quotations for tree maintenance work and evaluating tree growth over time.

The # of trunks notes single or multiple trunk trees. Trunks must occur at or below 54 inches above grade for the tree to be considered having multiple trunks for measurement purposes.

Height and Crown Diameters:

These fields are approximate visual estimates of the tree's height and crown spread. Accuracy is within plus or minus 10% 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, fair, and moderate ratings indicate limited structural problems, sufficient vigor, and an absence of significant pest or disease problems. Poor and marginal ratings indicate serious health or structural problems, especially if the tree is situated near structures or public areas. Trees rated as poor or marginal are often hazardous. This rating system is required as part of the Town of Windsor Tree Evaluation Requirements.
Rating Chart:

Health Ratings		Structural Ratings	
5	Excellent health		
4	Good health	4	Good structure
3	Fair health	3	Moderate structure
2	Marginal health	2	Marginal structure
1	Poor health	1	Poor structure

Trees may be rated between two conditions, such as 2.5 or 3.5. 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 Health Description and Defect Description fields describe the basis for the health and structural rating. The specific pests, diseases, and structural defects observed are described andidentified if possible.

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

Observations:

This is a summary discussion of the health and structural ratings as well as identification of any significant pest or disease issues and structural defects or issues.

Construction Impact:

An assessment of the construction impact to the individual tree.

Suitability for Preservation:

Ratings 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 canbe effectively abated in areas near structures or high-use areas.

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

Tree Protection Zone (TPZ Radius) and Critical Root Zone (CRZ Radius):

Tree protection distance established by trunk diameter as opposed to distances established by canopy edge. Generally, one inch of trunk diameter will equal one foot of protected distance from the tree. A 30-inch trunk diameter will establish a 30-foot radius TPZ. Modifications to theTPZ may occur. Over-mature trees or trees in poor or marginal health may require larger protected distances.

The Critical Root Zone is the radial area around the trunk where all root impacts should be avoided or mitigated with specialized procedures. Typically, the critical root zone will be a radialdistance equal to three times (3X) the trunk diameter.

Tree Management and Construction Protection Issues:

Tree management goals for retained trees include the following:

1.) Pruning trees to improve structural form and prevent future defects.
2.) Establishing tree protection zones for clearance from construction zones. The recommended distances are based upon trunk diameters and conform to accepted industry standards for tree protection.
3.) All pruning work should be performed under the supervision of an ISA Certified Arborist (International Society of Arboriculture) and according to ANSI A300 Pruning Standards.
4.) Providing pest control and other cultural procedures to improve and maintain the health of the trees during and post-construction.

Construction and Design Guidelines for Protection of Trees

Development of the project infrastructure, including roads, utilities, drainage facilities, etc. will alter the natural terrain and affect existing trees growing close to the construction areas.

Impacts will primarily occur as a result of the site grading requirements and underground utility installations. The following procedures are recommended to maximize tree survivability.

1. Tree Protection Zone and Critical Root Zone

   1.1. All construction activity (grading, filling, paving, landscaping) will respect a Tree Protection Zone (TPZ) around trees to be protected. The TPZ will typically be a distance of a one-foot radial distance from the trunk for each one-inch of trunk diameter. Exceptions to this standard may occur depending upon the age, condition, and species tolerance of individual trees. The Critical Root Zone is the radial area around the trunk where all root impacts should be avoided or mitigated with specialized procedures. Typically, the critical root zone will be a radial distance equal to three times (3X) the trunk diameter.

2. Construction Observations and Supervision

   2.1. All arboricultural and related soil work should be performed under the observation of an International Society of Arboriculture (ISA) Certified Arborist (Supervising Arborist), or Client designated representative.

   2.2. All specified arboricultural work should be completed prior to site grading (root pruning, crown pruning, fencing, etc.)

   2.3. The contractor is required to meet with the Supervising Arborist or Client designated representative to review the tree protection requirements, including work procedures, access routes, and storage areas.

3. Tree Protection Fencing

   3.1. Fencing at a minimum of four feet in height and clearly marked to prevent inadvertent encroachment by heavy machinery should be installed either at the edge of the Tree Protection Zone (TPZ), the crown drip line (whichever is further from the trunk), or at the edge of the construction zone, if the construction zone protrudes into the TPZ. The Supervising Arborist, or Client designated representative, should approve the location of the fencing. All fencing should be in place prior to any site grading. Fences may not be relocated or removed without the written permission of the Supervising Arborist or Client designated representative.

   3.2. Bilingual (English/Spanish) signage with a contact phone number shall be attached to the fencing in multiple locations with the following language:

Tree Preservation Area
Entry Prohibited without Authorization
by…

   3.3. Install trunk protection measures for trees within 10 feet of construction activities, which as a minimum shall include the installation of ½ in. closed cell foam padding around the truck of each tree from soil grade to a height of 6 ft. above grade. 2” x 4” x 6’ wood planks shall be installed ontop of the padding and secured with metal straps in at least two locations. No fasteners or other invasive hardware shall be driven into the protected trees. (This may not be applicable)

3.4. Contractor should maintain the protection fencing and prohibit all access to fenced areas by construction personnel or equipment until all site work is completed.

3.5. All structures including construction trailers, equipment storage areas and any other construction traffic are prohibited within fenced areas. Burning or debris piles are prohibited within fenced areas. No materials, equipment, spoil, waste, or washout water should be deposited or stored within fenced areas. Fences may not be moved without written permission of the Supervising Arborist or Client designated representative.

3.6. If temporary access within a fenced area is determined to be necessary, then a six-inch layer of bark mulch or gravel should be placed in all areas requiring access. This requirement for mulching should apply to all areas within the fenced area and subject to access. If equipment access is required, then the mulch should be overlaid with metal plates of sufficient thickness to adequately distribute bearing load.

4. Demolition/Site Clearing

4.1. The following work must be accomplished before any demolition or site clearing activity occurs within 50 feet of protected trees.

4.2. The demolition contractor is required to meet with the project arborist or designated client representative at the site prior to beginning work to review all work procedures, access and haul routes, and tree protection measures.

4.3. The limits of all tree protection zones shall be staked in the field.

4.4. Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain must be removed by a qualified arborist and not by demolition or construction contractors. The qualified arborist shall remove the tree in a manner that causes no damage to the tree(s) and understory to remain.

4.5. Any brush clearing required within the tree protection zone shall be accomplished with hand-operated equipment.

4.6. Trees to be removed shall be felled so as to fall away from tree protection zones and to avoid pulling and breaking of roots of trees to remain. If roots are entwined, the consultant may require first severing the major woody root mass before extracting the trees. This may be accomplished by cutting through the roots by hand, with a vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root-pruning equipment. [Note: If possible, show areas where root cutting is required on the demolition plan.]

4.7. Trees to be removed from within the tree protection zone shall be removed by a qualified arborist. The trees shall be cut near ground level and the stump ground out.

4.8. All downed brush and trees shall be removed from the tree protection zone either by hand or with equipment sitting outside the tree protection zone. Extraction shall occur by lifting the material out, not by skidding it across the ground.

4.9. Brush shall be chipped and placed in the tree protection zone to a depth of 6 inches.

4.10. Structures and underground features to be removed within the tree protection zone shall use the smallest equipment possible and operate from outside the tree

protection zone. The consultant shall be on site during all operations within the tree protection zone to monitor demolition activity.

4.11. All trees shall be pruned in accordance with the provided Pruning Specifications.

4.12. A 6-foot chainlink fence with posts sunk into the ground shall be erected to enclose the tree protection zone

4.13. Any damage to trees due to demolition activities shall be reported to the consulting arborist within 6 hours so that remedial action can be taken. Timeliness is critical to tree health.

4.14. If temporary haul or access roads must pass over the root area of trees to be retained, a road bed of 6 inches of mulch or gravel shall be created to protect the soil. The road bed material shall be replenished as necessary to maintain a 6-inch depth.

5. Site Grading, Trenching, and Root Pruning

5.1. Keep site grading within designated construction zones. Grading cuts or trenching within the TPZ of a retained tree trunk requires special trenching procedures. Trenches should be dug manually with an air spade or with the use of a root cutting machine, rock cutter, or other approved root-pruning equipment. This root-pruning trench should be placed one foot inside the edge of the grading cut or trench edge. The depth of the trench should equal the depth of the grading cut to a maximum depth of 40 inches. All work that is expected to encounter roots must be monitored by the Supervising Arborist or Client designated representative.

5.2. A trench may be mechanically dug toward a tree until the edge of the TPZ is reached. From the edge of the TPZ, the special trenching procedures should apply.

5.3. Underground utilities, drain, and irrigation lines should be routed outside the TPZs. When lines must cross the TPZ, the lines should be bored or tunneled through the area at a depth approved by the supervising arborist. In these instances, a single shared utility conduit should be used to reduce impacts to trees.

5.4. Any roots one inch in diameter or larger requiring removal should be cut cleanly in sound tissue. The roots and surrounding soil should be moistened and covered with a thick mulch (4”) to prevent desiccation. No pruning seals or paints should be used on wounds. Cut and exposed roots should be protected from drying. A water absorbent material (i.e. burlap) should be secured at the top of the trench and draped over the exposed roots. This material should be kept moistened and the soil replaced as soon as practicable.

5.5. Porous pavements are recommended for use within the TPZ. Construction of the pavement sub-base should avoid grading cuts where possible.

6. Site Drainage

6.1. All grading shall be designed to provide positive drainage away from the base of the tree trunk, and not create ponding within the TPZ.

7. Pruning and Cabling

7.1. Any tree pruning, cabling, or other similar activity which may be proposed as part of site construction will be included on site plans and be reviewed by a qualified arborist or Client designated representative.

7.2. Pruning methods shall conform to the ANSI A 300-2001 Pruning Standard Practices and performed by an ISA Certified Arborist or Certified Tree Worker. Cabling or other support systems shall conform to the ANSI A 300 (part 3)-2000 Standard Practices

8. Tree Damage Mitigation

8.1. Trees damaged or significantly impacted during construction shall be evaluated by the Supervising Arborist or Client designated representative. Proper mitigation measures shall be specified and may include:

8.2. Pruning of damaged and dead wood.

8.3. Installation of a drip irrigation system to provide supplemental irrigation for three to five seasons following damage.

8.4. Proper low nitrogen fertilization timed to growth response and phenological development of the tree.

8.5. Periodic risk assessment of tree.

8.6. Replacement of tree per client requirements.

8.7. Alleviation of severe compaction by vertical mulching with augers or hydraulic soil probes.

8.8. Alleviation of surface compaction by light cultivation or raking and the application of mulch.

Appendix A

Tree Assessment Data Matrix

Redwood Market Tree Assessment Matrix
Appendix A

Redwood Market Tree Data Matrix
Tree Evaluation and Preliminary Construction Impact Assessment

Health Rating Key:
4.0 = good health
3.0 = fair health
2.5 = marginal to fair health
2.0 = marginal health
1.5 = poor to marginal health
1.0 = poor health

Structural Rating Key:
4.0 = good condition
3.0 = moderate condition
2.5 = marginal to moderate condition
2.0 = marginal condition
1.5 = poor to marginal condition
1.0 = poor condition

Construction Impact Code:
RC= Removal Due to Construction
SI= Significant Potential Impact
MI= Moderate Impact
LI= Limited Impact
NI= No Impact Expected

Tree #	Species	# of Trunks	Trunk #1 Diameter @ 4.5' (inches)	Trunk #2	Trunk #3	Trunk #4	Trunk #5	Trunk #6	Total Stem Area	Equivalent Trunk Diameter	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Protected Tree Status	Construction Impact Assessment	Tree Protection Zone) (Radius in Feet)	Critical Root Zone (Radius in feet)	Impact Code
1	valley oak (*Quercus lobata*)	1	7.5						44.2	7.5	20'±	15'±	3.0	2.5	Young tree with closely spaced, multiple limb attachments forming at 7'. Twiggy growth with pit scale present.	Fair	Yes	Located off-site area. Located approximately 8' from project limits	10'	3'	MI
2	valley oak	2	4.5	7.0					54.4	8.3	18'±	15'±	3.0	2.0	Low, two trunk structure with included trunk attachment and seam. Pit scale observed.	Marginal	Yes	Located within project grading and construction limits. Removal required.			RC
3	coast live oak (*Quercus agrifolia*)	4	1.0	2.0	2.0	2.0	2.0	3.0	20.4	5.1	10'±	12'±	4.0	2.0	Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
4	coast live oak	3	2.0	3.0	4.0				22.8	5.4	12'±	12'±	4.0	2.0	Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
5	coast live oak	3	3	3.5	3.5				26.3	5.8	15'±	12'±	4.0	2.0	Multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
6	coast live oak	3	4.5	5	6				63.8	9.0	20'±	12'±	4.0	2.0	Co-dominant trunks forming at grade. Upright form. Vigor and foliage density are good.	Marginal	Yes	Located within project grading and construction limits. Removal required.			RC
7	valley oak	1	5						19.6	5.0	20'±	10'±	3.0	3.0	Single trunk structure with no significant structural defects. Twiggy growth with pit scale present.	Fair	No	Located within project grading and construction limits. Removal required.			RC
8	valley oak	3	4	5	5				51.8	8.1	20'±	12'±	3.0	2.0	Three trunk structure forming from basal sprouts at grade. Vigor is moderately low with probable pit scale.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
9	coast live oak	6	1	2	3	3	4		30.6	6.2	15'±	12'±	4.0	2.0	Dense, multiple trunk structure forming from basal sprouts at grade. Vigor and foliage density are good.	Marginal	No	Located within project grading and construction limits. Removal required.			RC

Redwood Market Tree Assessment Matrix
Appendix A

Tree #	Species	# of Trunks	Trunk #1 Diameter @ 4.5' (inches)	Trunk #2	Trunk #3	Trunk #4	Trunk #5	Trunk #6	Total Stem Area	Equivalent Trunk Diameter	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Protected Tree Status	Construction Impact Assessment	Tree Protection Zone) (Radius in Feet)	Critical Root Zone (Radius in feet)	Impact Code
10	valley oak	1	4.5						15.9	4.5	20'±	8'±	3.0	3.0	Single trunk structure with no significant structural defects. Growing in area of dense small diameter trees. Vigor is moderately low with probable pit scale.	Fair	No	Located within project grading and construction limits. Removal required.			RC
11	valley oak	2	4.5	4.5					31.8	6.4	22'±	10'±	3.0	2.5	Low, co-dominant trunk structure forming at grade with wide attachment. Growing in area of dense small diameter trees. Vigor is moderately low with probable pit scale.	Fair	No	Located within project grading and construction limits. Removal required.			RC
12	valley oak	2	4	5.5					36.3	6.8	20'±	12'±	3.0	2.5	Low two-trunk structure with seam at trunk attachment. Vertical, upright crown form. Vigor is moderately low with probable pit scale.	Fair	No	Located within project grading and construction limits. Removal required.			RC
13	valley oak	4	1.5	2	3.5	6			42.8	7.4	25'±	20'±	3.0	2.5	Low, multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale.	Fair	Yes	Located within project grading and construction limits. Removal required.			RC
14	valley oak	2	4	4					25.1	5.7	20'±	10'±	3.0	2.5	Co-dominant trunks forming at grade. Upright form. Vigor and foliage density are good.	Fair	No	Located adjacent to LPG tank. Removal required.			RC
15	valley oak	1	5.5						23.7	5.5	20'±	10'±	3.0	2.5	Single trunk structure with no significant structural defects. Twiggy growth with pit scale present. Growing adjacent to trees #14 and #16.	Fair	No	Located 10' from propane fill zone.	8'	2'	MI
16	valley oak	4	2	2.5	3.5	4			30.2	6.2	20'±	15'±	3.0	2.0	Low, multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale.	Marginal	No	Located adjacent to LPG tank. Removal required.			RC
17	valley oak	6	5	8	8	10	10	16	478.1	24.7	40'±	50'±	3.0	2.5	Mature tree with multiple trunks forming at grade. 16" trunk has upright form, while others have corrected leans. Dense bamboo growing around trees with lower trunk obscured. Vigor is moderately low with probable pit scale.	Fair	Yes	Located 20' from location of future storm drain.	25'	8'	LI
18	coast live oak	3	6.5	6.5	7.5				110.5	11.9	18'±	20'±	4.0	2.0	Low, multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good.	Marginal	Yes	Located at least 25' from grading limits.	12'	3'	NI
19	valley oak	3	2.5	3.5	4				27.1	5.9	20'±	12'±	3.0	2.5	Low, three-trunk structure forming from basal sprouts at grade. Upright crown form. Vigor is moderately low with probable pit scale.	Fair	No	Located at least 25' from grading limits.	8'	2'	NI

Tree #	Species	# of Trunks	Trunk #1 Diameter @ 4.5' (inches)	Trunk #2	Trunk #3	Trunk #4	Trunk #5	Trunk #6	Total Stem Area	Equivalent Trunk Diameter	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Protected Tree Status	Construction Impact Assessment	Tree Protection Zone) (Radius in Feet)	Critical Root Zone (Radius in feet)	Impact Code
20	valley oak	3	2	4	5				35.3	6.7	12'±	12'±	3.0	2.0	Multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale.	Marginal	Yes	Located at least 25' from grading limits.	8'	2'	NI
21	coast live oak	5	6	7	7	8	8.5		212.1	16.4	22'±	30'±	4.0	2.5	Low, multiple trunk structure originating from basal sprouts at grade. Located at fence line. Vigor and foliage density are good.	Fair	Yes	Located 20' from car wash driveway and fill zone.	18'	4'	LI
22	valley oak	3	1.25	4	4				26.3	5.8	18'±	12'±	3.0	2.5	Multiple trunk structure originating from basal sprouts at grade. Vigor is moderately low with probable pit scale.	Fair	No	Located within project grading and construction limits. Removal required.			RC
23	Canary Island date palm (*Phoenix canariensis*)	1	24						452.2	24.0	18'±	20'±	4.0	3.0	Young palm in good vigor and no structural issues.	Good	No	Located within project grading and construction limits. Removal required.			RC
24	valley oak	1	5.5						23.7	5.5	20'±	8'±	3.0	3.0	Single trunk structure with no significant structural defects. Vigor is moderately low with probable pit scale. Located adjacent to fence.	Fair	No	Located 10' from car wash driveway and fill zone.	6'	2'	LI
25	valley oak	2	4	4					25.1	5.7	20'±	10'±	3.0	2.0	Co-dominant trunks forming at grade. Vigor is moderately low with probable pit scale. Located adjacent to fence.	Marginal	No	Located 5' from car wash driveway and fill zone.	6'	2'	LI
26	coast live oak	2	3	6					35.3	6.7	12'±	10'±	4.0	2.5	Low, two-trunks structure with leaning, asymmetrical crown to west. Vigor and foliage density are good. Located adjacent to fence.	Fair	Yes	Located adjancet to car wash drveway. Removal likely required.	6'	2'	NI
27	valley oak	3	4	4	5				44.7	7.5	18'±	8'±	3.0	2.5	Low, multiple trunk structure originating from basal sprouts at grade. Upright crown form. Vigor is moderately low with probable pit scale.	Fair	No	Located within project grading and construction limits. Removal required.			RC
28	valley oak	1	12						113.0	12.0	30'±	15'±	3.0	3.0	Semi-mature tree with single trunk structure. Closely spaced, multiple limb attachments form at 10'. Vigor is moderately low with probable pit scale. Ivy growing on trunk.	Fair	Yes	Located within project grading and construction limits. Removal required.			RC
29	valley oak	1	12						113.0	12.0	30'±	25'±	3.0	3.0	Semi-mature tree with single trunk structure. Closely spaced, multiple limb attachments form at 15'. Symmetrical crown form. Vigor is moderately low with probable pit scale. Ivy growing on trunk.	Fair	Yes	Located within project grading and construction limits. Removal required.			RC

Redwood Market Tree Assessment Matrix
Appendix A

Tree #	Species	# of Trunks	Trunk #1 Diameter @ 4.5' (inches)	Trunk #2	Trunk #3	Trunk #4	Trunk #5	Trunk #6	Total Stem Area	Equivalent Trunk Diameter	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Protected Tree Status	Construction Impact Assessment	Tree Protection Zone) (Radius in Feet)	Critical Root Zone (Radius in feet)	Impact Code
30	coast live oak	1	7.5						44.2	7.5	22'±	20'±	4.0	2.5	Single trunk structure, originally a basal sprout. Growing through chain link fence. Vigor and foliage density are good.	Fair to Moderate	Yes	Located 20' from construction limits. Ni impact expected.	8'	2'	NI
31	coast live oak	3	3	3	3				21.2	5.2	12'±	10'±	4.0	2.5	Low, multiple trunk structure originating from basal sprouts at grade. Vigor and foliage density are good.	Fair to Moderate	No	Located within project grading and construction limits. Removal required.			RC
32	valley oak	1	5.5						23.7	5.5	20'±	12'±	3.0	3.0	Single trunk structure with no significant structural defects. Twiggy growth with pit scale present.	Fair	No	Located 20' from construction limits. Ni impact expected.	8'	2'	NI
33	coast live oak	3	10.5	12	12				312.6	20.0	22'±	30'±	4.0	2.5	Low, multiple trunk structure with the two 12" trunks having a partially included trunk attachment. Symmetrical crown form. Ivy growing on tree.	Fair to Moderate	Yes	Located approximatly 8' to 10' from construction limts. Clearance pruning likely required.	20'	6'	MI
34	coast live oak	1	7.5						44.2	7.5	18'±	20'±	4.0	3.0	Shaded tree with moderate lean. No significant structural defects. Growing at edge of drainage. Vigor and foliage density are moderate.	Moderate to good.	Yes	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	8'	2'	MI
35	coast live oak	1	6						28.3	6.0	15'±	12'±	4.0	3.0	Single trunk structure with closely spaced, multiple limb attachments forming at 5'. No significant structural defects observed. Vigor and foliage density are moderate. Ivy growing on tree.	Moderate to good.	Yes	Located 15' from construction area.	6'	2'	NI
36	coast live oak	2	4	4					25.1	5.7	15'±	10'±	4.0	3.0	Young tree with two trunk structure. Vigor and foliage density are good.	Moderate to good.	No	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	6'	2'	MI
37	coast live oak	1	5						19.6	5.0	15'±	10'±	4.0	3.0	Young tree with two trunk structure. Vigor and foliage density are good.	Moderate to good.	No	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	6'	2'	MI
38	coast live oak	3	3	3	4				26.7	5.8	10'±	10'±	3.0	3.0	Young tree with three trunk structure. Vigor and foliage density are good. Poison oak growing on tree.	Fair	No	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	6'	2'	MI
39	coast live oak	3	7	7.5	8				132.9	13.0	30'±	35'±	1.0	2.0	Low, multiple trunk structure originating from basal sprouts at grade. Extensive ivy and poison oak. Vigor is low with extensive crown dieback occurring.	Poor	Yes	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	12'	3'	MI

Redwood Market Tree Assessment Matrix
Appendix A

Tree #	Species	# of Trunks	Trunk #1 Diameter @ 4.5' (inches)	Trunk #2	Trunk #3	Trunk #4	Trunk #5	Trunk #6	Total Stem Area	Equivalent Trunk Diameter	Crown Height	Crown Diameter	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based Upon Condition)	Protected Tree Status	Construction Impact Assessment	Tree Protection Zone) (Radius in Feet)	Critical Root Zone (Radius in feet)	Impact Code
40	coast live oak	6	7	8	10	10	13	14	532.2	26.0	30'±	35'-40'±	3.0	2.0	Multiple trunks forming at 2' with included attachments with deep seam. Wide crown form. Vigor and foliage density are moderately low.	Marginal	Yes	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	20'	6'	MI
41	valley oak	1	8						50.2	8.0	20'±	30'±	3.0	2.0	Horizontal trunk form due to shading from tree #40. Extends to southeast. Vigor is moderately low with probable pit scale.	Marginal	Yes	Located approximatly 8' to 10' fro construction limts. Clearance pruning likely required.	8'	2'	MI
42	valley oak	2	7	8.5					95.2	11.0	30'±	20'±	3.0	2.5	Low two-trunk structure with seam at trunk attachment. Upright crown form. Vigor is moderately low with probable pit scale.	Fair	Yes	Located 15' from construction area.	12'	4'	Ni
43	valley oak	3	6	7	7				105.2	11.6	25'±	25'±	3.0	2.5	Low, multiple trunk structure originating from basal sprouts at grade. Unions are not yet included. Vigor is moderately low with probable pit scale.	Fair	Yes	Located at least 25' from grading limits.	12'	4'	LI
44	Raywood ash (*Fraxinus angustifolia* 'Raywood'	1	12						113.0	12.0	25'±	25'±	3.0	2.5	Single trunk structure with closely spaced, multiple limb attachments forming at 10'. No significant structural defects observed. Vigor and foliage density are moderately low. Located in small planter.	Fair	No	Located within project grading and construction limits. Removal required.			RC
45	coast live oak	1	7						38.5	7.0	15'±	10'±	4.0	2.0	Leaning, asymmetrical form due to heavy pruning. Previously topped. Volunteer seedling. Good vigor and foliage density.	Marginal	Yes	Located within project grading and construction limits. Removal required.			RC
46	Chinese elm (*Ulmus parvifolia*)	1	7						38.5	7.0	18'±	12	4.0	2.0	Single trunk structure previously topped. Vigor and foliage density are moderate. 4" elm nearby.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
47	Raywood ash	1	9						63.6	9.0	20'±	18'±	3.0	2.0	Single trunk structure with closely spaced, multiple limb attachments forming at 6'. Vigor and foliage density are moderately low. Located in small planter.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
48	Raywood ash	1	7.5						44.2	7.5	18'±	15'±	3.0	2.0	Single trunk structure with closely spaced, multiple limb attachments forming at 5'. Vigor and foliage density are moderately low. Located in small planter.	Marginal	No	Located within project grading and construction limits. Removal required.			RC
49	Raywood ash	4	4	4	5	6			73.0	9.6	15'±	12'±	3.0	1.0	Multiple trunk structure originating from basal sprouts at grade. Very poor structure.	Poor	No	Located within project grading and construction limits. Removal required.			RC

Appendix B

Tree Mitigation Chart

Redwood Market Tree Mitigation Chart

Health Rating Key:
5.0= excellent health
4.0 = good health
3.0 = fair health
2.5 = marginal to fair health
2.0 = marginal health
1.5 = poor to marginal health
1.0 = poor health

Structural Rating Key:
4.0 = good condition
3.0 = moderate condition
2.5 = marginal to moderate
2.0 = marginal condition
1.5 = poor to marginal condition
1.0 = poor condition

Tree #	Species	# of Trunks	Equivalent Trunk Diameter	Health Rating	Structural Rating	Replacement Ratio*	Required Replacement Inches
2	valley oak	2	8.3	3.0	2.0	0.5	4.2
6	coast live oak	3	9.0	4.0	2.0	0.5	4.5
13	valley oak	4	7.4	3.0	2.5	0.5	3.7
28	valley oak	1	12.0	3.0	3.0	1.0	12.0
29	valley oak	1	12.0	3.0	3.0	1.0	12.0
45	coast live oak	1	7.0	4.0	2.0	0.5	3.5

	Total Replacement Inches:	40	In Lieu Equivalent	
24" Box Replacement Tree Requirements **		10	$4,000.00	$400.00 per 24" box
Minimum 48" Box Requirements***		5	$8,000.00	$1,600.00 per 48" box

Total:		$12,000.00
# of 36" Box Mitigation Trees Shown on Landscape Plan:	4	$3,200.00
# of 48" Box Mitigation Trees Shown on Landscape Plan:	7	$11,200.00
Net Mitigation In Lieu Amount:		$0.00

Appendix C

Site and Tree Images



View of northwest section of property. Tree #1 (valley oak) is in foreground.



Tree #2 (valley oak) is on left with area of dense small diameter coast live oaks.



Tree #7 (valley oak in foreground) with view to west.



Area of very dense small diameter valley oak and cost live oaks on northwest side of property (within future Town section).



Common multiple trunk structure forming at grade from sprouts from previously mowed seedling.



View to north corner with mature valley oak (#17) in distance.



Tree #17 on left and area in north portion of site.



Dense grove of acacia (*A. decurrens*) in north portion of site.



Trees growing along fence line with Caltrans ROW.



Young Canary Island date palm near parking area.



Two semi-mature valley oaks (#28 and #29).



Small coast live oaks near fence and drainage swale on east side of project.



Coast live oaks on east side in area of dense ivy and poison oak.



Coast live oaks on east side. Tree #39 on left is rated in poor condition due to extensive crown dieback.



Base of coast live oak #40 with defective multiple trunk structure.



Tree #43 (valley oak) appears to away from grading limits, although not shown on survey plan.



Small elm and volunteer coast live oak on right in parking lot planter.



Mature Raywood ash in small landscape planter.





Smaller, drought stressed Raywood ash in planters on north side of parking area.

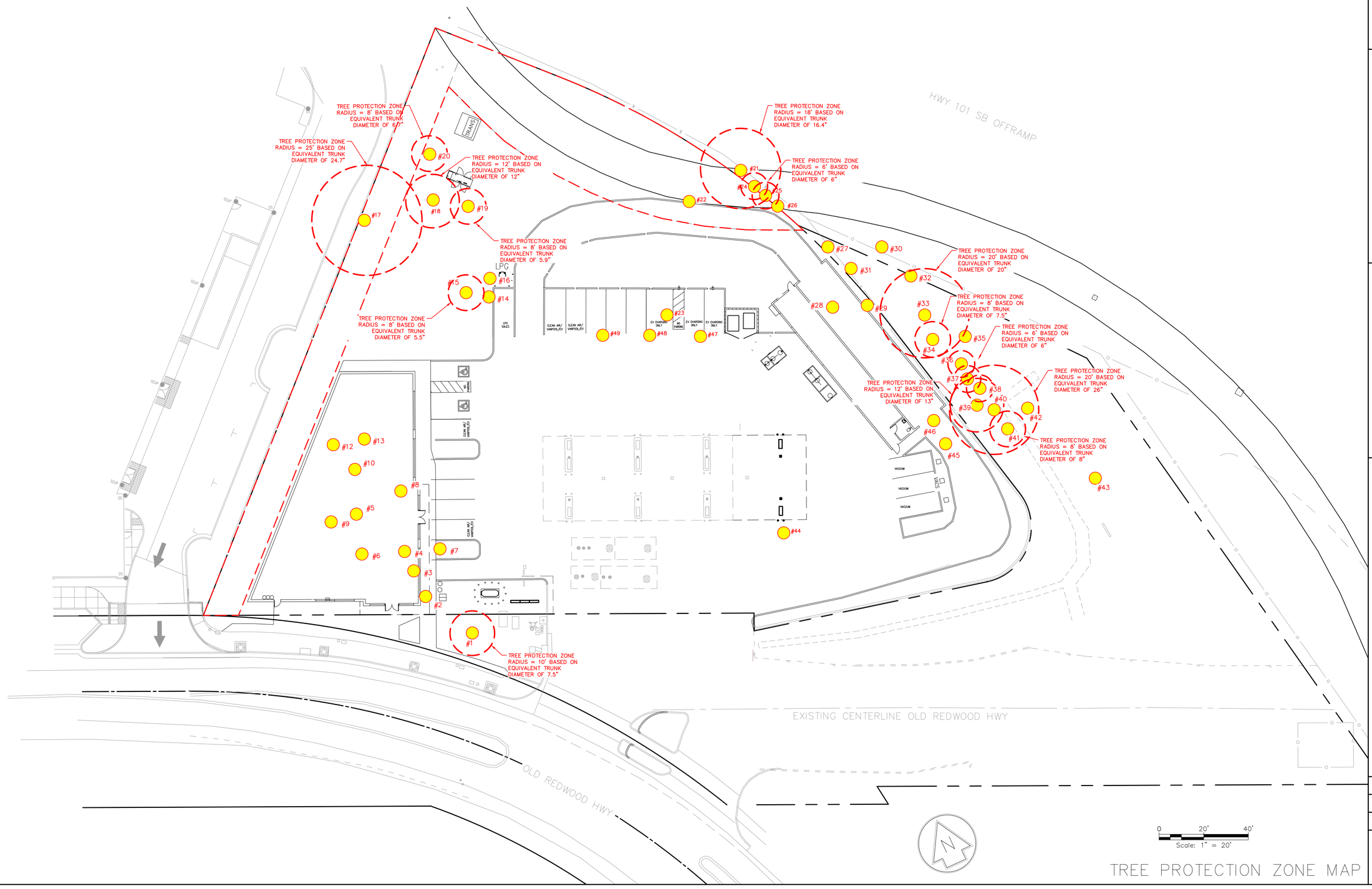
Appendix D

Appraisal Calculation Worksheet

Redwood Market Appraisal Calculation - Appendix D
10th Edition Reproduction Method Trunk Formula Technique- Data and Calculations

tatus, and Equivalent Trunk Diameter)				Depreciation Factors						Replacement Tree and Calculations								Additional Costs[2]	
Tree Number	Species	Trunk Diameter at 4.5 ft (inches)[1]	Cross-Sectional Area	Health Rating	Structure Rating	Form Rating	Condition Rating:	Functional Limitations[2]	External Limitations	Replacement Tree Species	Box Container Size	Trunk Diameter	Cross-Sectional Area	Replacement Tree Cost	Unit Tree Cost	Basic Reproduction Cost:	Depreciated Reproduction Cost:	Replacement Tree Installation Cost	Total Reproduction Cost
Preserved Trees																			
1	valley oak	7.5	44	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 3,164.06	$ 996.68	$ 450.00	$ 1,446.68
15	valley oak	5.5	24	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,701.56	$ 535.99	$ 450.00	$ 985.99
17	valley oak	24.7	478	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 34,256.25	$ 10,790.72	$ 450.00	$ 11,240.72
18	coast live oak	11.9	111	70%	50%	50%	57%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 7,917.19	$ 2,018.88	$ 450.00	$ 2,468.88
19	valley oak	5.9	27	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,940.63	$ 611.30	$ 450.00	$ 1,061.30
20	valley oak	6.7	35	70%	50%	70%	63%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 2,531.25	$ 721.41	$ 450.00	$ 1,171.41
21	coast live oak	16.4	212	70%	65%	65%	67%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 15,201.56	$ 4,560.47	$ 450.00	$ 5,010.47
24	valley oak	5.5	24	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,701.56	$ 535.99	$ 450.00	$ 985.99
25	valley oak	5.7	25	70%	50%	70%	63%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,800.00	$ 513.00	$ 450.00	$ 963.00
26	coast live oak	6.7	35	70%	65%	65%	67%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 2,531.25	$ 759.38	$ 450.00	$ 1,209.38
30	coast live oak	7.5	44	70%	65%	65%	67%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 3,164.06	$ 949.22	$ 450.00	$ 1,399.22
32	valley oak	5.5	24	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,701.56	$ 535.99	$ 450.00	$ 985.99
33	coast live oak	20.0	313	70%	65%	65%	67%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 22,401.56	$ 6,720.47	$ 450.00	$ 7,170.47
34	coast live oak	7.5	44	70%	70%	70%	70%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 3,164.06	$ 996.68	$ 450.00	$ 1,446.68
35	coast live oak	6.0	28	70%	70%	70%	70%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 2,025.00	$ 637.88	$ 450.00	$ 1,087.88
36	coast live oak	5.7	25	70%	70%	70%	70%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,800.00	$ 567.00	$ 450.00	$ 1,017.00
37	coast live oak	5.0	20	70%	70%	70%	70%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,406.25	$ 442.97	$ 450.00	$ 892.97
38	coast live oak	5.8	27	70%	70%	70%	70%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 1,912.50	$ 602.44	$ 450.00	$ 1,052.44
39	coast live oak	13.0	133	20%	50%	70%	47%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 9,520.31	$ 1,999.27	$ 450.00	$ 2,449.27
40	coast live oak	26.0	533	70%	50%	70%	63%	50%	90%	coast live oak	24"	2.0	3	$ 225.00	$ 71.62	$ 38,137.50	$ 10,869.19	$ 450.00	$ 11,319.19
41	valley oak	8.0	50	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 3,600.00	$ 1,134.00	$ 450.00	$ 1,584.00
42	valley oak	11.0	95	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 6,820.31	$ 2,148.40	$ 450.00	$ 2,598.40
43	valley oak	11.6	105	70%	70%	70%	70%	50%	90%	valley oak	24"	2.0	3	$ 225.00	$ 71.62	$ 7,537.50	$ 2,374.31	$ 450.00	$ 2,824.31
																			$ 62,371.62

[1] Combined cross-sectional inches of individual stems and converted to a single stem equivalent diameter.
[2] Superadequacy depreciation (high density of trees on site)



TREE PROTECTION ZONE MAP

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

APPROVED BY,

(NOT FOR CONSTRUCTION)

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REDWOOD MARKET (WINDSOR CHEVRON)
9120, 9200 OLD REDWOOD HIGHWAY, WINDSOR, CA
APNs: 161-170-034, -035

DATE: 04/15/2021
DRAWN: MED
JOB#: 2479.01
SHEET 4

\\Mdc_server\Trans Tech\Projects\2479.01 9120 Old Redwood Hwy, Windsor, CA\dwg\BASE 39 2479.dwg 4/15/2021 8:00:17 AM