DEPARTMENT OF PUBLIC WORKS
TREE MAINTENANCE ACTIVITIES PERFORMED AND PENDING
FEBRUARY 2011

ADDRESS	TYPE OF TREE	DIAMETER	ALTERED (TRIM)	REMOVED	COMMENTS
38 Lower Crescent Ave	2 Coast Live Oak	8.6" Tree #1 40.2 " Tree #3		February 8, 2011	Removed by City crews. Located on public right of way next to street near neighboring property boundary. Arborist identified SOD, trunk decay of 90%, canopies 98% dead. High risk of failure.
Between 14 & 16 Josephine	Victorian Box/Pittosporum	16"		Pending	Removal by Bartlett likely to occur February 25th depending on rain. Tree next to light pole pushed & broken. City to replace pole, install concrete base for new pole. No viable alternative pole location. Republic Electric will be onsite for removal coordination.

ITEM NO. 6 PAGE 1

DEPARTMENT OF PUBLIC WORKS
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FEBRUARY 2011

ADDRESS	TYPE OF TREE	DIAMETER	ALTERED (TRIM)	REMOVED	COMMENTS
71 Glen Drive	2 Coast Live Oaks	N/A	Pending		Pruning by Bartlett Tree likely to occur first week of March due to rain. Resident's permit application approved to trim City trees. PG&E cut v's out for power lines. Trim work will make trees healthier.
(Intersection of) Miller & Spencer Avenue	Monterey Pine	54.4"		Pending	City working with homeowners of 58 & Spencer Ave properties on issue of branches falling due to signs of bark beetle. Two arborist reports from Ed Gurka and Bartlett Tree. PG&E using on pole that may need to be relocated. Tree may only be 6" on City property.

ITEM NO. 6 PAGE 2

DEPARTMENT OF PUBLIC WORKS
TREE MAINTENANCE ACTIVITIES PERFORMED AND PENDING
FEBRUARY 2011

ADDRESS	TYPE OF TREE	DIAMETER	ALTERED (TRIM)	REMOVED	COMMENTS
City Open Space Cypress Ridge and APN 064-321-01	Non-native, invasive, fire hazard	varies		Pending	City has a vegetation management prescription that will ultimately result in removal of all non-native, invasive fire hazard vegetation from open space. TVC, Parks and Rec and City Council are being apprised of these plans prior to implementation (see September 21, 2010 prescription from Marin County Fire Dept Forester, Dr. K. Julin)

ITEM NO. 6 PAGE 3

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Ed Gurka, Consulting Arborist
Member, American Society of Consulting Arborists

International Society of Arboriculture
Certified Arborist #418

Arborist Report, 38 Lower Crescent Avenue, Sausalito, California

Prepared by, Ed Gurka, Consulting Arborist Services
San Rafael, California

Arborist Report Contents

AMERICAN SOCIETY of CONSULTING ARBORISTS

Ed Gurka, Consulting Arborist
Member, American Society of Consulting Arborists

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Certified Arborist #418

December 1, 2010

ASSIGNMENT:

A request by Mrs. Anne Komer to prepare an Arborist Report for a construction plan submittal for 38 Lower Crescent Avenue, Sausalito, California. A written Arborist Report is required by the Sausalito Community Development Department to provide information about protected trees on the property. This report will identify protected trees, describe their condition, and provide recommendations on how to proceed with a long-term management program for the protected trees on 38 Lower Crescent Avenue property.

REPORT BACKGROUND and DISCUSSIONS:

I arrived at 38 Lower Crescent Avenue at 1:00 PM on November 30, 2010, and met with Mrs. Anne Komer, the property owner, and Barry Peterson, Architect for the project. The meeting and site visit were necessary to collect information for the Arborist Report. A tree inventory of protected property trees was created for reference to individual trees. Numbered tags were placed on each protected tree, and the numbered trees coincide with the numbered trees' descriptions in this report. The numbered trees are added into the architect property map prepared by Mr. Peterson and used with his permission. A global positioning device was used in this inventory that accurately places each tree's location on the property.

38 Lower Crescent Avenue is located in the neighborhood referred to as "Old Town" Sausalito. A pedestrian stairway that originates on Main Street and extends to Lower Crescent Avenue borders the property to the North. The property slopes gradually down from Lower Crescent Avenue to the neighboring property below on Main Street. The tree inventory begins on the southwest corner of the property, the front yard, and proceeds to the backyard of the property. Each tree's description is detailed in the spreadsheet section of this report and recommendations are made based on observations and visual inspection. Recommendations are made for each tree based on risk determined by defects, the effect of stability from the defects, and any targets associated with a failure. Risk safety is given the highest priority and rated in spreadsheet condition and removal priority column.

Photographs of specific trees are included to illustrate conditions that support the decision and leading to this report's recommendations. The recommendations made are based on experience, education, and knowledge of Arboriculture practices. Determining when a tree will fail is unknown. The risk increases based on: degree of the defect, environmental influences, and the structural arrangement of the tree.

RECOMMENDATIONS:

Trees described as "Protected Trees" and recommended for removal are identified in red print on the spreadsheet. Photographs were taken at the time of the site inspection to document conditions discovered. The defects are evaluated in comparison to a normal healthy specimen. The conclusions are presented as recommendations which give clear advise on how to proceed. The recommendations are based on risk potential and to create a long-term safe environment for enjoyment of the property. A total of six trees are identified and recommended for removal.

An access ramp to enter and exit the property is planned and will pass in close proximity to a mature California Bay tree identified in this report as tree number seven. Retaining wall post placement must be located, marked, and the project arborist shall be present at the time of their installation. This is to protect the Bay tree identified as a critical screen between 38 Lower Crescent Avenue and the neighboring property. Aeration tubes are recommended to provide air moisture access for tree roots that will be covered by the grade alteration that passes within the root zone of the tree. The grade change shall not come within four feet of the trunk base.

CONSTRUCTION REQUIREMENTS:

Tree protection during construction work requires that temporary fencing is installed before any work begins. The fencing shall be placed around the root zone perimeter defined in the Sausalito Tree Ordinance as the outer limits of branches (the drip line) or as deemed necessary by the project arborist.. Nutrients such as fertilizers or mulches shall be applied to the root zone of remaining protected trees.

Any grade change or site work taking place within the protected perimeter of remaining trees shall have special measures incorporated to protect the root zone of the tree. These measures shall be provided to avoid compaction, and allow for air, water, and nutrients for root development. To avoid compaction within the root zone of trees where access is necessary, clean mulch and placement of plywood sections shall be used as platforms over the root zone. Water applied with soaker hoses shall be used to provide water for tree roots during hot dry conditions.

Any trenching or grade change work necessary for the project shall be made outside of the dripline of remaining protected trees. Where this is unavoidable, the site arborist shall provide measures to protect trees and their roots. Measures such as cutting of small roots and covering exposed roots, and other measures shall be performed by the site arborist for the project.

No construction materials, equipment, or spoils shall be placed within the perimeter of protected trees. Designated areas for this shall be arranged before work begins. No storage or use of harmful chemicals shall take place within the protection area of any remaining tree. Construction material shall be stored in a designated approved area away from protected trees. No dumping of oil, gas, chemicals, or other harmful substances shall take place on the construction property. Any unused material shall be taken to an approved dumpsite.

Any damage to remaining trees on the property during the construction project shall be reported to the City immediately by the contractor. The site arborist shall provide mitigating procedures to correct the damage and provide the City with a written description of the procedures. If the damage is irreversible, replacement planting will be considered as a requirement.

OBSERVATIONS:

The following observations were made and are presented in spreadsheet format for reviewing simplification.

Tree Inventory, 38 Lower Crescent Avenue, Sausalito CA. 12.3.2010

Tree Tag Number	Species	Location (GPS)	Circumference at Breast Height (CBH) at 24 inches from ground level	Height	Condition Rating 1=Excellent 2=Good, 3= fair,4=poor, 5=very poor or dead	Disease notation	Comments	Removal Priority 1 - No Removal 2 - Low possibility 3 - Possible removal 4 - Remove 5 - High removal priority	Recommendations
1	Quercus agrifolia Coast Live Oak	N 37. 50.981° W 122. 29.058°	8.6 inches	12 feet	5	very heavy trunk decay	Located on the public right of way immediately next to the street near the neighboring property boundary. Trunk decay is 90 % canopy is 98% dead. Potential for failure very high.	5	Remove Immediately a high risk of failure.
2	Quercus agrifolia Coast Live Oak	N 37.50.981° W 112.29.058°	2'5" (29 in.)	25'	3		Upper canopy sap sucker holes. Canopy sparse estimated at 60%.	1	Limit canopy pruning. Treat for Sudden Oak Disease using Agrifos/Pentera Bark treatments fertillze with complete and fertilizer annually in spring. Monitor for any change in condition.
3	Quercus agrifolia Coast Live Oak	N 37.50.983° W 112.29.058°	169.2" (40.2 in.)	25'	4	Armilliara fungus	Lower decay on west side of trunk. 75 % of circumference infected. Condition cannot be reversed with treatments. Lean over home at a 54° angle and then corrects to upright. Tree canopy sparse due to Armilliara disease.	5	Remove Immediately a high risk of failure.
4	Quercus agrifolia Coast Live Oak	N 37.50.985° W 122.29.056°	4'5.5" (53.5 in.)		2	None visible on lower trunk.	Decay pocket on North side of trunk at 8 ft. above ground. 48° lean. Reduce weight by pruning over lean.	1	Treat with Agrifos/Pentra Bark to prevent Sudden Oak Disease. Monitor for any changes annually.
5	Quercus agrifolia Coast Live Oak	N 37. 50.54.987° W 122.29.055	4'5" (53 in.)		2		Tree located to left of entrance to home. Nine inch decay pocket @ 12 inches above trunk base.	1	Monitor for advancement of decay annually. Remove all watering at base of trunk. Sparse canopy due to pruning. Allow lower canopy to develop. Treat with Agrifos/Pentra Bark annually to prevent Sudden Oak Disease.
6	Quercus agrifolia Coast Live Oak	N 37.50.987° W 122.29.052°	2'6" (30 in.)		2		Trunk inspection did not reveal any visible decay.	1	Spray treatments annually with Agrifos/Pentra Bark to prevent Sudden Oak Disease.

Tree Tag Number	Species	Location (GPS)	Circumference at Breast Height (CBH) at 24 inches from ground level	Height	Condition Rating 1=Excellent 2=Good, 3= fair,4=poor, 5=very poor or dead	Disease notation	Comments	Removal Priority 1 - No Removal 2 - Low possibility 3 - Possible removal 4 - Remove 5 - High removal priority	Recommendations
7	Umbellularia californica, California Bay	N 37.50.980° W 122.29.052°	2'6" (30 in.)		2	None visible on lower trunk.	Protect root system for grade alteration that includes retaining wall. Site Arborist necessary during retaining wall post placement. Aeration necessary to reduce impact of soil grade change. Installation of air tubes to allow air to root system.	1	Upper crown thinning for light. Then prune for screening. Monitor annually for any changes in condition.
8	Quercus agrifolia Coast Live Oak	N 37.50.981° W 122.29.049°	7'2" (86 in.)		4	Hypoxylon Carbon domes present on north side of trunk	Presence of Hypoxylon carbon domes and cracked bark on 50% of trunk circumference indicates a serious compromise in health. The Oak tree is within the area of the California Bay tree that it is very likely infected with Phytophthora ramorum, the Sudden Oak Disease pathogen.	5	The tree is diseased and treatments are not possible. The tree is located between two homes and failure could damage the homes. The tree must be removed.
9	Alnus rhombifolia, White Alder	N 37° 54.313' W 122° 30.169'	3' 4.5" (40.5 in.)	40-80 feet with 20-40 foot spread.	2	None	Good structure, upright single leader tree. Note tree characteristics: Has shallow roots and is a short lived tree.	1	Eventual repositioning of neighboring fence from growth expansion.
10	Quercus agrifolia Coast Live Oak	N 37° 54.322' W 122° 30.174'	2' 5.5" (28.5 in.)		4		Located 12 feet from neighboring fence line. Trunk positioned at an acute angle towards home and is in conflict with home. Previously cut to a stub for clearance.	5	Remove due to conflict with home and poor structure and lean directly against home.
11	Quercus agrifolia Coast Live Oak	N 37° 54.310' W 122° 30.160'			5	large cavity	Lower decay has 85% of trunk completely gone due to decay. Possibility of Armillaria. Trunk decay cavity so extensive it extends through to the opposite side of the trunk.	5	Remove Immediately failure risk high.
12	Quercus agrifolia Coast Live Oak	N 37. 50.986° W 122.29.041°	5'1" (61 in.)		3	None	Location near North East corner of house. Angle of lean is 36 degrees. No outer appearance of decay or disease. Utility lines (service drop) intersect through canopy of tree.	2	Monitor for any change in condition annually. Spray treatment with Agrifos/Pentra Bark annually for Sudden Oak Disease. Prune to reduce weight on lean side of canopy and to maintain line clearance.

Tree Tag Number	Species	Location (GPS)	Circumference at Breast Height (CBH) at 24 inches from ground level	Height	Condition Rating 1=Excellent 2=Good, 3= fair,4=poor, 5=very poor or dead	Disease notation	Comments	Removal Priority 1 - No Removal 2 - Low possibility 3 - Possible removal 4 - Remove 5 - High removal priority	Recommendations
13	Quercus agrifolia Coast Live Oak	N 37.50.998° W 122.29.041°	3'5" (41 in.)	45 ft.	2	none	Located in the back yard at the north east corner of the property. Main stem lean degree 43.3 towards east and then abrupt change in direction to the south.	2	Monitor for any change in condition annually. Spray treatment with Agrifos/Pentra Bark annually for Sudden Oak Disease. Prune to reduce weight on lean side of canopy and to maintain line clearance.
14	Quercus agrifolia Coast Live Oak	N 37.50.988° W 122.29.038°	4'1" (37 in.)		2	None	Located in the backyard at the north east corner of the property. This Oak is 6 ft. east of Oak # 13. It is rated the same as tree #13.	1	Monitor for any change in condition annually. Spray treatment with Agrifos/Pentra Bark annually for Sudden Oak Disease. Prune to reduce weight on lean side of canopy and to maintain line clearance.
15	Umbellularia californica, California Bay	N 37.50.988° W 122.29.036°	1' 8" (20 in.)		2	None	Under story tree for Oaks in this immediate location.	3	The recommendation is to keep the tree pruned low and under the Oaks. The best choice would be to remove the Bay to protect Oak tree in the area from contracting Sudden Oak Disease from the Bay which is identified as a host for the disease.
16	Quercus agrifolia Coast Live Oak	N 37° 54.329' W 122° 30.149'	4' 7" (55 in.)		2	None	No visible decay or disease in lower trunk.	1	Annual spray treatment with Agrifos/Pentra Bark for SOD prevention.
17	Quercus agrifolia Coast Live Oak	N 37° 54.332' W 122° 30.151'	8'.2" (74 in.)		4	Large trunk decay pockets	Large trunk decay pockets that extend from the base of the trunk vertically to 6 ft. and a similar decay pocket on the opposite side of the trunk beginning at 5 ft. above ground and extending to 8 ft. The canopy extends over a neighboring property courtyard below.	4	Failure risk exists and rated as high due to the decay pockets that compromise stability in the lower trunk. The upper canopy leans over the neighboring property and risk is elevated because of the decay and lean towards the neighboring property courtyard below.

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Tree Apprasial Trunk formula Method 9 edition

1 **Species:** ***Quercus agrifolia, Coast Live Oak, Tree # 1, Public Right of Way***

2 **Condition:** 5%

3 **Trunk Circumference:** 3.5 Diameter: 3 in.

4 **Location: %= [Site:** 10% **% + Contribution** 10% **% + Placement** 10%

sub total: 30% % div.by 3 10% % total

Regional Plant Appraisal Committee and/or Appraiser-Developed or Modified Information.

5 **Species Rating** 90%

6 **Replacement Tree Size (diameter)** 3.00 3.00 inch dia of tree

(Trunk Area) 7.00 in.sq./cm.sq.TAr

7 **Replacement Tree Cost:** $180.00

(see regional information to use cost selected)

8 **Installation Cost:** $ $360.00

9 **Installation Tree Cost line (12+14)** $540.00

10 **Unit Tree Cost:** $ $60.00 per in. sq./cm.sq.

(see regional information to use cost selected)

Calculations by Apprasier using Field and Regional Information

11 **Appraised Trunk Area:**

(TAa or ATa; use tables 4.4-4.7)

or Cir. sq.(line 5 trunk circumference) x 0.08 in. sq.

or dia. sq. (line 5 trunk diameter) 7 x 0.785 6 in. sq.

12 **Appraised Tree Trunk Increase (TA incr) =**

TAa or ATAa 6 in.sq.cir.Tar (minus) 3.00 (F10) = 3 in.sq.

13 Basic Tree Cost=Taincr (J24) 3 In.sq. x Unit Tree Cost (E16) $60.00 per in.sq. $180.00

(plus) Installed Tree Cost (E15) $540.00 (equals) $720

X species

14a **Appraised Value = Basic Tree Cost (K26)** $180 rating 90% X condition (5%

X Location (F7) 10% $1

If the Appraised Value is $5000 or more, round it to the nearest $100; if it is less, round to the nearest $10.

14b **Appraised Value =** $1

Tree Apprasial Trunk formula Method 9 edition

1 **Species:** ***Quercus agrifolia,*** **Coast Live Oak Tree # 3**
2 **Condition:** 5%
3 **Trunk Circumference:** 36.5 Diameter: 12 in.
4 **Location: %= [Site:** 10% **% + Contribution** 10% **% + Placement** 10%
sub total: 30% % div.by 3 10% % total
Regional Plant Apprasial Committee and/or Appraiser-Developed or Modified Information.
5 **Species Rating** 90%
6 **Replacement Tree Size (diameter)** 3.00 3.00 inch dia of tree
(Trunk Area) 7.00 in.sq./cm.sq.TAr
7 **Replacement Tree Cost:** $180.00
(see regional information to use cost selected)
8 **Installation Cost:** $ $360.00
9 **Installation Tree Cost line (12+14)** $540.00
10 **Unit Tree Cost:** $ $60.00 per in. sq./cm.sq.
(see regional information to use cost selected)
Calculations by Apprasier using Field and Regional Information
11 **Appraised Trunk Area:**
(TAa or ATa; use tables 4.4-4.7)
or Cir. sq.(line 5 trunk circumference) x 0.08 in. sq.
or dia. sq. (line 5 trunk diameter) 113 x 0.785 89 in. sq.
12 **Appraised Tree Trunk Increase (TA incr) =**
TAa or ATAa 89 in.sq.cir.Tar (minus) 3.00 (F10) = 86 in.sq.

13 Basic Tree Cost=Taincr (J24) 86 In.sq. x Unit Tree Cost (E16) $60.00 per in.sq. $5,160.00
(plus) Installed Tree Cost (E15) $540.00 (equals) $5,700
X species
14a **Appraised Value = Basic Tree Cost (K26)** $5,160 rating 90% X condition (5%
X Location (F7) 10% $23
If the Appraised Value is $5000 or more, round it to the nearest $100; if it is less, round to the nearest $10.
14b **Appraised Value =** $23

Tree Apprasial Trunk formula Method 9 edition

1 **Species:** ***Quercus agrifolia,*** **Coast Live Oak, Tree # 8**

2 **Condition:** 5%

3 **Trunk Circumference:** 86 Diameter: 27 in.

4 **Location: %= [Site:** 90% **% + Contribution** 80% **% + Placement** 90%

sub total: 260% % div.by 3 87% % total

Regional Plant Appraisal Committee and/or Appraiser-Developed or Modified Information.

5 **Species Rating** 90%

6 **Replacement Tree Size (diameter)** 3.00 3.00 inch dia of tree

(Trunk Area) 7.00 in.sq./cm.sq.TAr

7 **Replacement Tree Cost:** $180.00

(see regional information to use cost selected)

8 **Installation Cost:** $ $360.00

9 **Installation Tree Cost line (12+14)** $540.00

10 **Unit Tree Cost:** $ $60.00 per in. sq./cm.sq.

(see regional information to use cost selected)

Calculations by Apprasier using Field and Regional Information

11 **Appraised Trunk Area:**

(TAa or ATa; use tables 4.4-4.7) Guide for Plant Apraisal 9th ed.

or Cir. sq.(lineD-5 trunk circumference) x 0.08 in. sq.

or dia. sq. (line F-5 trunk diameter) 572 x 0.785 449 in. sq.

12 **Appraised Tree Trunk Increase (TA incr) =**

TAa or ATAa 449 in.sq.cir.Tar (minus) 3.00 (F10) = 448 in.sq.

13 Basic Tree Cost=Taincr (J24) 448 In.sq. x Unit Tree Cost (E16) $60.00 per in.sq. $26,760.00

(plus) Installed Tree Cost (E15) $540.00 (equals) $27,300

X species

14a **Appraised Value = Basic Tree Cost (K26)** $26,760 rating 90% X condition (5%

X Location (Cell F7) 87% $1,044

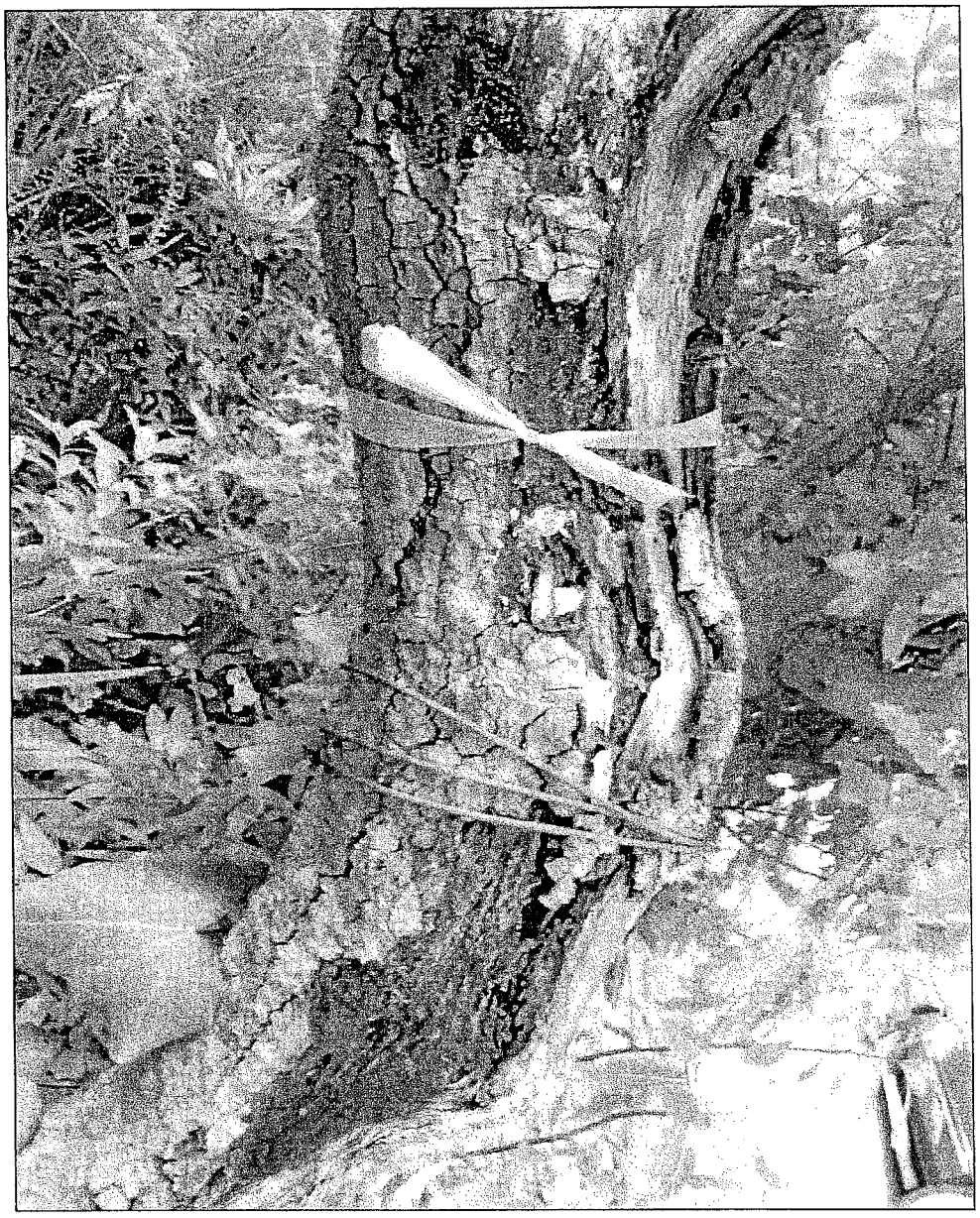
If the Appraised Value is $5000 or more, round it to the nearest $100; if it is less, round to the nearest $10.

14b **Appraised Value =** $1,044

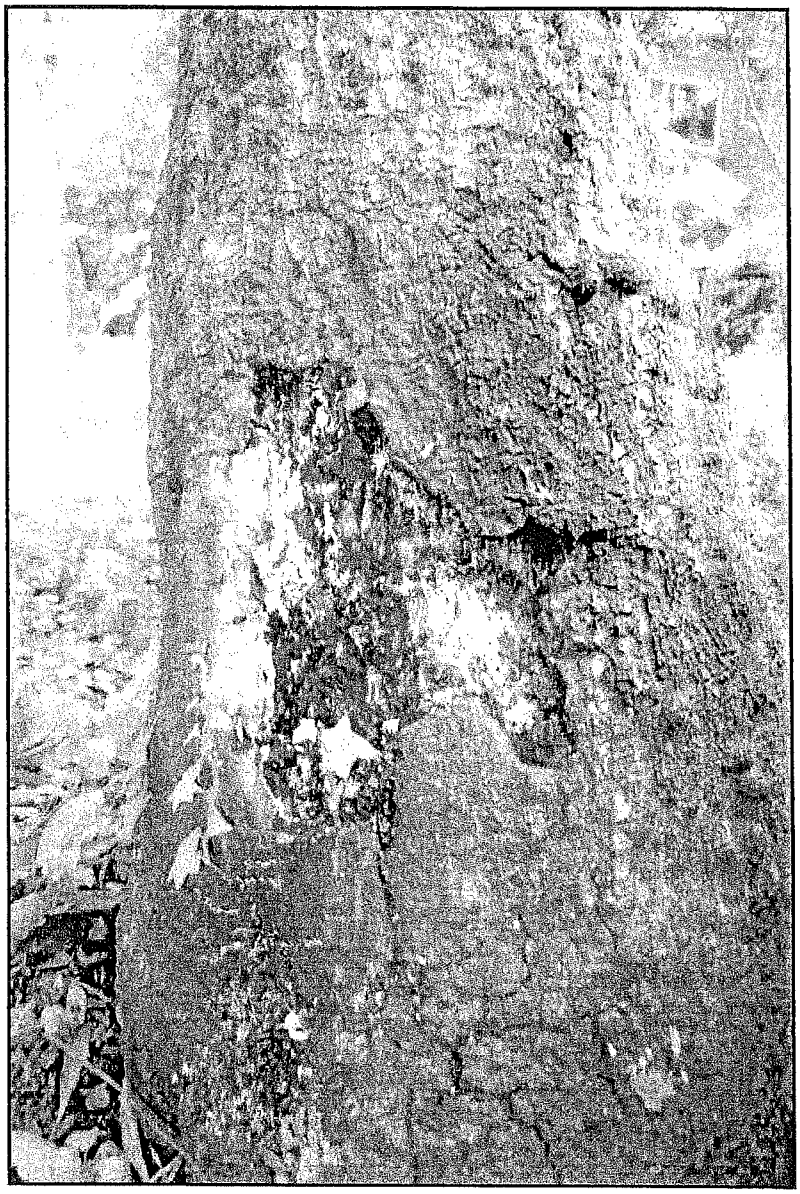
Tree Apprasial Trunk formula Method 9 edition

1 **Species:** ***Quercus agrifolia,*** **Coast Live Oak, (Tree # 17)**
2 **Condition:** 20%
3 **Trunk Circumference:** 61 Diameter: 19 in.
4 **Location: %= [Site:** 90% **% + Contribution** 80% **% + Placement** 80%
sub total: 250% % div.by 3 83% % total
Regional Plant Appraisal Committee and/or Appraiser-Developed or Modified Information.
5 **Species Rating** 90%
6 **Replacement Tree Size (diameter)** 3.00 3.00 inch dia of tree
(Trunk Area) 7.00 in.sq./cm.sq.TAr
7 **Replacement Tree Cost:** $180.00
(see regional information to use cost selected)
8 **Installation Cost:** $ $360.00
9 **Installation Tree Cost line (12+14)** $540.00
10 **Unit Tree Cost:** $ $60.00 per in. sq./cm.sq.
(see regional information to use cost selected)
Calculations by Apprasier using Field and Regional Information
11 **Appraised Trunk Area:**
(TAa or ATa; use tables 4.4-4.7) Guide for Plant Apraisal 9th ed.
or Cir. sq.(lineD-5 trunk circumference) x 0.08 in. sq.
or dia. sq. (line F-5 trunk diameter) 283 x 0.785 222 in. sq.
12 **Appraised Tree Trunk Increase (TA incr) =**
TAa or ATAa 222 in.sq.cir.Tar (minus) 3.00 (F10) = 219 in.sq.

13 Basic Tree Cost=Taincr (J24) 219 In.sq. x Unit Tree Cost (E16) $60.00 per in.sq. $13,140.00
(plus) Installed Tree Cost (E15) $540.00 (equals) $13,680
X species
14a **Appraised Value = Basic Tree Cost (K26)** $13,680 rating 90% X condition (20%
X Location (Cell F7) 83% $2,052
If the Appraised Value is $5000 or more, round it to the nearest $100; if it is less, round to the nearest $10.
14b **Appraised Value =** $2,052

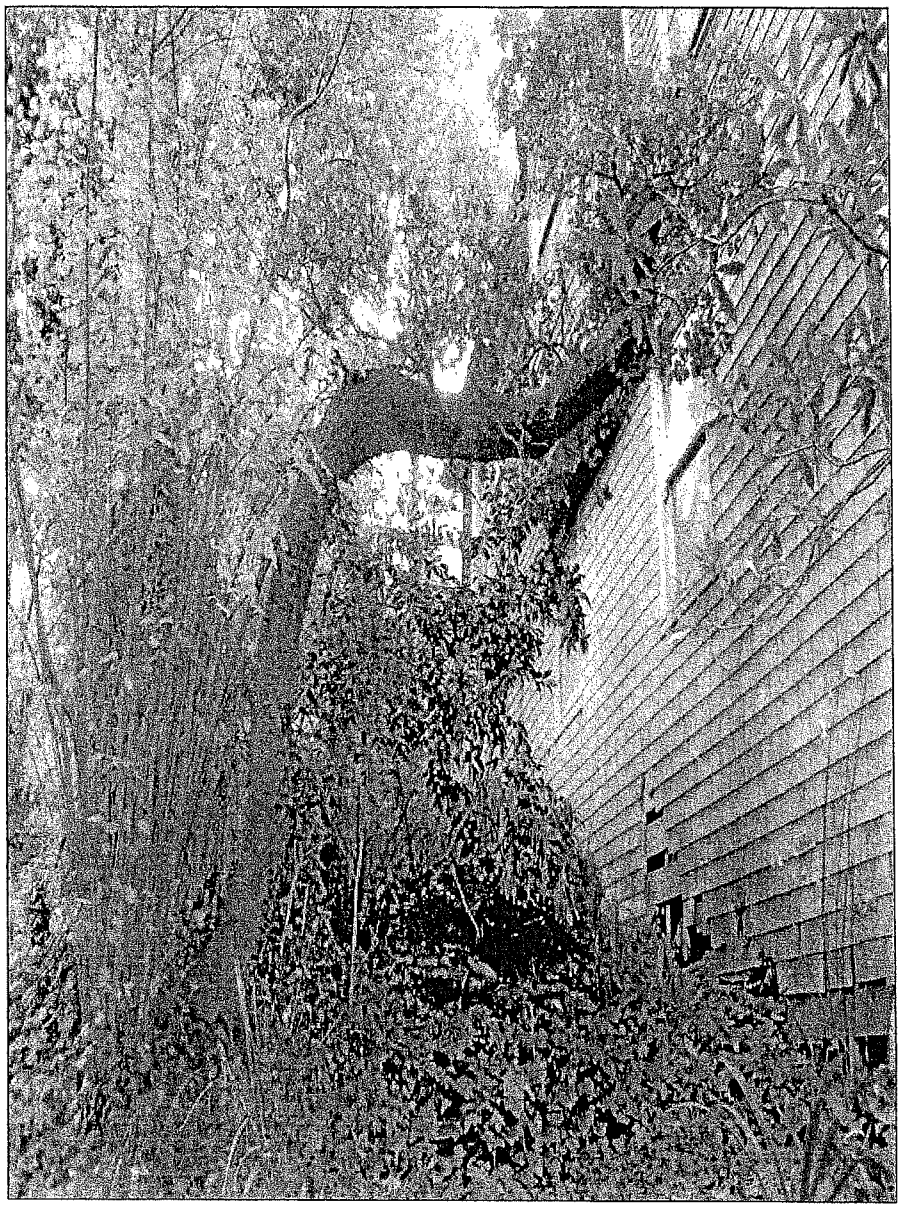


Coast Live Oak tree #1 trunk decay present in 95 % of trunk circumference.



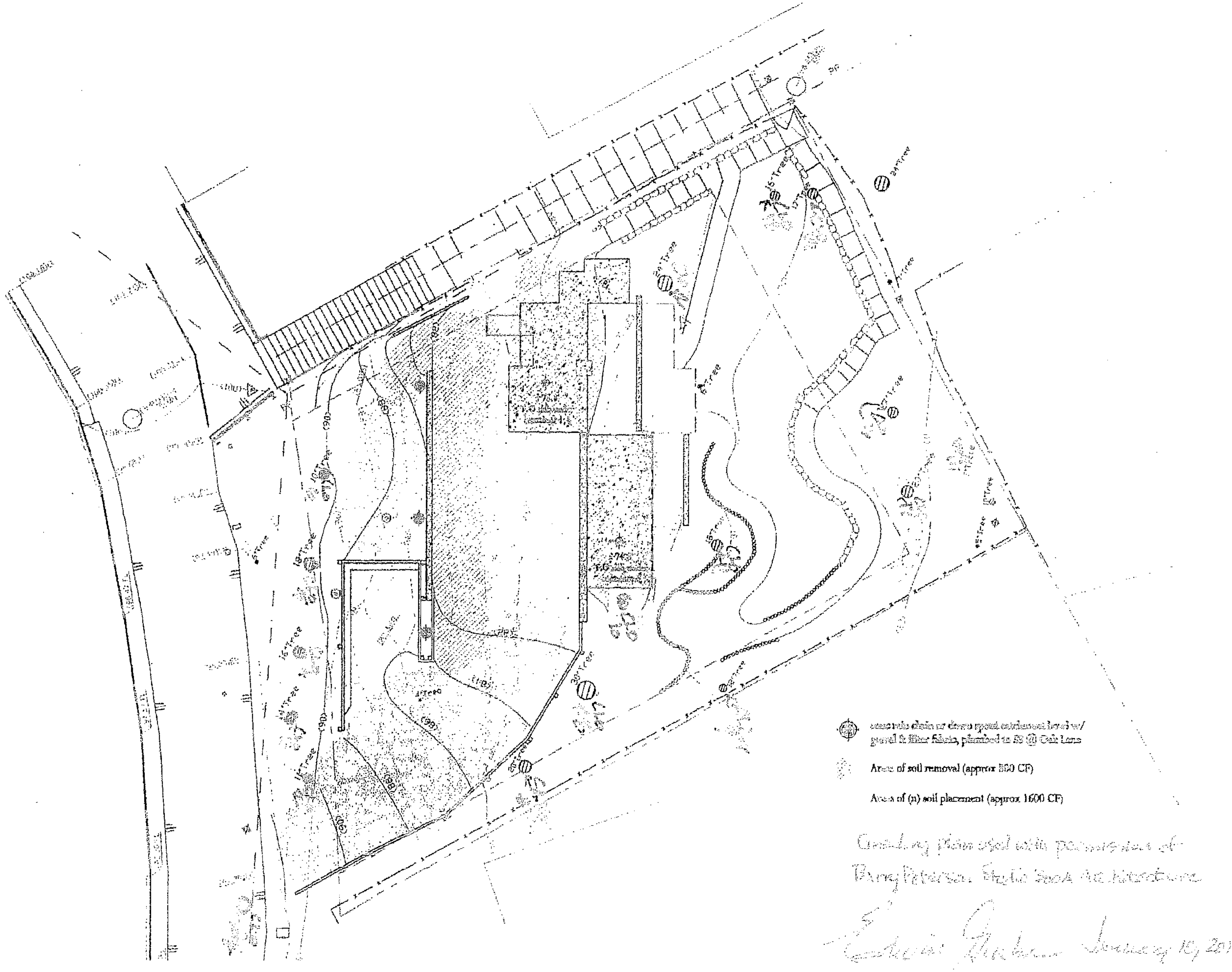
C L O Tree # 3 Lower trunk decay Armilliara fungal decay.

C L O Tree #8 Hypoxylon carbon domes on trunk very likely SOD present. Diseased trees are unpredictable to determine failure can occur at anytime.



CLO, tree #10, poor structure growth conflict with existing home can not be corrected.

CLO tree # 11 Extensive trunk decay 85 % of trunk completely hollow.


concrete drain or down spout catchment bowl w/ gravel & filter fabric, plumbed to SS @ Oak Lane
Area of soil removal (approx 550 CF)
Area of (n) soil placement (approx 1600 CF)
Grading plan used with permission of
Barry Peterson

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BARTLETT TREE EXPERTS

400 SMITH RANCH ROAD, SAN RAFAEL, CA 94903 • (415) 472-4300 • FAX (415) 472-8650

December 15, 2010

City of Sausalito
Attn: Kent Basso
420 Litho St
Sausalito, CA 94965

RE: Victorian Box (*Pittosporum undulatum*) located at the city right-of-way between #14 and #16 Josephine St in Sausalito

On Wednesday, December 15, 2010, I inspected the 16-inch in diameter at breast height Victorian Box (*Pittosporum undulatum*) located at the city right-of-way between #14 and #16 Josephine St.

The tree has a full canopy of leaves and is in good health condition. This tree grew next to a light pole which has been pushed and broken as the trunk has grown in diameter. The City of Sausalito is planning on replacing the light pole. This project requires the installation of a concrete base where the new pole will be standing. There will be significant disturbance to the root system of the tree, where some major anchoring roots will have to be cut almost at the root collar area, compromising the stability of the *Pittosporum*.

Due to the nature of the construction project and considering the location of the tree next to the road and hanging over two driveways, I recommend the removal of the *Pittosporum* to eliminate any potential risk of root failure after the new pole is installed.

If you have any questions or concerns about my assessment, please contact me directly.

Sincerely,

Juan M. Ochoa
Board Certified Master Arborist WE-6480B
Bartlett Tree Experts
400 Smith Ranch Rd.
San Rafael, CA 94903
Tel: (415) 472-4300 ext. 18
Fax: (415) 472-8650
jochoa@bartlett.com

Kent Basso

From: Jonathon Goldman
Sent: Wednesday, December 08, 2010 3:37 PM
To: Kent Basso; Alison Thornberry
Cc: Jeremy Graves; 'Tim Carter'
Subject: FW: Tree Trimming Needed at 12 Josephine

Kent: Will you please look at this with Jason and figure out what needs to be done and then work with Alison to confirm that we follow the appropriate permitting procedures? Thanks!

Jonathon Goldman
Director of Public Works
City of Sausalito
420 Litho Street
Sausalito, California 94965-1933
Direct: 415-289-4176
FAX: 415-339-2256
mailto: jgoldman@ci.sausalito.ca.us
www.ci.sausalito.ca.us

25 FOOT RIGHT OF WAY
THIS IS THE CITY'S TREE

From: Tim Carter [mailto:tcarter@republicits.com]
Sent: Wednesday, December 08, 2010 3:27 PM
To: Jonathon Goldman
Subject: Tree Trimming Needed at 12 Josephine

WE?

Jonathon,

We are scheduled to replace a streetlight pole foundation in front of 12 Josephine in Sausalito under the MGSA Streetlight Repair Project. We are planning to do this work next week and would like the City to trim the tree (significant trimming needed) in order to re-stand the pole on the new foundation. We can have someone meet you (or your staff) on site to go over the scope, or we can trim the trees ourselves if we have permission from the City.

I will call you as well to discuss.

Thanks!

Tim Carter
Project Manager
Republic ITS
A Siemens Company
371 Bel Marin Keys Blvd., #200
Novato, CA 94949-5699
1.800.LIGHTS.ON
415-475-6123 Direct Line
415-884-3000 Office
415-884-4800 Fax
415-720-3333 Cell
tcarter@RepublicITS.com
CA LIC: 647154

Kent Basso

From: Jonathon Goldman
Sent: Monday, December 13, 2010 5:00 PM
To: Kent Basso; Alison Thornberry
Cc: Jeremy Graves; Todd Teachout
Subject: RE: Tree Trimming Needed at 12 Josephine

We apparently need to retain an arborist to determine whether this tree can be trimmed enough to allow the streetlight necessary for public safety to be re-installed or whether the tree must be removed. Because this is arguably discretionary, someone other than me needs to approve it, possibly after one or more public hearings.

Jonathon Goldman
Director of Public Works
City of Sausalito
420 Litho Street
Sausalito, California 94965-1933
Direct: 415-289-4176
FAX: 415-339-2256
mailto: jgoldman@ci.sausalito.ca.us
www.ci.sausalito.ca.us

From: Jonathon Goldman
Sent: Wednesday, December 08, 2010 3:37 PM
To: Kent Basso; Alison Thornberry
Cc: Jeremy Graves; 'Tim Carter'
Subject: FW: Tree Trimming Needed at 12 Josephine

Kent: Will you please look at this with Jason and figure out what needs to be done and then work with Alison to confirm that we follow the appropriate permitting procedures? Thanks!

Jonathon Goldman
Director of Public Works
City of Sausalito
420 Litho Street
Sausalito, California 94965-1933
Direct: 415-289-4176
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mailto: jgoldman@ci.sausalito.ca.us
www.ci.sausalito.ca.us

From: Tim Carter [mailto:tcarter@republicits.com]
Sent: Wednesday, December 08, 2010 3:27 PM
To: Jonathon Goldman
Subject: Tree Trimming Needed at 12 Josephine

Jonathon,

We are scheduled to replace a streetlight pole foundation in front of 12 Josephine in Sausalito under the MGSA Streetlight Repair Project. We are planning to do this work next week and would like the City to trim the tree (significant trimming needed) in order to re-stand the pole on the new foundation. We can have someone meet you (or your staff) on site to go over the scope, or we can trim the trees ourselves if we have permission from the City.

Kent Basso

From: Doug Smith
Sent: Thursday, January 06, 2011 2:40 PM
To: Kent Basso
Subject: 12 Josephine

Kent,

I called the Assessor personally and got this:

APN: 065-211-08
Owner: Doris J. Ralston Trustee CELL # 265-3264 SPOKE WITH HIM & LET HIM KNOW WHAT NIZE NAME
Address: 12 Josephine, Sausalito CA 94965
Mailing Address: 10/12 Josephine
Phone: No listing in phone book or White pages.com PLAN IS 4 HE IS OK WITH IT
1/18/11 1:45

Doug Smith
City of Sausalito
420 Litho Street, Sausalito CA 94965
Phone: 415.289.4106 FAX: 415.339.2256
e-mail: *drsmith@ci.sausalito.ca.us*

BARTLETT TREE EXPERTS
SCIENTIFIC TREE CARE SINCE 1907

Alison - Permit Counter.

Client:

Mr ANNETTE WEBB
71 GLEN DR
SAUSALITO, CA 94965
Mobile Phone: 902-5767

Printed on: 2/10/2011
Created on: 2/10/2011

Juan Ochoa - Representative
400 Smith Ranch Rd.
San Rafael, CA 94903
Business: 415-472-4300
Fax Number: 415-472-8650
E-Mail Address: jochoa@Bartlett.com
Contractor Lic. No.: 678496

The following program is recommended for certain trees and shrubs on your property. In addition to a thorough plant health care program, Bartlett Tree Experts recommends having a qualified arborist inspect your property periodically to assist you in identifying potential risks or hazardous conditions relating to your trees or shrubs. THIS IS NOT AN INVOICE.

RECEIVED
FEB 2 2011
CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEP

General Tree Work

Prune two Live Oaks located at the front of property, on city right-of-way according to the following specifications:

- Clean to remove all dead, diseased and broken branches ½" in diameter and larger throughout crown to improve health and appearance and reduce risk of branch failure.
- Thin crown to remove approximately 15% of live branches to improve light and air penetration through crown.
- Reduce crown height by approximately 2-3 feet to balance crown and reduce the risk of branch failure.

Remove resulting debris.

Excavate soil and ivy from the lower stem of two Live Oaks located at the front of property, on city right-of-way to expose the root collar to reduce the risk of insect and disease infestations and to promote plant health.

- Excavation will be made with hand tools.

Total Amount: $1,580.00

2/11/11 K. Petro gave the go-ahead to pull permit. Neighbor Toyoko - okay Approved.

ITEM NO. 6 PAGE 27

NOTICE OF RIGHT TO CANCEL: You, the homeowner or tenant (client) have the right to require the contractor to furnish you with a performance and payment bond. If a performance or payment bond is requested, the client understands that the cost of such a bond will be added to the original proposed price for the services, and such cost will be assumed by the client. You, the client, may cancel this transaction at any time prior to midnight of the third business day after the date of this transaction. Or if this is a contract for the repair of damages resulting from an earthquake, flood, fire, hurricane, riot, storm, tidal wave, or other similar catastrophic occurrence, you the client may cancel this transaction at any time prior to midnight of the seventh business day after the date of this transaction. Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint is filed within three years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, CA 95826.

Please review the information and the terms and conditions attached, which become part of the agreement, and sign and return one copy authorizing the program.

(Customer Signature) 02/15/11
(Date)

(Bartlett Representative - Juan Ochoa) (Date)

All accounts are net payable upon receipt of invoice.
Work is done in accordance with ANSI standards.

BARTLETT TREE EXPERTS
SCIENTIFIC TREE CARE SINCE 1907

Client:

Mr ANNETTE WEBB
71 GLEN DR
SAUSALITO, CA 94965
Mobile Phone: 902-5767

Printed on: 2/10/2011
Created on: 2/10/2011

Juan Ochoa - Representative
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San Rafael, CA 94903
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E-Mail Address: jochoa@Bartlett.com
Contractor Lic. No.: 678496

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Pest Management

Perform a bark treatment to the following plant to help suppress sudden oak death and bark beetles.

- two Live Oaks located at the front of property, on city right-of-way

Provide 1 treatment at 180.00 per treatment.

Estimated date of completion: 3/31/2011.

Total Amount: $180.00

NOTICE OF RIGHT TO CANCEL: You, the homeowner or tenant (client) have the right to require the contractor to furnish you with a performance and payment bond. If a performance or payment bond is requested, the client understands that the cost of such a bond will be added to the original proposed price for the services, and such cost will be assumed by the client. You, the client, may cancel this transaction at any time prior to midnight of the third business day after the date of this transaction. Or if this is a contract for the repair of damages resulting from an earthquake, flood, fire, hurricane, riot, storm, tidal wave, or other similar catastrophic occurrence, you the client may cancel this transaction at any time prior to midnight of the seventh business day after the date of this transaction. Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint is filed within three years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, CA 95826.

Client: Mr ANNETTE WEBB

Printed on: 2/10/2011
Created on: 2/10/2011

Please review the information and the terms and conditions attached, which become part of the agreement, and sign and return one copy authorizing the program.

Annette Webb
(Customer Signature)

02/15/11
(Date)

(Bartlett Representative - Juan Ochoa)

(Date)

All accounts are net payable upon receipt of invoice.
Work is done in accordance with ANSI standards.

CITY OF SAUSALITO
TREE CUTTING PERMIT

This form gives permission for tree work as described below:
Property where work is to be performed:

Owner: CITY OF SAUSALITO
Address: 71 GLEN DR.
Telephone: 289-4113

Applicant for permit:
Name: ANNETTE WEBB
Address: 71 GLEN DR.
Property address: —
Telephone: 415-902-5767

Description of work to be performed: SEASONAL PRUNING (25%) OF TWO OAK TREES

Conditions for work to be performed:

- All work to be performed to Sausalito Tree Ordinance 1114 standards.
- The Trees and Views Committee vote that a replacement tree is not required.
- All work to be performed during normal work hours M. -F. 8:00 AM – 5:00 PM, Sundays Holidays prohibited.
- All work to be performed to ANSI Z133.1 Safety Standards.

Issue date: 2/24/11

Kemi Bousso
Approved by City Dept Public Works

Expiration date: 2/24/12

THIS PERMIT MUST BE POSTED VISIBLY ON THE STREET FRONT OF THE LOT WHERE TREE WORK IS TO BE PERFORMED

Liabilities

The issuance of a permit pursuant to the Sausalito Tree Ordinance shall not create any liability of the City. With regard to the work to be performed, and the applicant for such permit shall hold harmless the City and its officers and employees from any liabilities, damage or injury that may occur in connection with, or resulting from, such work.

Attn: Kent Basso

RECEIVED
FEB 2 8 2017
CITY OF SAUSALITO
COMMUNITY DEVELOPMENT

CITY OF SAUSALITO
TREE REMOVAL / ALTERATION PERMIT

APPLICATION

TRP 17-078

APPLICANT INFORMATION

Name Annette Webb

Address 71 Glen Drive, Sausalito 94965

Day Phone 415-902-5167 Email Address annettewebb@[illegible].com

PROPERTY OWNER INFORMATION (If different from Applicant)

Name ______

Address ______

Day Phone ______ Email Address ______

TREE OWNER INFORMATION (If different from Property Owner)

If this application is for work on a tree located on property not owned by the applicant, provide the following information and attach a completed "Permission to Enter" Form. If this application is for work on a tree on City-owned property, describe the location and state "City property".

Name ______

Address ______

Day Phone ______ Email Address ______

EXPLANATION OF PROPOSED WORK

Describe the extent of the proposed tree work.

Tree is in need of pruning - off balance by PG&E

Explain why the work is needed.

It's been many years since the last pruning & it needs to be balanced. Treatment for SOD.

CITY OF SAUSALITO
TREE REMOVAL / ALTERATION PERMIT

If the tree will be removed, will a replacement tree be planted?
[ ] Yes -- List species, location, and container size of replacement tree.

No

[ ] No -- Explain why not.

APPLICANT'S AUTHORIZATION AND VERIFICATION

I (We) hereby grant permission for the Trees and Views Committee members and any City Officials to enter the property to inspect the tree(s) for making a decision on this Permit application. If a quorum (three or more members) of the Trees and Views Committee meets on the property, a publicly-noticed meeting is required and interested parties are allowed to enter the property during the publicly-noticed meeting. I (We) grant this permission subject to the following conditions. If none, check here [ ]

I (We) hereby declare under penalty of perjury under the laws of the State of California that the information in this application and the accompanying materials are true, complete, and correct.

SIGNATURES

Applicant Date 2/23/11

Property Owner Date 2/23/11

For questions contact:
Community Development Department
420 Litho Street
Sausalito, CA 94965
415/289-4128 Voice
415/339-2256 Fax

Permit Fee Paid $50

Receipt No.

By (Initials)

Date Stamp

RECEIVED
FEB 23 2011
CITY OF SAUSALITO
COMMUNITY DEVELOPMENT DEPT

CITY OF SAUSALITO
TREE REMOVAL/ALTERATION PERMIT

PERMISSION TO ENTER FOR REMOVAL OR ALTERATION OF TREES

THIS PERMISSION FORM MUST BE ON THE SITE DURING TIMES WHEN WORK IS BEING PERFORMED

Please type or print all information

I Annette Webber (Name) hereby grant permission to Bartlett Tree Expert (Name of Tree Worker)

to enter my property at 11 Glen Drive

for the purpose of the removal or alteration of trees as may be approved by the City of Sausalito Trees and Views Committee, and subject to the following additional conditions (if none, enter "None"):

Furthermore, I hereby grant permission for the City of Sausalito Trees and Views Committee members and any City of Sausalito officials to enter the property to inspect the tree(s) for making a decision regarding removal or alteration of trees. If a quorum (three or more members) of the Trees and Views Committee meets on the property, a publicly-noticed meeting is required and the public or interested parties are allowed to enter the property during the publicly-noticed meeting.

Granted by:
Signature Annette Webber Date 2/23/11

Day Phone 415-902-5767 Email Address annettewebber@bartlett.com

AMERICAN SOCIETY of CONSULTING ARBORISTS

Ed Gurka, Consulting Arborist
Member, American Society of Consulting Arborists

November 21, 2010

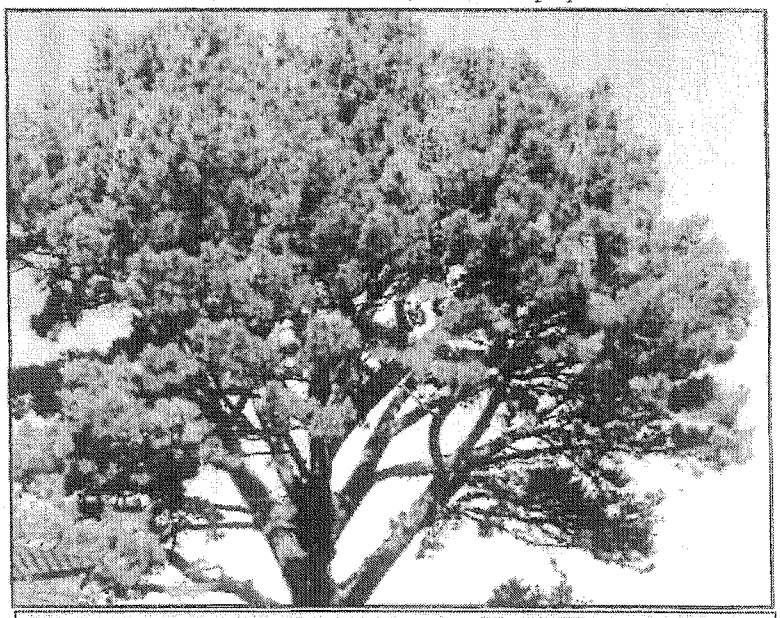
ASSIGNMENT:

A request by the City of Sausalito Public Works Department to inspect a Pine tree at Spencer and Miller Avenue in Sausalito. The inspection results will be presented in an arborist report that will provide a recommendation based on the findings.

OBSERVATIONS and DISCUSSIONS:

On November 19, 2010, I performed a site inspection at the location. The tree is located on a steep bank approximately 15 feet above Spencer Avenue where Miller Avenue intersects with Spencer Avenue. The base of the trunk is just outside of a property fence of 58 Spencer Avenue. The tree is a mature *Pinus radiata*, Monterey Pine. The Diameter at Breast Height, (DBH) is 54.4 inches. Tree height is 71 feet with a canopy spread of 85 to 90 feet. The tree is considered an undesirable species on private property, however, all trees on public property are considered protected if the DBH is 12 inches or greater. The scaffold limbs spread over Spencer Avenue and into neighboring backyard of 58 and 60 Spencer Avenue properties. The limbs extend over 45 feet in each direction away from the trunk center.

The Monterey Pine canopy inspection noted that there is tip dieback of terminal growth points throughout the upper canopy. In other limb tips, where smaller branches terminate, there appeared brown foliage, described as brown needle coloration. It is very possible that the two conditions are related. First, the limb tips produce brown needles that result in bare limb tip branches indicating a condition described as "dieback." This condition appears randomly throughout the canopy.



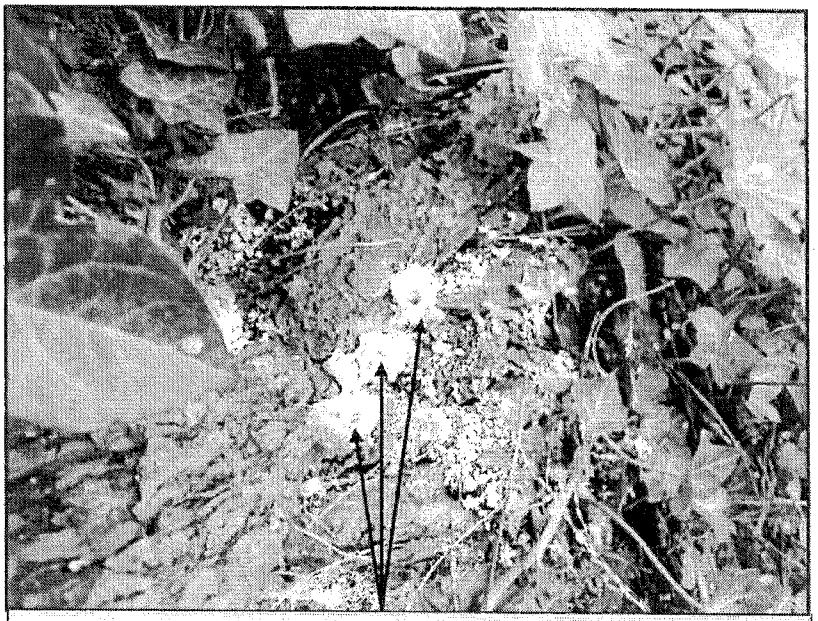
Brown needles on Pine branch tips. 11.19.2010

This dieback of branch tips and needle browning is a sign of Pine Pitch Canker, a fungal disease that most commonly occurs through wounding from pruning cuts or insect attacks.

At mid-height in the canopy where the main stem divides into scaffold limbs that form the canopy spread center, a group of five or six pruning cuts were noticed. At these pruning cuts, aged sap drip was noticed. This indicates that pruning cuts were made during the time of year when the tree's active growth takes place. The results of the pruning cuts are that the balance of the canopy is altered.

The result of canopy imbalance from pruning cuts is that the tree will shed other portions of the canopy in an attempt to rebalance the alteration. The corrective action occurs as the shedding of smaller diameter branches or larger limbs.

Pruning cuts performed during the growing season produce a sap pitch attracting pine beetles that are also active during the late spring, summer, and early fall months of the year. Since Pine Pitch Canker was noted during the time of visual inspection, the lower trunk area was examined for the presence of *Dendroctonus valens*, Red Turpentine Beetle. This beetle attacks the lower base of Pine trunks and exposed roots just below the soil surface. The Red Turpentine Beetle was detected in multiple locations on every side of the lower tree trunk. The beetle produces pitch tubes visible on the outer bark illustrated in the photograph from just one location on the lower trunk of this pine tree.



Beetle Pitch tubes on lower M. Pine trunk. 11.13.2010

RECOMMENDATIONS:

This Monterey Pine tree is in a stressed condition that has compromised its defense mechanisms. This is exhibited by the symptoms identified and discussed in this report. The tree will continue to decline and will be determined by factors such as continued beetle attacks, advancement of the fungal disease and climate conditions. There are multiple high value risk targets present in the failure path from falling branches and debris from the tree. A heavy pinecone production will also add to the debris produced by the tree. These events will increase with frequency as the tree declines and risk associated within the fall path must be evaluated by the City if the tree is on public right of way. The recommendation, based on these discovered findings from the site inspection, is that the tree should be removed to eliminate the risk.

SUMMARY:

When the decision to remove the tree is made, replacement planting should be considered. A mature tree is a benefit to the community. Trees absorb carbon monoxide and produce oxygen through photosynthesis process. Trees filter the air and prevent erosion and rainwater runoff. They produce shade cooling summer heat, and produce a desirable environment and enjoyment surroundings. These advantages should be included in a tree management program.

Contact Information:

Ed Gurka
Independent Services
San Rafael, CA. 94901
Mobile: 415 601-5337
Email: Egurka1@aol.com

Affiliations and Licenses:

- International Society of Arboriculture, Certified Arborist # 418, 1984 to present.
- American Society of Consulting Arborists, Member, 2000 to present.
- California Department of Pesticide Regulation, Pest Control Advisor PCA 74846, 1989 to present.
- Independent Consulting Arborist Services, 2004-present.

References:

Pest Notes, University of California Division of Agriculture and Natural Resources, Publication 7421 (included)
Plant Pathology, Fifth Edition, George Agrios, page 481, Canker of Forest Trees
ANR University of California, Publication 8025, Frequently Asked Questions about Pine Pitch Canker (included)

BLANK

BARK BEETLES

Integrated Pest Management for Landscape Professionals and Home Gardeners

Bark beetles, family Scolytidae, are common pests of conifers and some attack broadleaf trees. Several hundred species occur in the United States. The most common species infesting pines in California are the western pine beetle (*Dendroctonus brevicomis*) (Fig. 1), engraver beetles (*Ips* spp.), and the red turpentine beetle (*Dendroctonus valens*). Cedar or cypress bark beetles (*Phloeosinus* spp.) attack arborvitae, *Chamaecyparis*, cypress, and redwoods. Oak bark beetles (*Pseudopityophthorus* spp.) attack oaks and California buckeye. Shothole borer (*Scolytus rugulosus*) attacks damaged trunks of many tree species, including English laurel, fruit trees, and hawthorn. The European elm bark beetle (*Scolytus multistriatus*) feeds only on elms and vectors the Dutch elm disease fungus.

IDENTIFICATION

Adults are small, cylindrical, hard-bodied beetles about the size of rice grains. Most species are dark red, brown, or black. Their antennae are elbowed and the outer segments are enlarged and clublike. When viewed from above, the head is partly or completely hidden by the thorax. They have strong, scooplike jaws (mandibles) for chewing. A buckshot pattern of holes is apparent on infested branches or on the trunks where the new adults have emerged. Larvae of most species are off-white, robust, grublike, and may have a dark head.

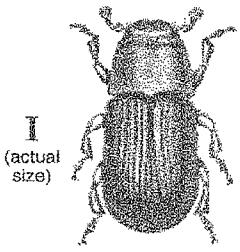


Figure 1. Adult western pine beetle.

Table 1. Bark Beetles Common to Garden and Landscape.

Species	Trees affected	Generations per year	Comments
Red turpentine beetle (*Dendroctonus valens*)	pines; only ponderosa and Coulter in So. Calif.	0.5 to 3	attacks lowest 2–8 ft.; pitch tubes appear; overwinters as adults and larvae; rarely kills tree
Western pine beetle (*Dendroctonus brevicomis*)	pines	2 to 4	attacks midtrunk, then spreads up and down; larva feeds on inner bark, completes development on outer bark; attacks in conjunction with other pests
Engraver beetles (*Ips emarginatus, I. mexicanus, I. paraconfusus, I. pini,* and *I. plastographus*)	pines	1 to 5	overwinter as adult; often makes wishbone-shaped tunnels; attack pines near the top
Cedar/cypress beetles (*Phloeosinus* spp.)	arborvitae, cypress, redwood, and *Chamaecyparis*	1 to 2	tunnels resemble centipede on inner and outer bark; adult feeds on twigs, causing flags; egg-laying female attracted to trunk of dead or dying trees
Oak ambrosia beetles (*Monarthrum* spp.) Oak bark beetles (*Pseudopityophthorus* spp.)	oaks, buckeye, and tanbark oak	2 or more	overwinter beneath bark; bleeding, frothy, bubbling holes with boring dust indicate damage; attack stressed trees
Shothole borer (*Scolytus rugulosus*)	fruit trees, English laurel, hawthorn, and other woody plants	2 or more	infestation indicated by gumming of woody parts, appearance of boring dust, or twig dieback; remove and destroy infested parts
European elm bark beetle (*Scolytus multistriatus*)	elms	2	overwinters as fully grown larva in bark; shotholes in bark indicate damage; lays eggs in limbs and trunk of injured, weakened, or recently cut elms; vectors Dutch elm disease fungus

PEST NOTES Publication 7421

University of California
Division of Agriculture and Natural Resources

Revised June 2000

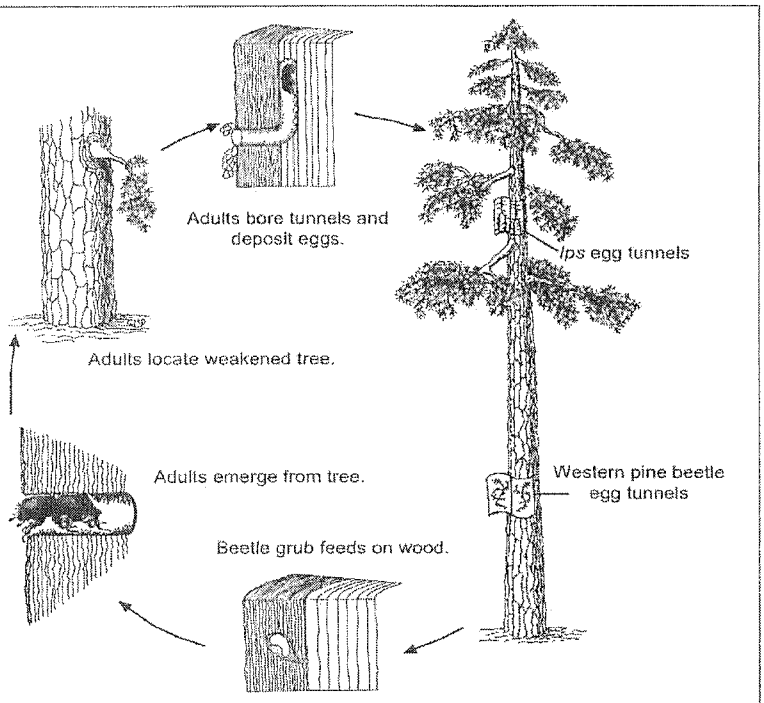


Figure 2. Life cycle of a bark beetle.

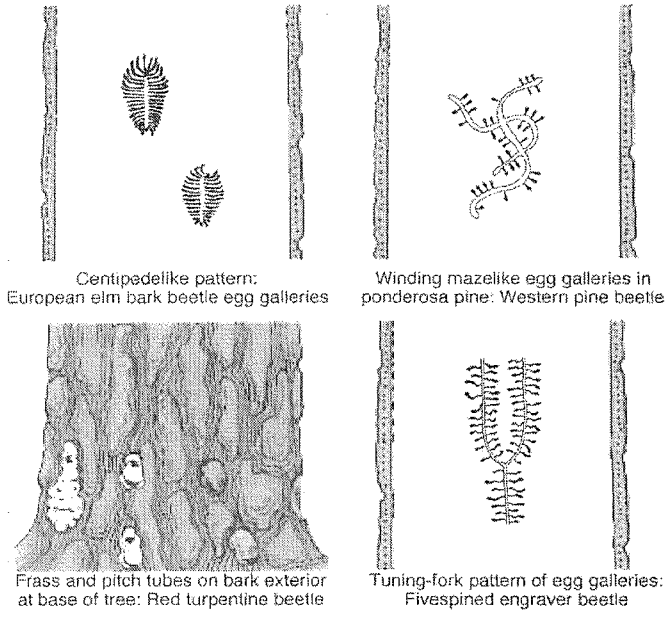


Figure 3. Bark beetle gallery comparison.

The species of tree attacked and the location of damage on the bark helps in identifying the bark beetle species present (Table 1). On pines, for example, engraver beetles usually attack trees near the top, while red turpentine beetles attack pine trunks near the ground. Engraver beetles are dark brown, cylindrical, and have a scooplike depression at the end of the abdomen. Red turpentine beetles are larger than engraver beetles and reddish brown; their presence is indicated by large, pinkish brown to white pitch tubes, a mixture of pitch and beetle boring dust, that appear on the lower trunk.

Peeling off a portion of infested bark to reveal beetle galleries is also helpful in identifying the beetle species present. Red turpentine beetle and western pine beetle adults usually pack about 60% of their egg-laying galleries with boring dust while engraver beetles maintain clean, open adult galleries. Larval galleries of all species are packed with sawdustlike boring dust called "frass" and most radiate out perpendicularly to the parent tunnels.

LIFE CYCLE

Females lay small, oval, whitish eggs at the interface of the bark and wood (Fig. 2). After eggs hatch, the tiny larvae mine galleries that branch out from the egg-laying gallery. At first the larval mines are very small, but they gradually increase in diameter as the larvae grow. The winding pattern of these galleries is helpful in identifying a bark beetle infestation and in distinguishing between the different species (Fig. 3). Pupation occurs in enlarged chambers at the ends of the larval tunnels or in the outer bark. Pupae are usually whitish and occur within or beneath bark. Adults can emerge at any time of year, weather permitting, but emergence is most common in late spring and again in late summer to early fall. After emergence, adults generally disperse to attack susceptible trees elsewhere. Most bark beetle species have two or more generations a year in California, depending on temperature. The season of attack is usually longer for species occurring in warmer locations, and they have more generations per year.

DAMAGE

The bark beetles of economic importance mine the inner bark (the phloem-cambial region) on twigs, branches, or trunks of trees and shrubs. This activity often starts a flow of tree pitch in conifers and is accompanied by a sawdust-like material (frass). Frass accumulates in bark crevices or may drop and be visible on the ground or in spider webs. Small emergence holes in the bark with sap weeping out of the holes are a good indication that bark beetles have been present. Bark beetles commonly attack trees weakened or predisposed to infestation by drought, disease, injuries, or other factors that may stress the tree. Beetles can contribute to the decline and eventual death of trees but with a few exceptions usually are not the initial cause.

In addition to attacking larger limbs, cedar and cypress bark beetles feed by mining twigs up to 6 inches back from their tips, resulting in dead tips or "flags" hanging on the tree. The adult European elm bark beetle also feeds on twig bark before laying eggs. If the adult has emerged from infected elm wood, its body will be contaminated with Dutch elm disease spores. The beetle then infects healthy elms with the Dutch elm disease fungus during feeding; it is during this pre-ovipositional (before egg laying) feeding, which usually takes place in limb crotches, that the fungus is transmitted. Elms showing yellowing or wilting in spring are suspect and should be reported to the county agricultural commissioner.

MANAGEMENT

Except for general cultural practices that improve tree vigor, little can be done to control most bark beetles beneath bark once trees have been attacked. Prune and dispose of bark-beetle-infested limbs. Promptly remove the entire tree if its main trunk is extensively attacked by bark beetles. Unless infested trees are quickly removed, large numbers of beetles can emerge and kill nearby host trees if they are weakened or predisposed by other factors. The exception is when pines are attacked by a few red turpentine beetles. Trees can often survive low density attacks by this species. Valuable, uninfested host trees near infested trees may be protected from bark beetles by spraying the trunk with a persistent insecticide in spring; however, do not substitute preventive sprays for proper cultural care.

Plant only species properly adapted to the area. Learn the cultural requirements of trees, and provide proper care to keep them growing vigorously. Healthy trees are less likely to be attacked and are better able to survive the damage from a few bark beetles. Rapid, vigorous growth encourages host resistance.

Pay particular attention to old, slow-growing trees, crowded groups of trees, and newly planted trees in the landscape. Large nursery stock or transplanted trees, notably oaks and pines, can become highly susceptible to bark beetles after replanting. Transplanting success depends on the tree species and its condition, appropriate tree and site selection, characteristics of the planting site, the season of the year, the transplanting method, and follow-up care. Stresses placed on a tree caused by poor planting or planting at the wrong time of year, lack of proper care afterwards, or the planting of an inappropriate species for the site will increase the tree susceptibility to bark beetle invasion.

Biological Control

Woodpeckers, several predaceous beetles such as the blackbellied clerid (*Enoclerus lecontei*) and a trogositid beetle (*Temnochila chlorodia*), a predaceous fly (*Medetera aldrichii*), and parasitic wasps are natural enemies of the western pine beetle but rarely control it. Predators are more important in regulating bark beetle populations than parasites. When bark beetles attack and kill some trees, natural enemies are attracted and may eventually limit the infestation.

Cultural Control

Prevention is the most effective method of managing wood-boring insects; in most instances it is the only available control. Avoid injuries to roots and trunks and protect trees from sunscald and other abiotic disorders. Irrigation may be important during dry summer months in drought years, especially with tree species that are native to regions where summer rain is common. Also, dense stands of susceptible trees should be thinned to increase their vigor and ability to withstand an attack.

Irrigate when appropriate around the outer canopy, not near the trunk. Avoid the frequent, shallow type of watering that is often used for lawns. The specific amount and frequency of water needed varies greatly depending on the site and tree species (i.e., whether trees are adapted to summer drought or regular rainfall).

Properly prune infested limbs and remove and dispose of dying trees so that wood-boring insects do not emerge and attack other nearby trees. Timing of pruning is important. Do not prune elm trees from March to September or pines during February to mid-October. Do not pile unseasoned, freshly cut wood near woody landscape plants. Freshly cut wood and trees that are dying or recently have died provide an abundant breeding source for some wood-boring beetles. Tightly seal firewood beneath clear plastic in a sunny location for several months to exclude attacking beetles and kill any beetles already infesting the wood.

Plant resistant species where bark beetles have been a problem. For instance, engraver beetles and red turpentine beetles do not attack redwoods or atlas cedars.

Chemical Control

Unless trees are monitored regularly so that borer attack can be detected early, any spraying is likely to be too late and ineffective. Sprays will not kill larvae tunneling beneath the bark and must be directed at the adults as they bore into the trunk to lay eggs. If the tree was attacked during a previous year and no longer contains beetles because they have completed development and flown away, spraying that tree will provide no benefit and could kill beneficials. Seriously infested trees, or trees that are dead or dying due to previous beetle attacks, cannot be saved with insecticide treatments and should be removed. Systemic insecticides injected through the

bark do not control or prevent attack by bark beetles or other wood borers.

Healthy specimen or high-value trees may be protected with an insecticide if they are near infested trees that are a source of beetles. Because each bark beetle species attacks only certain tree species (for example, pine bark beetles do not attack oaks and oak bark beetles do not attack pines) spray only healthy trees that are susceptible to the beetle species attacking nearby trees. It is not clear if products available to home gardeners can adequately prevent bark beetle attack. Most home gardeners also lack the high-pressure spray equipment and experience to effectively treat large trees. When hiring a professional applicator, discuss the specific pesticide to be applied.

Thoroughly drenching the main trunk with a pyrethroid (e.g., Dragnet) or the carbamate carbaryl (Sevin-Carbaryl) can prevent new bark beetle infestations if applied when adults are flying. Be sure to use a product labeled for trunk applications and apply it at the proper rate for trunk treatments. Label rates for foliage treatments will not be effective. Avoid organophosphates such as chlorpyrifos (Dursban) and diazinon whenever possible. These have been found in urban surface water systems at levels that warrant concern. Regardless of the insecticide used, mix only what you need. Apply the entire mix according to the label to avoid leftover insecticide, which should never be poured down the sink or storm drain.

Remember that treatments must be applied to kill adults before they lay eggs. Treatment at any other time will not be effective. Spray the bark in spring when beetles begin to emerge, which is in early spring in warm areas of the state and late spring in cooler and high elevation areas. Depending on local conditions and the pesticide used, a second application may be needed several months later to provide season-long control.

The red turpentine beetle can have as many as three generations a year and engraver beetles can have up to four generations a year; apply sprays about mid-February. Sprays made later will protect only against attack of later generations.

Insecticide sprays are not recommended against shothole borer and cedar or cypress bark beetles.

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For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

CONTRIBUTORS: D. Dahlsten, S. Dreistadt, T. Paine
EDITOR: B. Ohlendorf
TECHNICAL EDITOR: M. L. Flint
DESIGN AND PRODUCTION: M. Brush
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This Pest Note is available on the World Wide Web (http://www.ipm.ucdavis.edu)

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

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WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash nor pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

PUBLICATION 8025

Frequently Asked Questions about Pitch Canker

ANDREW J. STORER, Assistant Research Entomologist, Division of Insect Biology, Department of Environmental Science, Policy, and Management, UC Berkeley;
DAVID L. WOOD, Professor, Division of Insect Biology, Department of Environmental Science, Policy, and Management, UC Berkeley; and **THOMAS R. GORDON,** Professor of Plant Pathology, Department of Plant Pathology, UC Davis.

UNIVERSITY OF CALIFORNIA
Division of Agriculture and Natural Resources
http://anrcatalog.ucdavis.edu

QUESTIONS

Q. 1. What Is Pitch Canker?

A. Pitch Canker is a disease that causes die-back of individual pine branches (Figure 1), leading to a general decline in tree health, and, in some cases, premature death. This disease mainly affects pine trees in central coastal areas of California.

Q. 2. What Does Pitch Canker Look Like?

A. The earliest symptoms of pitch canker usually are dead branch tips in the upper part of the tree canopy. Needles on the ends of these branches are either wilted (Figure 2), red, brown, or absent, and resin exudation is associated with the point of infection on the branch (Figure 3). A more advanced symptom of the disease is the appearance of resinous cankers with heavy exudation of pitch on the main stem and larger branches of the tree (Figure 4). After these stem cankers appear, the top of the weakened tree may be killed by bark beetles and the entire tree may die.

Q. 3. Where Is Pitch Canker Found?

A. In the United States before 1986, pitch canker was only known to occur in the southeastern states. The disease was first recognized in California in 1986. It has also been found in Mexico, Japan, Spain, and South Africa. In California, pitch canker is at this time limited mostly to coastal areas from San Diego to Mendocino Counties. To date there are no confirmed occurrences of pitch canker in the Sierra Nevada or other locations east of the Central Valley or farther north than Mendocino County.

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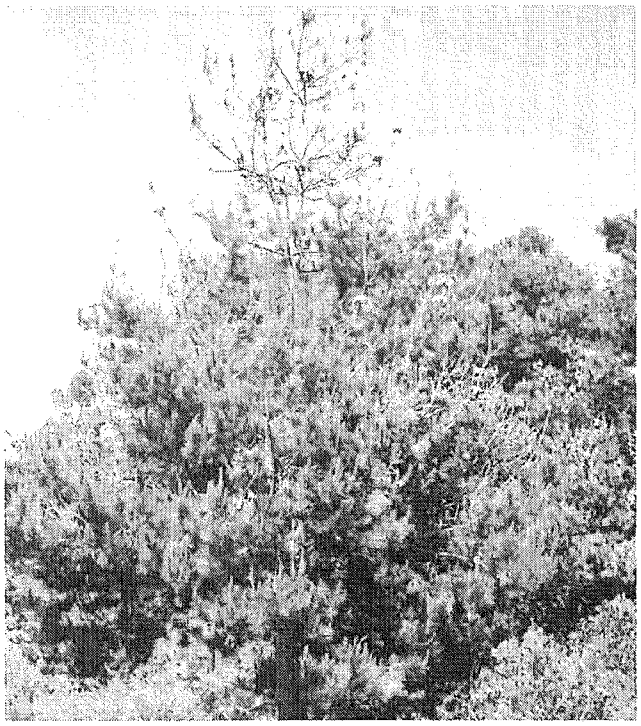

Figure 1. Multiple branch tip infections and dead tree top resulting from pitch canker in Monterey pine.

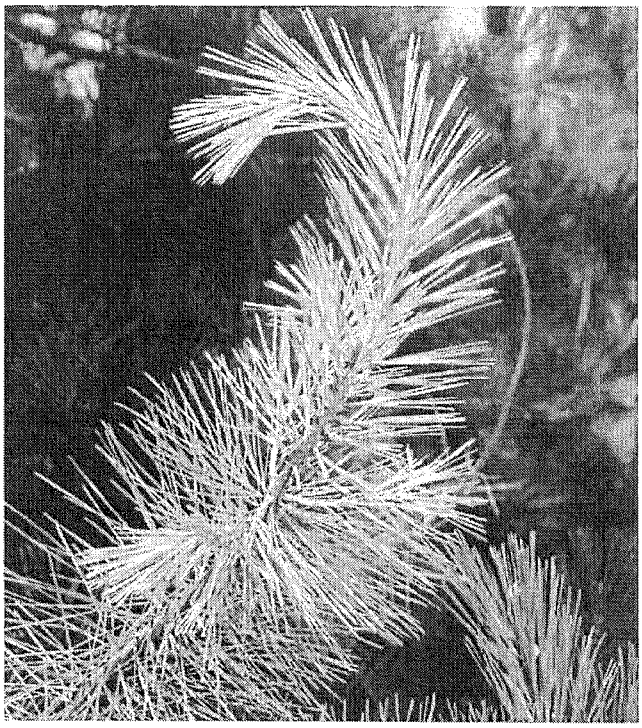

Figure 2. Infected Monterey pine shoot. Discolored area of shoot is the lesion resulting from infection by the pathogen. Note the wilting of the tip of this shoot.

Figure 3. Resin exudation from infected Monterey pine branch tip. Needles distal to the point of infection wilt and die.

Figure 4. Cankers on the main stem result in copious exudation of resin.

Q. 4. What Trees in California Are Affected by Pitch Canker?

A. Pitch canker affects many native pines in California, including Monterey pine, Bishop pine, knobcone pine, gray (=foothill) pine, coulter pine, Torrey pine, ponderosa pine, and shore pine. Douglas-fir, another native California conifer, is also susceptible, although less so than most pines. For Monterey, Bishop, and knobcone pines, infected trees have been observed in native forests. Pitch canker only affects pines (and occasionally Douglas-fir), and should not be confused with other canker diseases such as cypress canker.

Q. 5. Are All Susceptible Tree Species Affected to the Same Extent?

A. No. Of the native pines, Monterey and Bishop pines are very susceptible and are the most widely affected. Knobcone pine and shore pine are also severely affected in some areas. Other native species are known to be susceptible based on greenhouse tests, but these species are not common in the areas where pitch canker is found and as a consequence infected trees are rarely seen. Among nonnative pine species commonly found in landscape settings in California, Canary Island and Italian stone pines are relatively resistant to pitch canker. Aleppo pine is intermediate in susceptibility.

Q. 6. What Causes Pitch Canker?

A. Pitch canker is caused by a fungus called *Fusarium circinatum*. Older names for this fungus include *Fusarium subglutinans* f. sp. *pini* and *Fusarium moniliforme* var. *subglutinans*. Many other *Fusarium* species are commonly found in soil; some cause wilt diseases, but many are not pathogenic to plants.

Q. 7. How Does Pitch Canker Spread?

A. The pathogen produces airborne spores that can be spread by wind and carried by native insects. Insects known to carry the pathogen include bark beetles and twig beetles (which, respectively, feed under the bark of large- and small-diameter tree material) and cone beetles (which attack cones on the host tree). Many of these insects are known to transmit the pitch canker fungus to healthy trees and they are considered to be the primary means by which new infections are established. Although flying beetles can spread the disease to new areas, long-distance spread is more likely to result when people transport insect- or pathogen-infested logs, nursery stock, seeds, or soil. The pathogen is known to be able to survive for long periods in these media.

Q. 8. Are There Any Monterey Pine Trees That Do Not Get Pitch Canker?

A. Yes. Some Monterey pine trees are resistant to pitch canker. In addition, some trees in long-term survey areas have exhibited only a very limited amount of damage from the fungus. These trees are not expected to die from the disease unless new strains of the fungus capable of overcoming the trees' natural resistance are introduced into the state.

Q. 9. Is There a Cure for Pitch Canker?

A. There are no practical, direct methods to control pitch canker. However, actions can be taken to slow the spread of the pathogen, including techniques that reduce the number of insects emerging from diseased plant material. These methods include debarking recently killed trees and branches and

timely chipping and removal of diseased or insect-infested tree material from nearby susceptible trees.

Q. 10. Will Pruning-Out Infected Branches Slow the Decline of the Tree?

A. In most areas where pitch canker occurs, infected branch tips are so numerous that removing them all is not a practical option. Even where removal is possible, repeated pruning will almost certainly be necessary as new infections are likely to occur. Where the incidence of the disease is isolated, the timely removal of diseased branch tips may effectively slow the spread of the disease. The benefits of this practice, however, have not been demonstrated in full-scale field studies.

Q. 11. Can I Prevent Pitch Canker from Getting into My Trees?

A. No proven method is currently available for preventing pitch canker from infecting susceptible trees in areas where the fungus is established.

Q. 12. What Should I Do if I Think a Tree Has Pitch Canker?

A. If other trees in the area have pitch canker, there is little that can be done for an individual tree. Tree removal should only be considered if a tree becomes hazardous or unacceptably unsightly. A confirmed diagnosis of the disease requires isolation of the fungus. Details on this procedure are available from your county agriculture commissioner's office and your local UC Cooperative Extension county office.

Q. 13. How Far Will Pitch Canker Spread?

A. Given the geographic range of susceptible host tree species, the potential for spread is great and includes the northern coast of California and the Sierra Nevada. Work is underway to determine whether climatic conditions, differences in host susceptibility, or insect vectoring potential will limit spread of the disease.

Q. 14. What Can I Do to Help?

A. The potential for the spread of pitch canker into the forests of the Sierra Nevada is a major concern. To help reduce the risk that this will occur, no Monterey pine or other pine material should be transported from west of Interstate 5 to east of Interstate 5. Any firewood, cones, logs, or chipped pine material should be used in the local area where it originated. These types of material may carry the fungus, its insect vectors, or both, and they will increase the risk that the disease will spread if they are transported outside of the local area.

Q. 15. Where Can I Get More Information about Pitch Canker?

A. Information is available from various sources including printed documents and information on the Internet. Documents and links relating to pitch canker can be found at this URL:

http://cnr.berkeley.edu/foresnry/pitch.html

ADDITIONAL READING

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FOR MORE INFORMATION

You'll find detailed information on many aspects of disease prevention in the landscape and garden in these and other publications, slide sets, and videos from UC ANR:

Pests of Landscape Trees & Shrubs: An Integrated Pest Management Guide, Publication 3359

CD-ROM: *UC Guide to Solving Garden and Landscape Problems,* Publication 3400

UC IPM Pest Management Guidelines, Publication 3339

To order these products, visit our online catalog at http://anrcatalog.ucdavis.edu. You can also place orders by mail, phone, or fax, or request a printed catalog of publications, slide sets, and videos from

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BARTLETT TREE EXPERTS
400 SMITH RANCH ROAD, SAN RAFAEL, CA 94903 • (415) 472-4300 • FAX (415) 472-8650

November 4, 2010

City of Sausalito
Attn: Kent Basso
420 Litho St
Sausalito, CA 94965

RE: Monterey Pine (*Pinus radiata*) located on the corner of Miller Ave and Spencer Ave

On Monday, November 1, 2010, I inspected the Monterey Pine (*Pinus radiata*) located at the corner of Mille Ave and Spencer Ave. The purpose of this inspection was to determine the current health condition of the tree and its safety.

The tree has a full canopy of needles with significant candle dieback and some dead scaffold limbs, as a result of infection caused by the pathogen *Fusarium moniliforme*, disease known as "pine pitch canker". On the lower trunk, there is some evidence of old turpentine beetle attacks. There is ivy growing at the base of the tree and on the lower trunk that should be removed to allow for a better inspection of the root collar.

Based on my visual inspection of the tree and considering its species, health condition and location on the landscape, I recommend pruning the tree to reduce the risk of branch failure and to eliminate as many candles infected with *Fusarium moniliforme* as possible. The crown should be cleaned removing dead, diseased and broken branches that are ½ inch and larger in diameter. Also, the crown should be thinned not to exceed the removal of 15% of live branches to reduce weight on branch ends to reduce the risk of branch failure. These recommendations may help to improve the tree's health condition and may help to reduce potential risks. However, if the main objective is to eliminate any potential hazards the tree represents, the removal of the tree is recommended.

If you have any questions or concerns about my assessment, please contact me directly.

Sincerely,

Juan Ochoa
ISA Board Certified Master Arborist WE-6480B
Bartlett Tree Experts
O: (415) 472-4300 x 18
F: (415) 472-8650
jochoa@bartlett.com

Cypress Ridge Open Space Preserve
Vegetation Management Prescription (Phase 1: Fire-Fuel Reduction)
Prescription by Kent Julin, California Registered Professional Forester #2648
September 21, 2010

Site Conditions. Cypress Ridge Open Space Preserve is a 10-acre undeveloped property owned by the City of Sausalito and is situated east of the intersection of Interstate Highway 101 and Rodeo Avenue (see map). Access is gained from Rodeo Avenue through a locked, cabled gate which leads to an un-surfaced road that loops through the property. Vegetation on the property is dominated by fire-prone trees including bluegum eucalyptus (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), and Monterey cypress (*Cupressus macrocarpa*), with broom (*Cytisus scoparius* and *Genista monspessulana*), cotoneaster (*Cotoneaster* sp.), and Himalaya berry (*Rubus discolor*) in the understory. Remnant native plants including coast live oak (*Quercus agrifolia*), toyon (*Heteromoles arbutifolia*) are well distributed on the property and should be preserved.

Project Purpose. Overgrown vegetation on the property has created a hazardous fire-fuel condition that the City of Sausalito would like to mitigate by directed, clearing of vegetation. The proposed work is also part of a long-term plan of re-establishing a native plant community for continued passive recreation or for developing a more active recreational park on the property. The first phase of work—primarily for fire-hazard reduction—includes pruning lower branches from large trees, thinning smaller eucalyptus and pine trees in the forest and clearing non-native flammable brush from the understory. The following prescriptions address work for trees, shrubs, and ground vegetation.

Prescription for Trees. Cut all eucalyptus with a diameter at breast height (dbh) of *less than 10 inches*. Cover *each* cut stump with black plastic sheeting to prevent resprouting. Use landscaping staples or piled chips to secure the sheeting. Chip eucalyptus trunks, branches, and leaves onsite. Cut all plum trees, off-haul chips, and cover stumps with plastic sheeting. Cut all pines then chip and spread materials onsite. Prune lower cypress branches to a height of 20 feet—leaving primary scaffold branches on forked trunks—and distribute chips onsite. Spread all chips to a maximum depth 6 inches. Protect all oak and bay trees from damage.

Prescription for Shrubs. Cut all broom, cotoneaster, and Himalaya berry near ground level and off-haul all material. Onsite burning of these materials is an alternative option for disposal. (Note: follow-up treatments for re-sprouting stems and germinating seeds *will* be necessary for long-term control of these weedy plants. This work would be most effective during the Spring following initial cutting).

Prescription for Ground Vegetation. Clear all English and Cape ivy and haul offsite. Chip all down tree branches longer than 6 feet onsite and distribute chips onsite.