

June 29, 2011

Carol Macannan
83 Princess Street
Sausalito, CA 94965

URBAN FORESTRY ASSOCIATES, INC.

8 Willow Street San Rafael, CA 94901
415 454 4212 arborforestry@sbcglobal.net

RECEIVED
JUL 06 2011
CITY OF SAUSALITO
COMMUNITY DEVELOPMENT

RISK ASSESSMENT OF COAST LIVE OAK
83 Princess Street, Sausalito, California 94965

PURPOSE

Urban Forestry Associates, Inc. (UFA) was asked to assess the health and structural condition of a coast live oak, as well as perform a Resistograph® test to satisfy a condition of approval for the Trees & Views Committee of the City of Sausalito. The tree was inspected on June 10, 2011.

SITE LOCATION

The subject tree is located on the Macannan property at 83 Princess Street in Sausalito, California.

SCOPE OF WORK / LIMITATIONS

Information regarding property boundaries, land, or tree ownership were provided by Ms. Carol Macannan (tree owner) and/or were evident from property features. Urban Forestry Associates, Inc. (UFA) has no interest either personal or monetary in the outcome of this matter. All determinations reflected in this report are objective to the best of our ability. All observations and conclusions regarding tree, shrubs, and site conditions in this report were made by (UFA), independently, based on my education, experience, and inspection of the site.

TREE STATUS: City of Sausalito's Tree Ordinance:

- ▶ Heritage Trees are trees that measure 30.0" in circumference or greater at 4.5' above grade. No undesirable tree can be a Heritage tree.
- ▶ Protected Trees are 1) On private property: a) Coast Live Oak (*Quercus agrifolia*) measuring 12" CBH or larger; b) heritage trees; and c) dedicated trees. 2) On private undeveloped property, a tree measuring 12" CBH or larger. 3) All trees and shrubs on City-owned property. 4) No undesirable tree is a protected tree.

- ▶ Undesirable Tree: is one of the following: 1) *Eucalyptus globulus* (Bleu Gum Eucalyptus), 2) *Pinus radiata* (Monterey Pine), 3) *Cupressus macrocarpa* (Monterey Cypress), 4) *Sequoia sempervirens* (Coast Redwood), 5) *Acacia melanoxylon* (Blackwood Acacia), *Acacia baileyana* (Bailey Acacia), *Acacia decurrens*: (Green Wattle).
- ▶ Dedicated Trees are trees that have special significance as provided for by resolution of the City Council.
- ▶ C.B.H. (Circumference at Breast Height): The tree trunk's circumference as measured at 4½ feet above the ground. For multi-trunked trees, the circumference of the two largest trunks combined.

RESISTOGRAPH®

The Resistograph is a probe with a long, thin specialized steel bit. As it is inserted into the wood tissue, variation in resistance is translated into graphical output that depicts the internal conditions encountered by the probe. It is used to detect internal decay and defects in tree trunks, branches and exposed roots. Interpreting the graphical information produced by the Resistograph requires practice, experience, and skill.

It extends 400 millimeters into the tree. As the probe passes through the wood, it encounters variable amounts of resistance, which reflects:

- the structural condition of the cell walls
- the variations between early and late wood in the annual growth ring
- the species of wood and its typical cell layout (for example diffuses, or ring porous)
- the manner in which the tree has developed in response to environmental conditions

Citation:

- Dunster, J.A. 2000. *A Manual for Users of the Resistograph Decay Detection Instrument*. Bowen Island, BC: Dunster & Associates Environmental Consultants Ltd.

TREE ASSESSMENT

All tree diameters were taken at CBH (Circumference at Breast Height, 4.5' above grade) or otherwise stated. Inspection in accordance with ISA standards.

TPZ = Tree Protection Zone

CBH = Circumference at breast height

SOD = Sudden Oak Death (*Phytophthora ramorum*)

Subject Tree - Heritage & Protected Status

Species Coast Live Oak (*Quercus agrifolia*)
Size 58.75" CBH

Site History An oak tree to the east of the subject tree was recently removed. The area to the immediate east of the tree base is used for parking.

Location Located in side yard; 18 feet north of driveway and 7 feet north of a 28" diameter oak.

Condition 1 - Fair healthy, Poor structural Condition: This tree has a severe lean to the southwest, toward the home, deck and detached garage. There is a 16" deep cavity on the northeast side of the tree at 2.2 feet above grade, as well as an old wound on the northeast root crown. There is a wound on the east base of tree. There is an old wound on the south root crown that has created an invagination with decay spanning the south to west quadrant of the root crown. The south edge of the cavity is 20" deep and the north edge of the cavity is also 20" deep. This major cavity extends almost completely across the root crown. Two cavities were also located on the southwest (lean side) of trunk at 7 feet above grade. One cavity is 8" deep. The tree's lean and balance is toward the deck, home, dining deck and garage, which are all high use areas and have high property value. As two of these areas have frequent use, often with people in stationary positions, the target value is very high.

Prelim Conclusions This tree has a serious asymmetry exacerbated by major cavities, particularly the 20 inch deep cavity in the root crown. This tree is a high risk to life and property. Our preliminary conclusions justified testing.

Resistograph Test The Resistograph is a thin drill probe with a long specialized steel bit that translates the amount of drilled resistance onto a graph for professional interpretation. It accurately detects decay and defects in trees and wooden structures. *Copies of the Resistograph® test are available in Appendix A of this report.

The sounding of the bark with a hammer detected a hollow on the south to west quadrant of the root crown. The resistograph test of this area showed there was a deep cavity with no resistance. We opened the cavity for view.

Test #	Test Location	Test Result
1	Southeast root crown & parallel to south (cavity?)	8.25" of good wood.
2	Southwest side (prior to punkwood & decay removal).	1" of bark and the remainder was cavity or decay
3	Northeast base at 1 foot above grade.	2.0" of sound sapwood, 1" of dead & dry sapwood, 0.5" of decay in lense, 1.0" of dead sapwood, 4.0" of good sound heartwood, 2.75" of punkwood, and 3.0" of dead and dry heartwood.

Suitability for Preservation

Poor.

Conclusion

The root crown cavity with the southwest opening is 20" deep and is particularly concerning because it is on the lean side or compressed side of the tree. There is a vertical cavity on the tension side of the tree. Also there has been parking on the roots on the tension side. There are large supporting roots on either side of the south and northwest cavities. There is a large east supporting root that appears to be in good condition, but it has a significant wound above it - (there is most likely some degree of vascular disruption occurring, which is a concerning defect). There is a decay column and cavity opening on the northeast side of the tree at 2 feet above grade that joins the lower decay of the root crown cavity.

This tree is structurally compromised by the cavity on the lean side of the tree and decay on the tension side of the tree. While the three roots mitigate the hazard to an unknown extent the tree has a high level of risk

Failure Potential: 3 - High

Size of Part: 3 - 18 to 30 inches

Target Rating: 4 - stationary, constant use, Home and deck

Total: 10 out of 12 points = unacceptable risk level

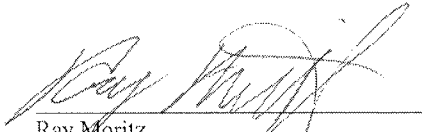
Recommendation

Remove tree for safety.

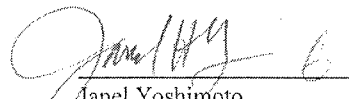
Macannan: Risk Assessment of Coast Live Oak
83 Princess Road, Sausalito, CA 94965

Urban Forestry Associates, Inc. 2011

Certification: Ray Moritz is a Pacific Northwest Chapter ISA Certified Risk Assessor.



Ray Moritz
Certified Forester #241



Janel Yoshimoto
WE-7588A

Macannan: Risk Assessment of Coast Live Oak
83 Princess Road, Sausalito, CA 94965

Urban Forestry Associates, Inc. 2011

