Assessment of One (1) Valley Oak (Quercus lobata) Street Tree
Adjacent To

1406 Maddux Drive
Redwood City, California

Prepared at the Request of:

Mr. Mike Gibbons, Superintendent
Department of Public Works
1400 Broadway Street
Redwood City, CA 94063

Site Visit:

Walter Levison, Consulting Arborist (WLCA)
9/3/2014

Report:

WLCA
9/3/2014
1.0 Background and Assignment

Walter Levison (WLCA) was requested by Superintendent Mike Gibbons of the City of Redwood City Department of Public Works to independently assess and comment on the health and structural status of one (1) large valley oak street tree specimen located in the street planting strip in front of 1406 Maddux Drive, Redwood City, California (see digital images below in this report). The exact location is the southeast corner of Maddux Drive and Alameda de las Pulgas (ADLP), in the ADLP planting strip between the ADLP curb and the ADLP sidewalk.

WLCA was directed to field assess the tree using the standards of visual tree assessment (VTA) for a “level 2 basic assessment” per the ISA Tree Risk Assessment Best Management Practices protocols, record standard arboriculture data, and record digital images of the tree. WLCA performed a root crown excavation (RCX) using a brick layer’s hammer to unearth soil to a depth of three inches below grade elevations around the entire circumference of the subject oak trunk. This RCX is also considered part of a level 2 basic assessment.

At the end of the basic assessment on 9/3/2014, WLCA performed Resistograph ™ tracing, which is considered to be an element of a “level 3 advanced assessment”. This tracing was performed in order to obtain verifiable hard data concerning the health and structural status of the trunk cross section xylem and phloem tissues for documentation purposes.

The following are WLCA’s findings and recommendations, including a formal tree risk rating analysis which follows the new standard ISA TRAQ (Tree Risk Assessment Qualified) tree risk rating protocols.

2.0 Basic Field Data and Discussion

WLCA assessed the subject tree on 9/3/2014.

The subject is a California valley oak (Quercus lobata) measuring 64.1 inches diameter at 4.5 feet above grade, and approximately 98 inches diameter at grade elevation after discounting wayward buttress root extensions that protrude generally to the north (see trunk cross section sketch in section 4.0).

The subject stands approximately 55 feet in height as determined using a Nikon Forestry Pro hypsometer. The canopy radius extends 37 feet north, 45 feet south, 20 feet east, and 37 feet west, also determined using the Nikon Forestry Pro hypsometer.

On scales of zero to 100%, this tree rates out with a health of 20% and a structure of 10%, for an overall condition rating of 15% or “very poor”. These ratings were determined after analysis of the root crown excavation (see section 4.0 below). Trees with a condition rating of “very poor” are typically recommended for immediate removal for safety purposes if there are high value or high occupancy-type targets within the tree’s target zone of 1x to 1.5x the canopy dripline radius distance from trunk.

Canopy Condition Overview

- North Quadrant: Poor to moderate TDE (TDE = live twig density and live twig extension). Minor dead twig buildup. Limbs not overextended.

South Quadrant: Moderate TDE. Over-extended limb growth with heavy endweight. Minor dead twig buildup.

East Quadrant: Poor to moderate TDE. Not over-extended in terms of limb lengths or weights. Minor dead twig buildup.

West Quadrant: Very poor TDE. Over-extended limb lengths extend out over the entire width of ADLP. Good wound closure on some pruning cut wounds (see images below in this report). Multiple large diameter pruning cut wounds evident from pruning by City of Redwood City made over the last few years.

If this tree were to be retained, extensive endweight reduction pruning would need to be performed to reduce the lengths of over-extended limbs to reduce load forces acting on the limb attachments, to reduce the likelihood of failures of those attachments.

Cavities

An extensive open cavity is located between one and three feet above grade on the southwest side of the trunk (see images below in this report).

Wound Closure

The tree apparently has maintained good vigor over many years, as is evidenced by the fact that many old pruning cut wounds have been completely sealed over by the tree’s natural growth processes during which new callus and woundwood engulfed old pruning cut wounds to the point where they are no longer voids, and appear simply as round areas along the limbs of the subject tree (see images below in this report). Good wound closure is considered one defining factor in determining the state of the tree’s vigor, as a tree needs to have good energy reserves in order to be able to allocate those energy stores toward closure of a pruning cut wound. Good energy reserves derives from good photosynthetic capability, which is directly tied to live twig density and live twig extension.

The overall vigor rating for this tree appears to have declined from good to poor, as the tree no longer maintains enough live twig density and live twig extension to allow for rapid wound closures to occur.

3.0 Root Crown Excavation Findings and Trunk Cross Section Sketch

WLCA performed a root crown excavation (RCX) down to approximately three inches below grade elevations, using a brick layer’s hammer.

The following are WLCA’s findings presented in matrix form for ease of understanding. The findings are arranged by numeric zones, the numbers of which correspond to the numbers noted on the trunk cross section sketch below on page 6:

<table>
<thead>
<tr>
<th>Zone Number</th>
<th>Visual Findings:</th>
<th>Indication of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water soaked brown color xylem wood.</td>
<td>Likely Armillaria mellea fungi infection.</td>
</tr>
<tr>
<td>Zone Number</td>
<td>Visual Findings:</td>
<td>Indication of:</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>2</td>
<td>Carpenter ants, and white mycelial plaques.</td>
<td>Carpenter ants indicate presence of wood decay and/or internal voids in the wood(^2), as they colonize these voids. White mycelial plaques at the root crown is a typical indicator of <em>Armillaria mellea</em> fungi infection which kills phloem and cambium, and causes a white type rot of the xylem wood which is cellulose remaining after lignin has been digested(^3).</td>
</tr>
<tr>
<td>5</td>
<td>Black and brown colored lignin chimneys remaining in decayed wood.</td>
<td>Brown rot type fungal species infection. Species has digested cellulose, leaving behind lignin which appears as brittle chimneys.</td>
</tr>
<tr>
<td>6</td>
<td>Black and brown colored lignin chimneys remaining in decayed wood.</td>
<td>Brown rot type fungal species infection. Species has digested cellulose, leaving behind lignin which appears as brittle chimneys.</td>
</tr>
<tr>
<td>7</td>
<td>White mycelial plaques. Carpenter ants. Concave open cavity area which appears to extend at least 12” to 18” into the cross section of the trunk. One fruiting body of puffball-type fungus found, measuring 3.5 inches diameter, which exhibits brown spore production as “dust” puffs.</td>
<td>Internal voids, <em>Armillaria</em>. Puffball likely a species of <em>Calvatia</em>, which digests dead plant materials, and probably has no significant negative effect on the subject tree’s health or structure.(^4)</td>
</tr>
</tbody>
</table>


### Visual Findings

<table>
<thead>
<tr>
<th>Zone Number</th>
<th>Visual Findings</th>
<th>Indication of</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Fungal fruiting body of a fungus that produces a shelf mushroom. Fruiting body</td>
<td>Likely a Ganoderma species: a white rot-producing</td>
</tr>
<tr>
<td></td>
<td>exhibits a brown and white surface, measuring 2.25&quot; diameter total.</td>
<td>pathogen which typically causes decay of the roots</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and lower trunk areas, digesting primarily lignin.</td>
</tr>
</tbody>
</table>

### Summary of RCX findings:

The entire circumference of the subject tree’s trunk is compromised, and the tree appears to retain zero percent of its original buttress roots in an intact and healthy state. There was zero sound wood found during the RCX digging process during which WLCA excised small “chips” of phloem and xylem wood to observe color, scent, water content, texture, and other factors.
4.0 Tree Risk Rating Analysis

The following tree risk rating analysis is based on the protocols set forth in the ISA Tree Risk Assessment Best Management Practices companion book to the ANSI A300 standards (see reference #1). The basic tree risk rating process from this book is summarized at right by WLCA in an easy to understand single page format for reference.

Targets:

Cars on busy street (Alameda de las Pulgas).

Pedestrians on ADLP and on Maddux, walking to/from school at northeast corner of Maddux and ADLP. High occupancy.

Tree part most likely to fail: (Entire tree failure).

Failure mode: Basal trunk failure at root crown with root plate breaking apart due to advanced Armillaria infection that appears to have destroyed all of the buttress roots along the entire trunk circumference.

The subject tree is considered to be an overall extreme risk, per the following analysis using the new ISA TRAQ protocol:

<table>
<thead>
<tr>
<th>Likelihood of Failure</th>
<th>Likelihood of Impacting Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Likely</td>
</tr>
<tr>
<td>Medium</td>
<td>Somewhat Likely</td>
</tr>
<tr>
<td>Low</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

In the above table:

- **Imminent**: The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions.
- **Possible**: Failure could occur, but it is unlikely during normal weather conditions.
- **Probable**: Failure may be expected during normal weather conditions.
- **Imminent**: Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load.

**Very Low**: Remote chance that failure will impact target. Rarely used site fully exposed; occasionally used site partially protected. Rarely used trail or trailhead in a rural area, or an occasionally used area that has some protection due to other trees between the failure and the target.

**Low**: Not likely that failure will impact target. Occasionally used area fully exposed; frequently used area partially exposed; constant target well protected. EX: a little-used service road next to the tree, or a frequently used street with a street tree between the assessed tree and the street.

**Medium**: Even odds that failure will impact target. Frequently used area fully exposed on one side of tree; constantly occupied area partially protected. EX: suburban street next to street tree, or a house partially protected by an intermediate tree.

**High**: Likely that the failure will contact the target. A fixed target is fully exposed. EX: near a high-use road or walkway with an adjacent street tree.

<table>
<thead>
<tr>
<th>Likelihood of Failure and Impact</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Likely</td>
<td>Negligible</td>
</tr>
<tr>
<td>Likely</td>
<td>Low</td>
</tr>
<tr>
<td>Somewhat Likely</td>
<td>Low</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Low</td>
</tr>
</tbody>
</table>

- **Negligible**: Low value damage or disruption, no personal injury.
- **Minor**: Low to moderate damage, small disruptions to traffic or communication lines, or very minor personal injury.
- **Significant**: Moderate to high value damage, considerable disruption, or personal injury.
- **Severe**: High value damage, major disruption, severe personal injury or death.

Failure of Branch or Root: Imminent
Likelihood of Impacting Target: High
Likelihood of Failure and Impact: Very Likely
Consequences: Severe
Overall Risk Rating: Extreme
Mitigation Options:

None. In the case of our subject oak, it is not possible to mitigate part of the risk of tree or tree part failure, since the tree’s structural anchor root or buttress root system is completely compromised. There is no way to reduce the risk of injury or death to car drivers, pedestrians, etc. within the target zone consisting of 1x to 1.5x the height of this tree, which is 55 feet = 55 feet radius in all directions out from the trunk point.

5.0 Resistograph™ Tracing and Findings

WLCA’s root crown excavation of the subject tree along the circumference of trunk base allowed the author to determine that the entire root crown of the subject tree was decayed with zero sound wood remaining along the trunk circumference. From this information, supplemental level 3 risk assessment methods such as use of an invasive Resistograph™ machine to trace into the subject oak trunk cross section were not warranted. However, WLCA decided to perform Resistograph tracing for additional documentation purposes to provide City of Redwood City Staff with verified proof that the trunk cross section is actually compromised in terms of wood tissue structural quality.

The Resistograph machine used for this project was an F-300 which has an actual needle travel distance of approximately 11 inches penetration depth from start to finish, penetrating first outer bark, then inner bark (phloem), and finally the structural xylem wood.

WLCA performed traces at five (5) root crown excavation numeric zones #1, 2, 6, 8, and 12, in order to give Staff an idea of wood tissue decomposition at various locations around the trunk at grade elevation, including concave areas between buttress roots (zones #2 and 12) and the convex buttress roots themselves (zones #1, 6, and 8). All traces were performed horizontally toward the trunk center, except for the trace at zone #1 which was angled downward in trajectory to allow the machine to trace through the wood year rings in a normal manner perpendicular to the concentric rings, as required for a good “read”.

Below is a scan of the five (5) traces performed by WLCA, in order of zone number. Note that all traces were performed with the machine set on the “softwood” setting, which allowed for better resolution in terms of the needle’s vertical travel over the wax graph paper. Inches of needle travel are noted along the scales on the bottoms of the wax paper graphs on page 9.
The following are WLCA’s interpretations of the above five (5) traces:

<table>
<thead>
<tr>
<th>Trace Number</th>
<th>Trace Details</th>
<th>Interpretation</th>
<th>Sound Wood Wall Thickness Adequate for Stability?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1” of bark, then 2” of sound wood, and the remainder of trace is mainly incipient decay and advanced decay.</td>
<td>Severely compromised wood, with little or no structural quality.</td>
<td>n/a</td>
</tr>
<tr>
<td>2.</td>
<td>Almost 100% advanced decayed wood.</td>
<td>Wood retains basically zero structural qualities, and has no function in terms of keeping the tree vertical against gravity.</td>
<td>n/a</td>
</tr>
</tbody>
</table>
### Trace Details and Interpretation

<table>
<thead>
<tr>
<th>Trace Number</th>
<th>Trace Details</th>
<th>Interpretation</th>
<th>Sound Wood Wall Thickness Adequate for Stability?</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0.25&quot; bark, then 2.5&quot; of sound wood, then incipient decay and advanced decay along the remainder of the trace.</td>
<td>Severely compromised wood, with little structural quality.</td>
<td>n/a</td>
</tr>
<tr>
<td>8</td>
<td>Almost total 100% decomposition of wood cells.</td>
<td>Wood retains basically zero structural qualities, and has no function in terms of keeping the tree vertical against gravity.</td>
<td>n/a</td>
</tr>
<tr>
<td>12</td>
<td>Almost total 100% decomposition of wood cells.</td>
<td>Wood retains basically zero structural qualities, and has no function in terms of keeping the tree vertical against gravity.</td>
<td>n/a</td>
</tr>
</tbody>
</table>

### 6.0 Summary and Recommendations

The subject tree exhibits active wood decomposition from very advanced infection by *Armillaria mellea* fungus and other pathogenic fungi that have compromised or destroyed the bark/phloem, the cambium active growing layer, the xylem wood, and the buttress roots around the entire circumference of the trunk to the point where it is not clear how the tree is maintaining its above-ground woody structure against gravity.

Resistograph™ tracing at five (5) locations around the circumference of trunk at grade elevation confirmed the lack of sound buttress root wood and sound xylem wood thicknesses adequate for structural stability of the above-ground portion of this over-extended canopy tree.

The tree rated out as a “very poor” specimen with a very low 15% overall condition rating on a scale from zero to 100%.

The tree rated out with a TRAQ protocol tree risk rating of “extreme” on a scale from “low” to “extreme”, with the targets noted as cars as well as pedestrians walking to/from the adjacent school along busy Alameda de las Pulgas and Maddux Drive.

Given the above findings, WLCA suggests immediate removal of the tree for safety purposes.
7.0 Consultant’s Qualifications

- Review Team, Landscape Construction Specifications & Side Cut Details for Landscape Architects
  CALFIRE Grant, 2013

- Contract Project Arborist, Hetch Hetchy Water System Improvement Program (WSIP)
  San Francisco Public Utilities Commission
  10/10-present

- ISA Qualified Tree Risk Assessor

- ISA Qualified Tree Risk Assessor Course, Palo Alto, CA. 2013

- PNW-ISA Certified Tree Risk Assessor Course graduate, 2009
  Vancouver, B.C., Canada

- ASCA Registered Consulting Arborist (RCA) #401

- Millbrae Community Preservation Commission (Tree Board)
  2001-2006

- ASCA Arboriculture Consulting Academy graduate, class of 2000

- ISA Certified Arborist (CA) #WC-3172

- B.A. Environmental Studies/Soil and Water Resources
  UC Santa Cruz, Santa Cruz, California 1990

- Peace Corps Soil and Water Conservation Extension Agent
  Chiangmai Province, Thailand 1991-1993

- Associate Consulting Arborist
  Barrie D. Coate and Associates
  4/99-8/99

- Contract City Arborist to the City of Belmont Department of Planning and Community Development
  5/99-present

- Continued education through attendance of arboriculture lectures and forums sponsored by The American Society of Consulting Arborists, The International Society of Arboriculture (Western Chapter), and various governmental and non-governmental entities.

(My full curriculum vitae is available upon request)
# 8.0 Bay Area Vendors

<table>
<thead>
<tr>
<th>Service</th>
<th>Company</th>
<th>What they offer</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transplanting</td>
<td>Tree Movers Inc.</td>
<td>Large specimen trees, transplant services.</td>
<td>650-968-6117</td>
</tr>
<tr>
<td></td>
<td>Valley Crest Tree Co. tree moving division</td>
<td>Large specimen trees, transplant services.</td>
<td>818-223-8500</td>
</tr>
<tr>
<td>Pruning</td>
<td>Advanced Tree Care</td>
<td>Pruning, root crown excavation, fertilization, tree installation, support systems for high risk trees, SOD phosphate sprays.</td>
<td>650-839-9539</td>
</tr>
<tr>
<td></td>
<td>Maguire Tree Care</td>
<td>Pruning performed directly by an ISA Certified Arborist</td>
<td>650-245-2620</td>
</tr>
<tr>
<td></td>
<td>Trees 360</td>
<td>Pruning performed directly by an ISA Certified Arborist (upon request).</td>
<td>408-866-1010</td>
</tr>
<tr>
<td></td>
<td>Commercial Tree Care</td>
<td>Pruning of very high quality if request ISA Certified Arborist Joe Nama to directly monitor pruning work.</td>
<td>408-985-TREE</td>
</tr>
<tr>
<td></td>
<td>The Shady Tree Co.</td>
<td>High quality pruning.</td>
<td>650-326-0406</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="http://www.theshadytreecompany.com">www.theshadytreecompany.com</a></td>
</tr>
<tr>
<td>Special Tree Sources</td>
<td>Specialty Oaks Lower Lake, CA</td>
<td>California native oak species</td>
<td><a href="http://www.specialtyoaks.com">www.specialtyoaks.com</a></td>
</tr>
<tr>
<td></td>
<td>Oracle Oak Nursery</td>
<td>Various oaks and hybrid elms. Only local purveyor of hard to find Italian oak (Quercus frainetto 'Forest Green')</td>
<td><a href="http://www.oracleoaknursery.com">www.oracleoaknursery.com</a></td>
</tr>
<tr>
<td></td>
<td>Sweet Lane Wholesale Nursery Santa Rosa, CA</td>
<td>Can import rare oaks such as the fantastic 'Forest Green' Hungarian oak, from Oregon growers. Also may be able to request the excellent Cathedral live oak (Quercus virginiana 'Cathedral')</td>
<td><a href="http://www.sweetlanenursery.com">www.sweetlanenursery.com</a></td>
</tr>
<tr>
<td></td>
<td>L.E. Cooke Nursery</td>
<td>Current local source of the rare 'Roberts' sycamore: a cultivar of deciduous California sycamore that is reported to be resistant to both powdery mildew and sycamore anthracnose, while exhibiting fast upright growth appropriate for urban landscape conditions.</td>
<td><a href="http://www.lecooke.com/cms/contact-le-cooke.html">http://www.lecooke.com/cms/contact-le-cooke.html</a></td>
</tr>
</tbody>
</table>

(The above sources have been known to provide high-quality arboriculture services in the past. They are not guaranteed or endorsed by the author.)
9.0 Assumptions and Limiting Conditions

Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownership to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised and evaluated as through free and clean, under responsible ownership and competent management.

It is assumed that any property is not in violation of any applicable codes, ordinance, statutes, or other government regulations.

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.

The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

Unless required by law otherwise, the possession of this report or a copy thereof does not imply right of publication or use for any other purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.

Unless required by law otherwise, neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed conclusions, identity of the consultant/appraiser, or any reference to any professional society or institute or to any initiated designation conferred upon the consultant/appraiser as stated in his qualifications.

This report and any values expressed herein represent the opinion of the consultant/appraiser, and the consultant’s/appraiser’s fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.

Sketches, drawings, and photographs in this report, being intended for visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise. The reproduction of any information generated by engineers, architects, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by Walter Levison to the sufficiency or accuracy of said information.

Unless expressed otherwise:
information contained in this report covers only those items that were examined and reflects the conditions of those items at the time of inspection; and
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 problems or deficiencies of the plants or property in question may not arise in the future.

Loss or alteration of any part of this report invalidates the entire report.

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Tree are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning, and removal of trees may involve considerations beyond the scope of the arborist’s services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate the trees.

10.0 Certification

I hereby certify that all the statements of fact in this report are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Consultant
11.0 Digital Images

Looking south down Alameda de las Pulgas. The north quadrant of the subject tree canopy is in full view in the left center of this image.

Looking north at the subject tree. The local school is located at the lower left portion of this image. The canopy sections in view are the west quadrant (center of image), south quadrant (right side of image), and a portion of the north quadrant (top of image).

Looking south at the subject tree, this image is a close-up of the east quadrant of the canopy shown on the left half of the image. This section of the tree has been noticeably shortened through use of pruning over time.
Most of the subject tree’s older pruning cut wounds exhibit excellent closure, which indicates good vigorous wood growth. Newer wounds are not yet closed (see right).

For comparison, a newer pruning cut wound on the west quadrant of the subject tree’s canopy is not closed.

The tree’s current level of vigor is probably not adequate to allow for continued rapid wound closure, as various pathogenic fungi are digesting the tree’s woody materials and are likely slowing down this closure process considerably.

Close-up of the west quadrant of the subject tree canopy, exhibiting very poor live twig density and live twig extension or “vigor”.

The north, south, and east quadrants exhibit poor to moderate vigor.

A fungal fruiting body located at zone 12 of the root crown sketch shown on page 6 of this report (i.e. northeast corner of the basal trunk circumference). This shelf mushroom represents prolonged presence of a pathogenic fungi species that has been digesting live wood within the lower trunk and buttress root cross sections.

A puffball type fungus species (likely *Calvatia sp.*) located at zone 7 of the trunk (see trunk cross section sketch above on page 6 of this report).

Unlike other fungi attacking this tree, this species probably has little or no negative effect on the tree’s health or structure.

A void on the southwest portion of the lower trunk indicates decay by fungi over time.

However, the actual remaining safe and useful lifespan of the tree is more related to the health and structure of the root crown at and below grade elevation.

The root crown of this tree at zone 7 is completely decayed along the curb, as shown here in the upper half of the image.

The west side of trunk base (i.e. “zone 7”) does in fact exhibit a deep decay void which extends into the cross section of the trunk as noted at left.
Looking south along Alameda de las Pulgas at the north side of root crown (trunk base), with the sidewalk at left and the ADLP roadway at right.

The entire circumference of this trunk base was excavated down to approximately 3” below existing soil grade elevations by WLCA, and the area examined carefully both visually and using a Resistograph F300 decay detection device.

Fungi-infected phloem and xylem were found along the entire trunk circumference, along with carpenter ants which are a good indicator of wood decay and internal voids.