Deborah Ellis, MS

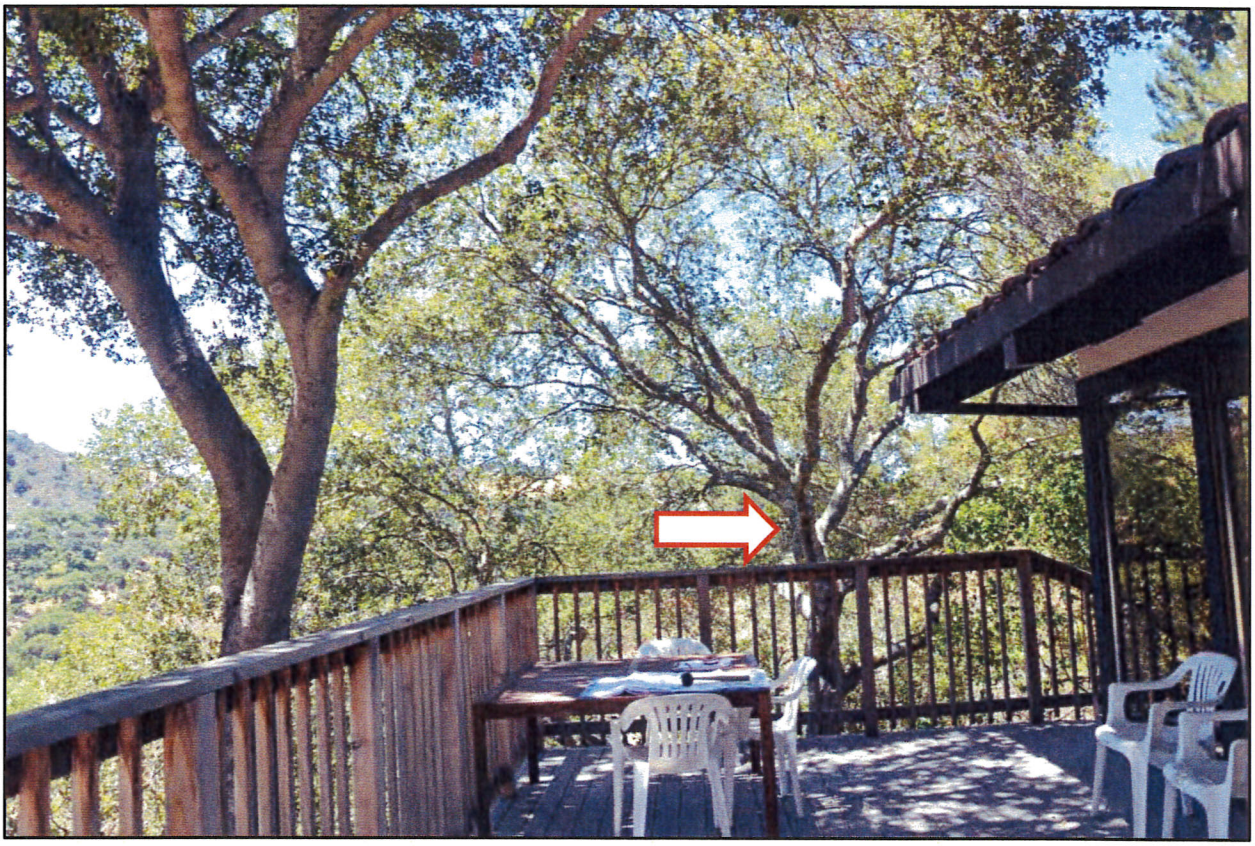
Consulting Arborist & Horticulturist

Service since 1984

Suzanne Avila
Los Altos Hills Community Development Department
263790 Fremont Road
Los Altos Hills, CA 94022

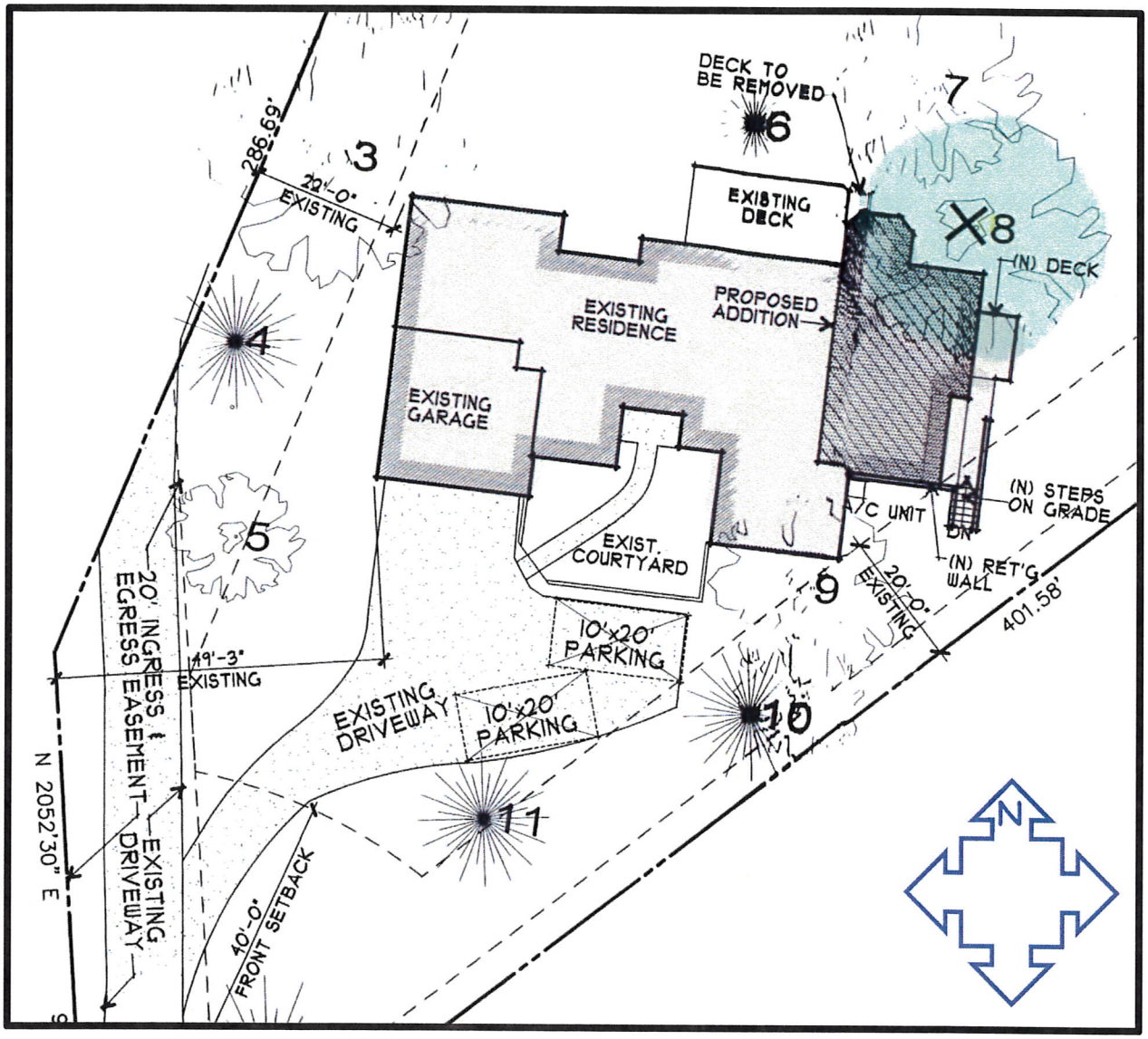
June 27, 2014

27299 Byrne Park Lane, condition of coast live oak tree #8



Dear Suzanne:

You requested that I evaluate the subject coast live oak tree, because it has been scheduled for removal on the proposed construction plans for an addition near the tree. I looked at this oak yesterday. In my opinion the tree has "Fair/Poor" preservation suitability and the proposed addition is closer than advisable to the trunk. It is possible that the addition could be constructed without severe damage to the tree, if construction work is done very carefully around the oak and the tree is adequately fenced off from construction. Whether or not to save the tree however, is debatable due to its condition. I don't think it is unreasonable to remove the tree. On the other hand it would also not be unreasonable to try to save the oak if it will not incur severe construction damage.

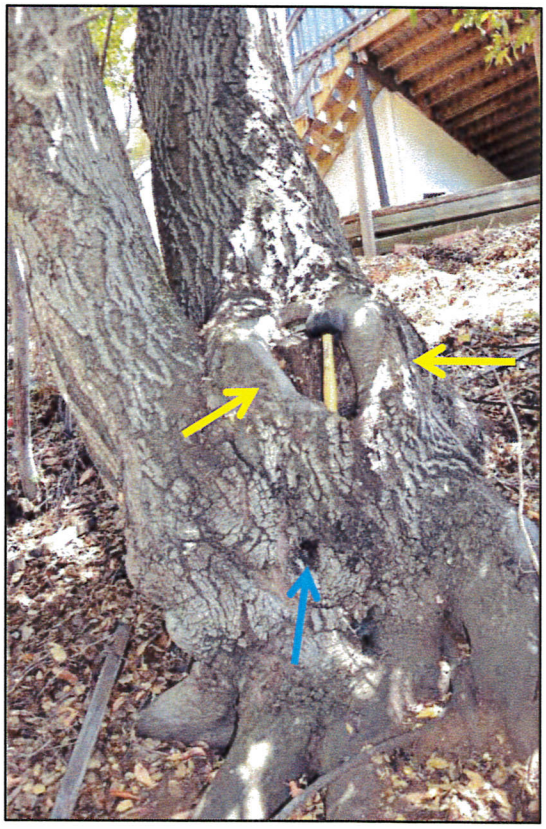


A portion of the Site Plan in the construction plan set I received is shown above. I have highlighted the subject oak, which is labeled as tree #8. Based upon the plans it appears that the North side of the addition is about 6 feet from the trunk, and the west portion is 8 feet. These distances are approximate however, and may actually be a bit farther because the tree is on a slope below the existing house. Excavation for the addition however, can be expected to extend a few feet beyond the actual wall of the addition. So, if the tree may remain I think it would be a good idea to actually survey the location of the addition (and also note any necessary over-excavation beyond the addition) relative to this tree.

Regarding the oak's canopy, it is already fairly high now due to past pruning for the existing house, and a general thinning of the canopy. But the new addition will be close to the tree, so if the oak does remain story posts will be helpful in understanding the actual impact on the canopy.

DESCRIPTION OF THE TREE

Species: *Quercus agrifolia*
Common Name: coast live oak
Trunk diameter at 4.5 feet above the ground: 24 and 15.6 inches
Tree size *(height x canopy spread, estimated)*: 40-45 feet tall with a canopy spread of 40-45 feet
Condition[1]:
Vigor: 60 (Fair)
Structure: 50 (Fair/Poor)
Preservation Suitability: Fair/Poor
Expected Impact of Construction: Not sure; possibly Moderate
Action: Debatable
Reason: Overall Condition, Construction
Notes: There is a large cavity in the lower portion of the larger trunk. It looks like this cavity is the result of a previous third trunk removal long ago. The cavity is at least 14 inches deep and 12 by 8 inches wide, and there is decayed wood beyond that. On a positive note though, there is very good woundwood growth around the cavity opening *(yellow arrows in photo at right)*, which strengthens this void in the trunk. The extent of the cavity and its impact on the structural integrity of the tree cannot be accurately assessed without additional and more detailed evaluation such as tomography or resistance drill tests. The owners may contact me if interested in this type of additional evaluation.



Another significant structural defect is included bark between the two tightly pressed together trunks, even though one trunk is quite a bit larger than the other. Canopy density is sparser than normal as if the tree is declining. There is also some terminal twig dieback and several dead branches to 3 inches in diameter.

This is definitely not a vigorous, healthy tree – although the oak does not appear to be on the brink of death either. The ground surface around the tree is beneficial for the oak – 6 inches or more of the tree's own natural leaf and twig litter and no irrigation. Although no irrigation is the preferred state for native California oaks, the past drought is causing many of these trees to decline due to lack of sufficient winter rainfall for the past 3 years. Trees on slopes generally

[1] Highlighted terms are explained in the Glossary on page _.

receive less rainfall than trees in level areas, and so lack of water could be part of the reason that this oak does not appear healthy.

There are some other anomalies on the lower trunk, such as an old stump or perhaps a previous fourth small trunk which is now decayed and being engulfed by the living trunk of the tree. There is also an indentation below the cavity *(blue arrow in photo on previous page)* which is probably an old branch stub with seems to be connected to the cavity.

The southeast side of the tree, showing the tightly pressed trunks with included bark between them. This side of the tree is opposite the large cavity shown in the photo on the previous page.

The west side of the oak, viewed from the existing deck. Some of the small cavities on branches are visible.

Regarding the branch structure of the oak, this tree has been lion-tail pruned in the past, which unfortunately is not unusual for oaks (and many other tree species) in this area. Long ago many flush cut wounds were created during pruning, some of which have decayed and developed into small to medium-size cavities on the branches.

I scraped away the leaf litter from the root collar of the tree and observed as well as mallet tap tested this area as well as the lower trunk. Even with the cavity the trunk seemed sound although mallet tapping is a relatively simple test that can only detect decay that is close to the surface of the wood.

RECOMMENDATIONS:

1) **Decide either to attempt to save or the tree, or to remove the tree.**

2) **If the tree may be saved**, accurately locate improvements in the field, relative to the trunk and the canopy. Use story posts for the canopy.

   a) A distance of 8 linear feet is recommended as a minimum no soil disturbance zone from the edge of the trunk of this tree. If this distance cannot be achieved, I would lean toward removing the tree. This is the 5xDBH distance for this tree, which will experience soil disturbance on two sides of its trunk. It may be possible to squeeze down over-excavation margins in order to achieve this distance, or redesign the addition to move construction slightly farther from the tree.

   b) Irrigation of the tree is recommended. Because the tree is on a slope, water jet irrigation (without fertilizer added) is recommended. Water jet probe holes should be spaced 2 feet on center, underneath the uncovered soil beneath the dripline of the tree, starting 3 feet from the trunk. Have the irrigation performed as soon as possible, and also irrigate the tree monthly throughout the remainder of the normal dry season, which normally extends through Mid-October. The owner may contact me for a paper with directions for the water jetting, and also a company that will provide this service.

   c) Maintain the natural leaf litter mulch beneath the tree, but keep it off the root collar of the tree. A retaining device such as a 2 x 12" piece of lumber a few feet upslope of the trunk, held in place with rebar can be helpful although some hand clearing will be necessary.

   d) I have enclosed a paper on California native oak care for the owners, *Living Among the Oaks*, which will help them to understand and care for this oak as well as other native oaks on their property.

GLOSSARY:

1. **Canopy density** refers to the percentage of leaf cover in a tree canopy (after full leaf expansion and maturation), which varies with tree species and age. A lower than normal canopy density can indicate tree decline.
2. **Condition & Preservation Suitability Ratings**: Trees are rated on their condition on a scale of zero to 100 with zero being a dead tree and 100 being a perfect or near-perfect tree (which rarely exists – like a supermodel in human terms). There are two components to tree condition – vigor and structure, and they are each rated separately. Averaging the components would not be useful because a very low rating for either component could be a good reason to remove a tree from a site -- even if the other component has a high rating. Numerically speaking, 100 is *Excellent* (an A' academic grade), 80 is *Good* (B), 60 is *Fair* (C), 40 is *Poor* (D), 20 is *Unacceptable* (F) and 0 is *Dead*. A "U" rating (Uncertain) for either vigor or structure means that the tree was deciduous or just starting to leaf out when evaluated, so I could not accurately estimate its vigor based on foliage characteristics. Condition of the tree is considered relative to the tree species and present or future use of the site to obtain the tree's *Preservation Suitability Rating* (i.e. "Is this tree worth keeping on this site, in this location, if the tree could be provided with enough above and below ground space to survive and live a long life?"). Preservation suitability ratings are: *None, Poor, Fair, Good* and *Excellent*. *Fair/Poor* and *Fair/Good* are intermediate ratings.
3. **Dieback:** the abnormal and premature death of branches, usually in the upper or more terminal portions of a tree or woody plant. Generally the smaller diameter branches die first, and the dieback may extend downward and/or to larger branches. Branch dieback is generally a symptom of stress some underlying problem with the plant, such as root disease or an unfavorable environment. The plant is "downsizing" to deal with this problem.
4. **Flush cut**: The removal of a branch through pruning, cutting as close as possible to the trunk or parent branch. Flush cuts are no longer recommended because they are unnecessarily large and expose trunk tissue to greater possibility of decay. Instead, the cut should be made just beyond the "branch collar", but not so far outward so as to leave a "stub".
5. **Included bark** is bark sandwiched between adjacent branches, a branch and the trunk, or two or more trunks, often appearing as a seam. In contrast, a normal attachment will have a ridge of bark protruding upwards and a continuous wood connection between adjacent members. An included bark branch or trunk attachment is weaker than a normal attachment. As branches or trunks with included bark grow, they expand in diameter, squeezing the bark along the seam. This may kill some portion of the included bark. When this occurs, a wound response is initiated. As a consequence, cracks can be generated, leading to breakage. Such defects can often be completely removed when a tree is young (e.g. the offending members equal or less than 2 inches in diameter). Older, larger cuts (such as 6 inches in diameter or more) could cause decay to spread into the remaining member, which is undesirable. In these cases it may be best to thin one member (usually the smaller member) by 25% to slow its growth and ultimate size.
6. **Lion-tail pruning** removes interior branches and concentrates foliage at the ends of branches. This may result in sunburned bark tissue, watersprouts, cracks in branches, reduced branch taper, increased load on branch unions, and weakened branch structure. Lion tailing also changes the dynamics of the branch and often results in excessive branch breakage.
7. **Mallet Tap Test** (also called "trunk sounding"). A rubber mallet is used to tap a tree trunk or branch to look for obvious loose bark, decay, cavities or other obvious defects that can be found by this quick, simple, inexpensive but cursory method. Sound, feel and the bounce of the mallet can be used to find obvious defects, but it usually cannot detect deep interior defects which are not visible to the user.
8. **Resistance drilling** (for decay and cavity detection in tree wood) utilizes a specialized drill with a very small bit that has a slightly wider tip, reducing friction on the drill bit shaft. Changes in wood density as the bit progresses through the wood during drilling are detected and recorded on a graph. Information from the graphs is used by arborists to help determine the internal structure and stability of trees.

9. **Root collar**: area at the base of the trunk (usually flared) where the roots and trunk merge; also called the root flare or root crown of the tree or shrub. Buttress roots (the main support roots of the tree) originate here and are often visible for a short distance above the ground. The root collar is critical to whole-tree health and stability.
10. **Tomographic scanning (of trees)**: Tomography is a method of imaging the interior of an object by sending invisible waves (sound, magnetic, x-ray, etc.) through it. The changes that the waves experience as they pass through the object provide data, which through mathematical algorithms is translated into a two-dimensional color-coded image. Interpretation of the image provides information on the mechanical and sometimes chemical properties of the interior of the object. A common type of tomography used for medical imaging is the MRI scan, which uses magnetic waves. For trees, sonic (sound wave) and electric resistance tomography are used to investigate the interior of trunks and large branches. Sonic tomography measures wood density and electric resistance tomography measures hydration and other chemical properties of the wood. Sonic and electric resistance tomographies used together provide more and higher quality information than either method used alone. Deborah Ellis provides tree tomography services to clients; information on this technology is available on her web site at: http://www.decah.com/picus.html
11. **Water Jet**: (water probe, water needle, root feeder, hydrojet, etc.) is a hand-held metal probe, usually ½ to ¾ of an inch in diameter, with small side holes near the pointed tip end. The device is attached to a hose and the probe end with the holes is inserted into the ground by pushing on two perpendicular side handles at the top of the instrument. Water flows out of the holes horizontally, and a hole is also made vertically into the ground by the probe. The end result is the creation of vertical and horizontal tunnels filled with water and soft soil slurry. Water jetting probably does not increase soil aeration (diffusion of air through the soil), but it can help circumvent difficult water penetration of compacted, sealed soils or soil – especially on slopes. The probe creates voids in the soil that can more easily be penetrated by future irrigation and rain. The soft slurry created by the water jetting is also highly conducive to fine root growth.

****

I certify that the information contained in this report is correct to the best of my knowledge, and that this report was prepared in good faith. Thank you for the opportunity to provide service again. Please call me if you have questions or if I can be of further assistance.

Sincerely,

Deborah Ellis

Deborah Ellis, MS.
Consulting Arborist & Horticulturist
Certified Professional Horticulturist #30022
ASCA Registered Consulting Arborist #305
I.S.A. Board Certified Master Arborist WE-457B

Enclosure:
Living Among the Oaks – a Management Guide for Landowners. Johnson. University of California Cooperative Extension, Natural Resources Program. No date.

Please Note: The measures noted within this report are designed to assist in the protection and preservation of the subject oak tree discussed herein, should this tree remain, and to help in its short and long term health and longevity. This is not however; a guarantee that this tree may not suddenly or eventually decline, fail, or die, for whatever reason. Because a significant portion of a tree's roots are usually far beyond its dripline, even trees that are well protected during construction often decline, fail or die. Because there may be hidden defects within the root system, trunk or branches of trees, it is possible that trees with no obvious defects can be subject to failure without warning. The current state of arboricultural science does not guarantee the accurate detection and prediction of tree defects and the risks associated with trees. There will always be some level of risk associated with trees, particularly large trees. It is impossible to guarantee the safety of any tree. Trees are unpredictable.

The oak tree described in this report received a *basic evaluation*. Other trees on the property were not evaluated. A basic evaluation is a brief visual inspection of the tree from the ground, without climbing into the tree or performing detailed tests such as extensive digging, boring or removing samples. A basic evaluation is an initial screening of the tree after which the evaluator may recommend that additional, more detailed examination(s) be performed if deemed necessary. Note that because there may be hidden defects within the root system, trunk or branches of trees, it is possible that trees with no obvious defects can be subject to failure without warning. The current state of arboricultural science does not guarantee the accurate detection and prediction of tree defects and the risks associated with trees. There will always be some level of risk associated with trees, particularly large trees. It is impossible to guarantee the safety of any tree.