EXHIBIT - D

Heritage Tree
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August 17, 2022

To: Michael Stoltey – MD3 Investments & Damien Mavis – CoVelop

Re: Oak Tree Assessment report for Ardmore Road Project, 2930 Union Rd, Paso Robles, CA 93446

Gentlemen,

In response to your request for an Oak Tree Assessment for trees growing on a lot you intend to purchase and develop at 2930 Union Road, I have produced the following report.

Assignment

- Collect tree data and perform Level 2 inspection on 9 valley oaks *(Quercus lobata)* to determine condition and suitability for retention.
- Perform advanced Level 3 Assessment with Resistograph for 3 valley oaks.
- Provide written summary of condition and suitability for retention for all 9 valley oaks.

Introduction

On August 2, 2022, I visited the site and performed a Level 2, basic assessment on all native oaks 6-inch diameter and greater on lots you intend to develop. As a result, 3 of the trees required a Level 3 advanced inspection with a Resistograph, wood density measuring device. I returned to the site on August 5, 2022, and performed the advanced inspections with a Resistograph to measure wood density. On August 12, 2022, I collected additional data for tree #2 via a climbing inspection. I analyzed data collected during the advanced inspections and have made recommendations regarding tree condition, tree risk and potential for retention. All tree inspections were based on the potential for a tree to fail within the next 5 years from the date of this report. Any tree retained should be re-inspected on an annual basis to determine health and structural integrity status.

Methodology-

My initial level 2 inspection consisted of a ground based, visual inspection and full walk around of the tree. I used a rubber mallet to sound the trunk to detect decay. I tagged each tree with an aluminum tag and assigned it a number. Based on a previous arborist's inspection of the trees, I assigned the same number that was listed in their report so we would have consistency when referencing the trees.

Advanced inspections consisted of Resistograph wood density testing, and in one instance, an aerial inspection that consisted of determining the extent of decay with a tape measure.

Tree Condition Ratings

All trees in the inventory were given a condition rating. The rating was based on the health, structure and presence of disease and insects. See the following definitions:

- **Dead** = Severely declining or no foliage, large dead branches, decay cavities, loss of bark, roots decayed or dead.
- **Very Poor** = Evidence of multiple large past failures, advanced decay, uncontrollable pest infestations or disease infection. Tree in severe decline.
- **Poor** = Tree may be suppressed, drought stressed, or had at least 1 large branch failure. Disease or pest infestations may be present. Can potentially be retained with attention to mitigation pruning, cultural care changes, pest and disease control.
- **Fair** = May have had minor past failures. Some pests or structural defects may be present, small deadwood. Minor to moderate drought stress present. Defects may be mitigated with pruning and pests can be controlled.
- **Good** = A relatively healthy tree with minor to no structural defects with minimal to no pest observed. Defects can be mitigated with pruning and pests can be controlled.
- **Very Good** = Trees that have had professional arboricultural care. No structural defects, disease or pests identified.
- **Excellent** = Specimen tree with superior form, root structure and health. Tree has been regularly cared for by professional arborists over its lifetime, E.g., estate or arboretum tree.

Inspection Levels

Level 1 – Limited Visual Inspection – This is a limited walk-by or drive-by, which does not typically include a complete walk around a tree. The inspection focuses on obvious defects, imminent or probable likelihood of failures. There are generally no tools used at this level. This is the fastest and least thorough assessment.

Level 2 – Basic Assessment – Generally includes a complete walk around inspection. Basic tools such as probes, measuring devices, binoculars, mallet or magnifying glass are used. At this level, an aerial inspection is not included. A Level 2 assessment is usually necessary to establish the need for a Level 3 assessment.

Level 3 – **Advanced Inspection –** Detailed inspection which usually employs the use of special equipment, data collection and analysis. A higher level of training is also required, such as International Society of Arboriculture (ISA) Tree Risk Assessment Qualification. Specialized equipment may include an Air Spade (device that uses compressed air to expose roots or root crown for inspections without causing damage to sensitive plant tissues). Resistograph (drilling devise used to measure and graph wood density) Level 3 inspections may also include sending samples to labs for analysis. A Level 3 inspections will usually take place later because of time needed to perform a Level 2 inspection.

Assessing Tree Structure and Potential to Fail

Estimating the structural integrity of trees is a challenge because, unlike steel I-beams or other construction materials there is no precise engineering standard to help determine the load a tree can withstand.

Arborists must use measurement of decay, experience with previous, similar trees as well as factor in the various stressors on the compromised areas within the tree. Trees with thicker outer shells are going to be stronger. Oval internal decay areas and areas of decay that have broken through the outer shell of the trunk or branch will be weaker due to the inconsistency of the cylinder.

Tree Risk

Tree risk is determined by identifying the targets e.g. (people, buildings, cars or property) that could be injured or damaged by a whole or partial tree failure, the occupancy rate, exposure of the target to the tree hazard, the size of part of the tree that may impact the target if it were to fail, the likelihood of impact on the target, and the consequences of failure on the target.

The part of the tree most likely to fail and cause the largest impact is used to determine the highest overall risk for the tree.

When considering likelihood of failure, the definitions are as follows:

- **Imminent** – Failure has started or most likely to occur in the near future. Even if there is no significant wind or increased load. The imminent category overrides the time frame stated in the scope of work.
- **Probable** – Failure may be expected under normal weather conditions within the specified time frame.
- **Possible** – Failure may be expected in extreme weather conditions, but is unlikely during normal weather conditions during a specified time frame.
- **Improbable** – The tree or part is not likely to fail during normal weather conditions and may not fail in extreme weather conditions within the specified time frame.

Risk Matrices

I used the International Society of Arboriculture's Basic Tree Risk Assessment Form to determine risk. Matrix 1 the "Likelihood Matrix" determines the likelihood of failure and impact. The result is entered into Matrix 2, the "Risk Rating Matrix" which factors in Consequences of Failure to get the overall risk rating. In the example below, Likelihood of failure of a part was Probable. The Likelihood of Impact was High. The result was Likely. In Matrix 2, I entered the result of Likely and entered Severe in the Consequences of Failure which gave me a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

For each tree requiring a level 3 inspection, I have highlighted matrix tables to show how risk was determined for the part or parts of the tree being considered regarding failure potential.

Mitigation

When assessing risk for a tree, it is important to determine if the risk of tree failure can be reduced through mitigation. Mitigation can be made through pruning, installing cabling or bracing support structures. Moving targets out of the strike zone of a tree or restricting access to a tree are also viable mitigation measures. The recommended mitigation should not be so excessive that they compromise the health of the tree.

Tree Assessments

I performed level 2 assessments on trees 1,2,3,4,9,10,11 & 13. See Tree Map Appendix B. From those assessments, I determined that trees 1,2 and 13 required level 3 advanced inspections. Each assessment below includes a condition rating as well as potential for retention and mitigation recommendations. For level 3 inspections, I included a tree risk assessment matrix.

Tree 1 – A 43" diameter valley oak was in Very Poor condition. See Appendix A - Photographs - Photo 1

Basic Level 2 Inspection –

This tree had drought stress which was indicated by dead wood in the canopy. It also had decay throughout its scaffold branches which was indicated by decay cavities and woodpecker nests excavated in dead wood. See Appendix A - Photographs - Photos 1 & 4.

The trunk had an approximate lean to the east of 10 degrees. It also had a horizontal compression bulge on the east side of its trunk approximately 1' above ground. Compression bulges or wrinkles, indicate that wood fibers are being crushed by the weight of the canopy and trunk due to lack of supportive structure in the trunk. Further the tree had a large, decayed, anchor root on its southwest side. The root was on the opposing side of the lean of the tree and is likely to fail as decay advances and stress from the weight of the canopy continues to build. See Appendix A -Photographs - Photos 1-3.

Although this tree had a full canopy it has significant trunk decay. When I sounded the trunk with a rubber mallet, it resounded hollow on all sides. To further confirm the sounding results, I performed an advanced inspection of the decay using a Resistograph.

Advanced Level 3 Inspection -

I took 4 measurements of the wood density of the trunk at 3.5' above ground.

- Sample 1 – west side of tree. Outer shell thickness was 4"
- Sample 2 – south side of tree. Outer shell thickness was 6"
- Sample 3 – east side of tree. Outer shell thickness was 4" with a small 1.25" pocket of sound wood at 8" laterally, then total decay

- Sample 4 – north side of tree. Outer shell thickness was 5.25”

Based on the Resistograph results, it was apparent that interior wood of the trunk is significantly decayed. The evidence of compression bulges showed that the trunk is losing structural integrity and leaning due to lack of supportive wood fibers.

Armillaria mellea, a.k.a. Oak root fungus is a common disease in valley oaks and is likely the cause of the decay in the roots and the trunk. Christopher J. Luley in his guide *Wood Decay Fungi* calls this fungus *Number one of the “Big Three” of the important decay fungi.* Again, according to Mr. Luley, “Armillaria is a root and butt rot fungus that increases the risk of tree failure and is a pathogen capable of killing cambium of roots and lower trunk of stressed trees”. See Appendix A - Photographs - Photos 29 & 30 for example of failed oak due to root and butt rot.

Parts Assessed – Roots and Trunk

I used the International Society of Arboriculture’s Basic Tree Risk Assessment Form to determine risk for this tree. In Matrix 1 the “Likelihood Matrix” I selected Likelihood of Failure of the roots and trunk as Probable. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Likely, which I entered into Matrix 2, the “Risk Rating Matrix” in the Likelihood of Failure and Impact section. For the Consequences of Failure section of Matrix 2, I entered Severe. The Likelihood of Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Part Assessed – Scaffold Branches

In Matrix 1 the “Likelihood Matrix” I selected Likelihood of Failure of the scaffold branches as Probable. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Likely, which I entered into Matrix 2, the “Risk Rating Matrix” for the Likelihood of Failure and Impact section. Under Consequences of Failure in Matrix 2, I entered Severe. The Likelihood of Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Combined Inspection Results and Risk Assessment

The highest risk rating for this tree was High and was associated with root and trunk failure. I found decay in one anchor root and significant decay was detected in the trunk. Buckling of trunk fibers was evident. Based on shell strength measurements, the likelihood of trunk failure was probable, due to lack of structural integrity. Root failure was Probable due to significant decay in the anchor root on the southwest side of the tree. Scaffold failure was also probable with a high likelihood of failure.

Mitigation:

Scaffolds - Reducing the canopy through end weight reduction and removing decayed branches 2" diameter and larger would relieve some stress on remaining scaffold branches and reduce their risk to Moderate.

Roots and Trunk - Reducing the canopy through end weight reduction would relieve some stress on the trunk but not enough to offset the overall stress being exerted on the buckling area on the north side of the tree. No structural support or bracing will help the stability of the tree's trunk or roots. Significant decay has been detected in the roots as well as the trunk. Based on shell strength measurements, lean of the tree and buckling of wood fibers on the east side of the trunk made failure likely due to lack of structural integrity. I recommend removing the tree before commencement of construction.

Tree 2 – A 47" diameter valley oak was in Poor condition. See Appendix A - Photographs - Photo 5.

Basic Level 2 Inspection –

On the south side of the trunk there was a decay cavity originating at the root-crown and extending approximately 5.5' upward. When sounded with a rubber mallet on either side of the cavity, it resounded hollow. Moving around the trunk to the east side, I detected another hollow sounding area with my mallet at approximately 3.5' above ground. See Appendix A - Photographs - Photo 6. Like Tree 1, I suspect *Armillaria mellea* - Oak root fungus, is the cause of the rot.

At approximately 8 feet above ground, on the southwest side of the trunk there was another decay area that was almost closed over with scar tissue. Although almost closed, I suspected a large area of decay behind the scar. See Appendix A - Photographs – Photo 7. There was a large scaffold branch attached to the trunk above the scar. It had a desiccated fungal fruiting body growing on it and cankers had killed strips of bark near the fungus. See Appendix A - Photographs – Photo 8. I identified the fungi genus to be that of *Inonotus*. Jessie A. Glaeser and Kevin T. Smith in the winter 2010 issue of Western Arborist, note this fungus to cause a white-rot of heartwood in the trunk of living oaks and also decays strips or sections of sapwood, forming elongate cankers and killing the cambium. According to Swiecki, T. J.; Bernhardt, E. A. 2006, A Field Guide to Insects and Diseases of California Oaks, "*Inonotus dryophilus* is one of the most serious pathogens of living oaks in California associated with decline, failure, and mortality". In this tree, the combined weakened trunk area at the scar combined with the heavy, decayed scaffold branch make this section of the tree likely to fail.

In the upper canopy at approximately 14' above ground there was another decay cavity in the center of the canopy, where a large scaffold branch had failed many years ago. I suspected advanced decay in the trunk at this location. See Appendix A - Photographs - Photo 9

Advanced Level 3 Inspection -

During the aerial inspection, it was discovered that the opening of the decayed scaffold in the upper canopy was 13" in diameter. The depth of the cavity was 13'2" deep. When the distance to the ground from the outside of the cavity was measured, it was 14'3", which illustrated that the entire trunk of the tree was hollow. See Appendix A - Photographs – Photos 9 -14.

From the cavity opening, the decay continued upward into the scaffold branch growing east. This scaffold is very likely to fail due to weak trunk structure. See Appendix A - Photographs – Photo 12.

Based on the decay detected during mallet sounding, I wanted to investigate the extent of the decay further. I performed an advanced inspection for decay using a Resistograph. I took 6 measurements of the wood density of the trunk at 3.5' above ground unless otherwise indicated.

- Sample 1 – west side of tree. Outer shell thickness was 8"
- Sample 2 – south side of tree, 1' west of decay cavity, outer shell thickness was 8.5"
- Sample 3 – south side of tree at decay cavity seam, outer shell thickness was 3" at 3' above ground.
- Sample 4 – south side of tree, 1' east of decay cavity, outer shell thickness was 7.25"
- Sample 5 – east side of tree, outer shell thickness was 5.5"
- Sample 6 – north side of tree, outer shell thickness was 12"

I have highlighted the tables below to show how risk was determined for the part or parts of the tree that was being considered regarding failure potential.

I used the International Society of Arboriculture's Basic Tree Risk Assessment Form to determine risk for this tree.

Part Assessed - Trunk

In Matrix 1 the "Likelihood Matrix" I selected Likelihood of Failure of the trunk as Probable. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Likely, which I entered into Matrix 2, the "Risk Rating Matrix" in the Likelihood of Failure and Impact section. Under Consequences of Failure in Matrix 2, I entered Severe. The Likelihood of the Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Part Assessed – Scaffold Branches

In Matrix 1 the "Likelihood Matrix" I selected Likelihood of Failure of the scaffold branches as Probable. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Likely, which I entered into Matrix 2, the "Risk Rating Matrix" for the Likelihood of Failure and Impact section. Under Consequences of Failure in Matrix 2, I entered Severe. The Likelihood of Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Combined Inspection Results and Risk Assessment-

The highest risk rating for this tree was High and was associated with trunk and scaffold branch failure. Significant decay was detected in the trunk and eastern scaffold branch.

Based on shell strength measurements, and the void caused by decay on the south side of the tree, the trunk is likely to fail due to lack of structural integrity. In regard to the eastern scaffold branch and other decayed branches, they could be removed, and end-weight could be reduced to relieve some stress on remaining scaffold branches. However, the reduction of the canopy would be close to 50% and would compromise the health of the tree. Further, since the trunk is not structurally sound, this negates the mitigation measure.

Mitigation: Remove tree before commencement of construction. No structural support or bracing will help the stability of the tree's trunk.

Tree 3 – A 47" diameter valley oak was in Very Poor condition. When I sounded the trunk with a rubber mallet, it resounded hollow on the southwest side. A large wound left by a scaffold branch failure in the crown of the tree has since decayed and left a 3'x 4' hollow at approximately 14' above ground on the east side of tree. Another decay cavity on the north side of the tree at the same height as the previous, measured approximately 2' in diameter. Remaining scaffold was overextended and attached to the decaying trunk. The remaining parts of this tree have a high likelihood of failure. See Appendix A - Photographs – Photos 15 & 16.

Mitigation: Remove tree before commencing project.

- **Tree 4 –** A 52" diameter valley oak was in Very Poor condition. The tree was growing off-site but had critical root zone (CRZ) and crown encroachments into your proposed construction area. This tree has had several large scaffold branch failures. At the failure points, significant decay was visible. The remaining scaffolds were overextended and potentially had similar internal decay and had a high likelihood of failure. See Appendix A - Photographs – Photo 17.

  Mitigation: I highly recommend removal of this tree due to the advancement of decay in the scaffold branches which is compromising their structural integrity. Crown reduction needed to reduce the risk of scaffold branches failing would take up to 50% of the live canopy and jeopardize the tree's health. Because this tree is off site, you will need to coordinate with the owner regarding removal.

  At minimum this tree should have all overextended branches reduced to help prevent further failures and protect any buildings or other targets you may place on your property within striking distance of the tree. If the owner of the tree chooses to retain it, you will need to design buildings, service and loading zones outside of the CRZ.

- **Tree 9 –** A 51" diameter valley oak was in Very Poor condition. Multiple large scaffold branches had failed. Extensive decay was present at branch failure points. Only 2 overextended scaffold branches remain, and they are connected to a decaying trunk.

  When I sounded the trunk with a rubber mallet, it resounded hollow. A 3' long by 10" wide decay cavity was on the northeast side of trunk. This tree has a high risk of complete failure. See Appendix A - Photographs – Photos 18 & 19.

  Mitigation: Remove tree before commencing project.

- **Tree 10 –** A 51" diameter valley oak was in Good condition. The trunk of the tree resounded solid when sounded with a rubber mallet. Tree form was good, but there was some large dead wood and decaying scaffolds. This tree can be retained, but it should have maintenance pruning performed prior to commencement of your project. See Appendix A - Photographs – Photos 20 & 21.

  Mitigation: Reduce end-weight on overextended branches. Remove dead wood 2" diameter and larger. Remove decayed and structurally unsound scaffold branches.

- **Tree 11 –** A 30" diameter valley oak was in Very Poor condition. The tree was in severe decline due to drought stress and root disease. Many of the smaller branches had died. I detected decay at the root crown on the southwest side of the tree. I found an ant nest at the root-crown decay area indicating ants are excavating and nesting in dead roots and root crown. The dead roots contribute to the decline of the canopy and compromise the stability of the tree. At least five, 12" average diameter scaffolds had extensive decay on the east side of the tree. To reduce scaffold failure risk, up to 50% of the live canopy would need to be removed, which would compromise the health of and already unhealthy tree. See Appendix A - Photographs – Photos 22-24.

  Mitigation: Remove tree prior do commencement of project.

- **Tree 13 –** A 42" diameter valley oak was in Poor condition.

  Basic Level 2 Inspection –

  The tree had a full canopy with a balanced form. On the south side of the tree at the root crown, there was an area of decay in the underside of one of the anchor roots. Like trees 1 and 2, the decay is likely caused by *Armillaria mellea*. I also noted the lower trunk was bulging and larger than normal which may indicate butt-rot caused by A. mellea. Further, I observed that the eastern scaffold branch was decayed, and large dead wood was present throughout the canopy. See Appendix A - Photographs – Photos 25 - 28.

  A previous report, by another arborist, expressed concern that a scar at the base of the tree might indicate decay and structural instability. When I sounded the tree's trunk with a rubber mallet, it resounded solid, except on the north side of the trunk. Due to the difference of opinion regarding the structural integrity of the trunk, I performed an advanced inspection for decay using a Resistograph.

  Advanced Level 3 Inspection -

  I took 5 measurements of the wood density of the trunk at 3.5' above ground.

  - Sample 1 – west side of tree. Outer shell thickness was 7"
  - Sample 2 – south side of tree. Outer shell thickness was 8.5"
  - Sample 3 – east side of tree. Outer shell thickness was 8.5"
  - Sample 4 – east side of tree scarred area on east side of trunk approximately 1' above ground. Outer shell thickness was 12".

- Sample 5 – north side of tree. Outer shell thickness was 5”

Like Tree 1, the trunk of this tree had advanced internal decay, however when comparing outer shell thickness, this specimen had thicker walls and did not have indications of trunk fibers buckling, therefore its structural integrity is likely stronger.

Tree Risk - I used the International Society of Arboriculture’s Basic Tree Risk Assessment Form to determine the risk. I used Matrix 1 the “Likelihood Matrix” on the form and entered the result into Matrix 2, the “Risk Rating Matrix” to get the overall risk rating.

I have highlighted the tables below to show how risk was determined
for the part or parts of the tree that was being considered regarding failure potential.

Part Assessed - Root

In Matrix 1 the “Likelihood Matrix” I selected Likelihood of Failure of the roots as Possible. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Somewhat Likely, which I entered into Matrix 2, the “Risk Rating Matrix” for the Likelihood of Failure and Impact section. Under Consequences of Failure in Matrix 2, I entered Severe. The Likelihood of Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of Moderate.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Part Assessed – Trunk

In Matrix 1 the “Likelihood Matrix” I selected Likelihood of Failure of the scaffold branches as Probable. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Likely, which I entered into Matrix 2, the “Risk Rating Matrix” for the Likelihood of Failure and Impact section. Under Consequences of Failure in Matrix 2, I entered Severe. The Likelihood of Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Part Assessed – Scaffold Branches

In Matrix 1 the "Likelihood Matrix" I selected Likelihood of Failure of the scaffold branches as Probable. The Likelihood of impacting a target in a built environment would be High. The resulting Likelihood of Impact was Likely, which I entered into Matrix 2, the "Risk Rating Matrix" for the Likelihood of Failure and Impact section. Under Consequences of Failure in Matrix 2, I entered Severe. The Likelihood of Failure and Impact rating combined with the Consequences of Failure resulted in a risk rating of High.

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Combined Inspections Results and Risk Assessment-

The highest risk rating for this tree was High and was associated with scaffold and trunk failure. I found decay in one anchor root and significant decay was detected in the trunk, however no bulging of trunk fibers was evident. Based on shell strength measurements, the likelihood of trunk failure is probable due to lack of structural integrity. Scaffold failure was also probable. Risk of root failure remained moderate.

Mitigation:

Mitigations are meant to reduce risk without compromising the health of the tree. Ultimately, the tree manager, owner or other controlling entity must decide if the residual risk assessed is reasonable.

Scaffolds - Reducing the canopy through end weight reduction and removing decayed and branches 2" diameter and larger will relieve some stress on remaining scaffold branches and reduce their risk to Moderate.

Roots - Reducing the canopy through end weight reduction will relieve some stress on roots, however due to the overall weight of the canopy and stem, the risk rating for root failure will remain Moderate.

Trunk - Canopy reduction will relieve some stress on the trunk of the tree, however it will not likely be enough to lower trunk failure risk to moderate. If this tree is to be retained, and the goal is to reduce the risk rating, the only reasonable way to achieve that goal will be to restrict access by installing a permanent fence around it. The fence shall be a minimum of 4.5' tall and be set at least to the edge of the canopy dripline. Once access is restricted, the risk rating will be Moderate.

Respectfully Submitted,

Rodney D. Thurman
ISA Board Certified Master Arborist PN-2684BUM
ISA Municipal Specialist
ISA Utility Arborist
ISA Tree Risk Assessor Qualification

Appendices: *Photographs, Tree Map*

Appendix A - Photographs

Photo 1 - View of Tree 1 to south. Note lean to east.

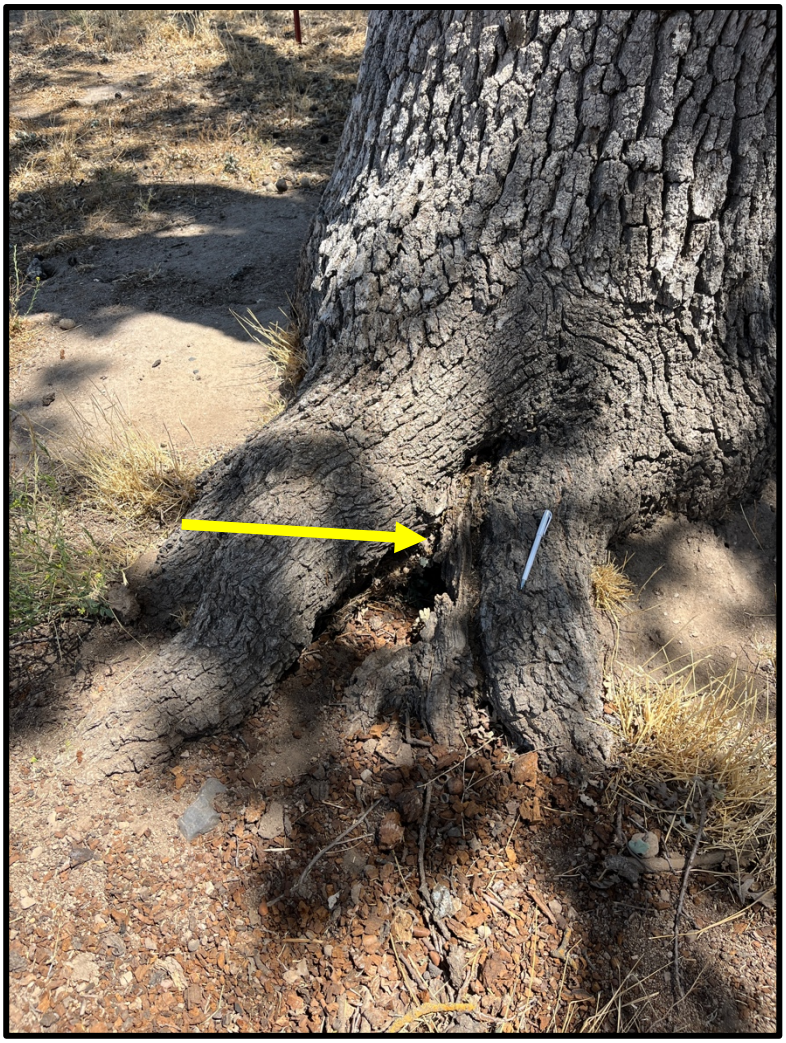


Photo 2 - Tree 1 with decayed anchor root on southwest side, indicated by arrow. Ink pen provided for scale

Photo 3 - Tree 1 with compression bulge east side of trunk indicated by arrow shows lack of structural support.

Photo 4 - Tree 1 with decay in scaffold branches. indicated by arrows.

Photo 5 - View of Tree 2 to north

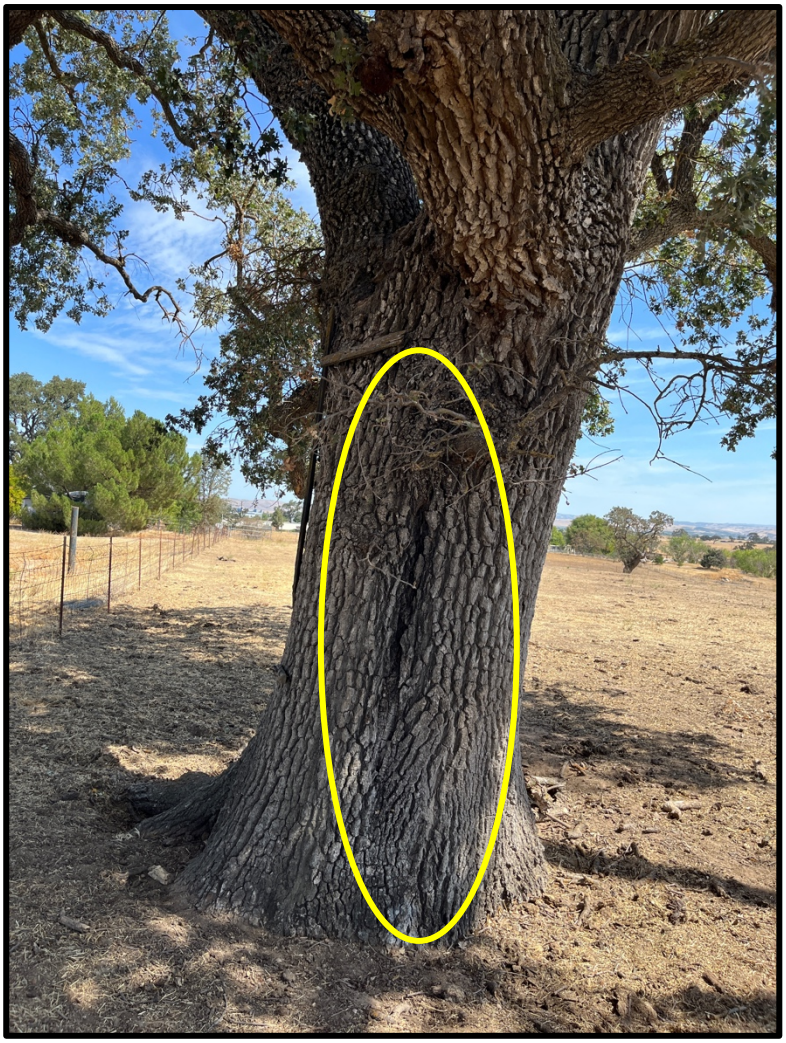


Photo 6 - Tree 2 with decay cavity south side of trunk. Length is approximately 5.5’.

Photo 7 - Tree 2 with decay cavity at scaffold union approx. 8’ above ground on southwest side of tree.

Photo 8 - Tree 2 with fungal fruiting body circled and decay in south scaffold branch indicated by arrow.

Photo 9 - Tree 2 with decay cavity formed by failed scaffold circled at center of tree, approximately 14 feet above ground.

Photo 10 - Tree 2 perspective view of decay cavity formed by failed scaffold circled at center of tree. Cavity is circled. Other decay points below the open cavity are indicated by arrows.

Photo 11 - Tree 2 view of decay cavity formed by failed scaffold. Opening measures 13”

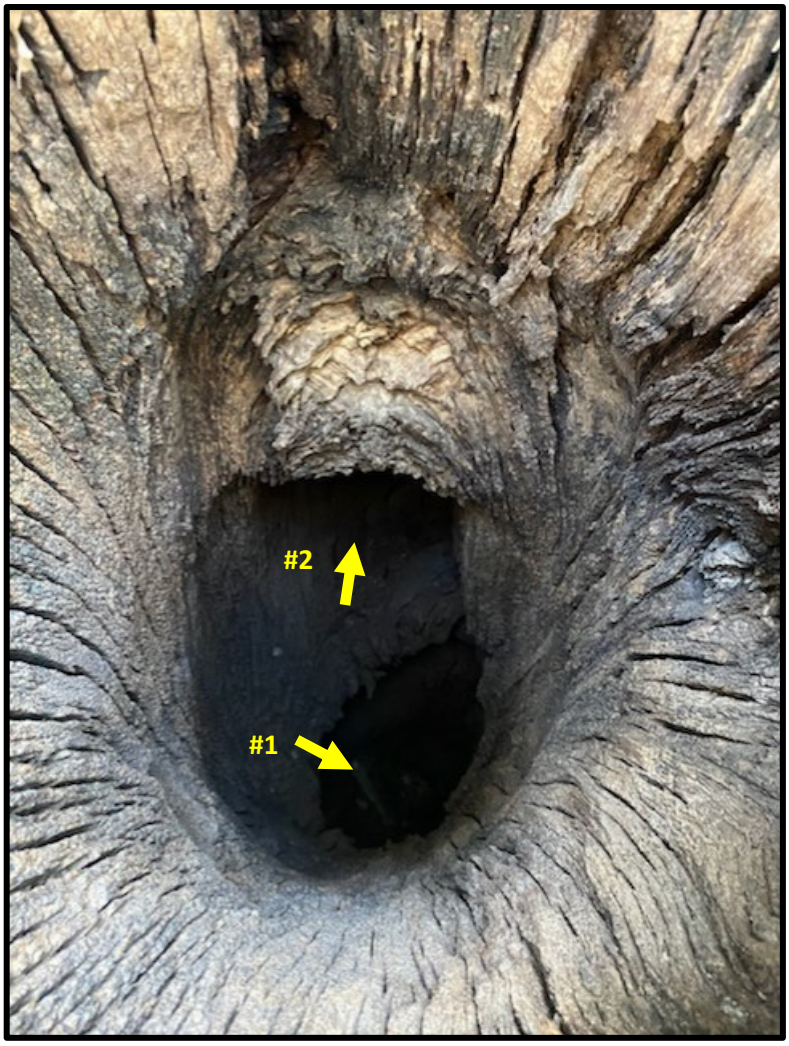


Photo 12 - Tree 2 view of interior decay cavity formed by failed scaffold. Arrow 1 shows depth of cavity down to roots of tree. Arrow 2 shows decay that has advanced into eastern scaffold branch.

Photo 13 - Tree 2 measurement of interior depth of decay cavity formed by failed scaffold. 13’ 2”

Photo 14 - Tree 2 measurement of exterior depth of decay cavity formed by failed scaffold. 14’ 3”

Photo 15 - View of Tree 3 to north. Overextended scaffold to west. Large decay cavity at connection to trunk.

Photo 16 - Tree 3 with large decay cavity at scaffold connection to trunk.

Photo 17 - View of Tree 4 with to northwest. Numerous failed scaffold branches due to overextension and internal decay.

Photo 18 - View of Tree 9 to north. Numerous failed scaffold branches due to overextension and internal decay.

Photo 19 - Tree 9 close-up of failed scaffold branch with internal decay.

Photo 20 - View of Tree 10 to south.

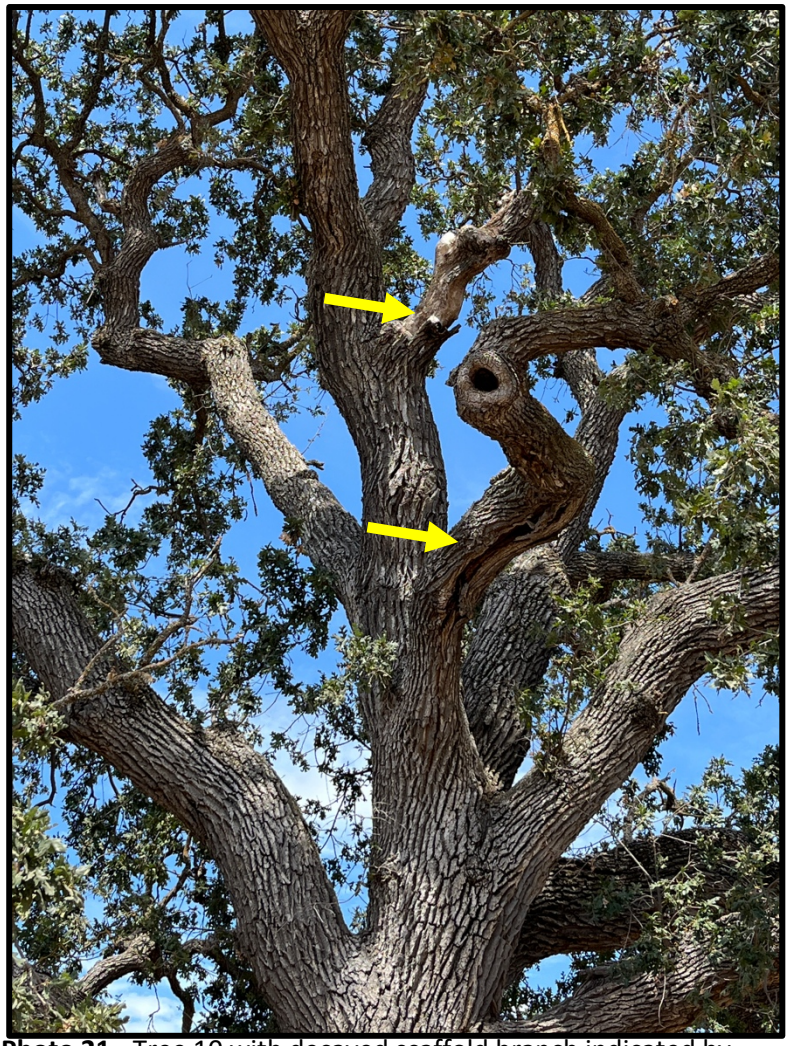


Photo 21 - Tree 10 with decayed scaffold branch indicated by yellow arrows.

Photo 22 - View of Tree 11 to north. At least 5 decayed scaffold branches would be removed which would reduce the tree at least 50%. Arrows indicate branch removal points.

Photo 23 - Tree 11 close up of declining canopy, decayed branches, and dead wood indicated by arrows.

Photo 24 - Tree 11 close up of root crown decay at southwest side of tree indicated by yellow arrow. Ant nest discovered here which indicates dead and rotting wood.

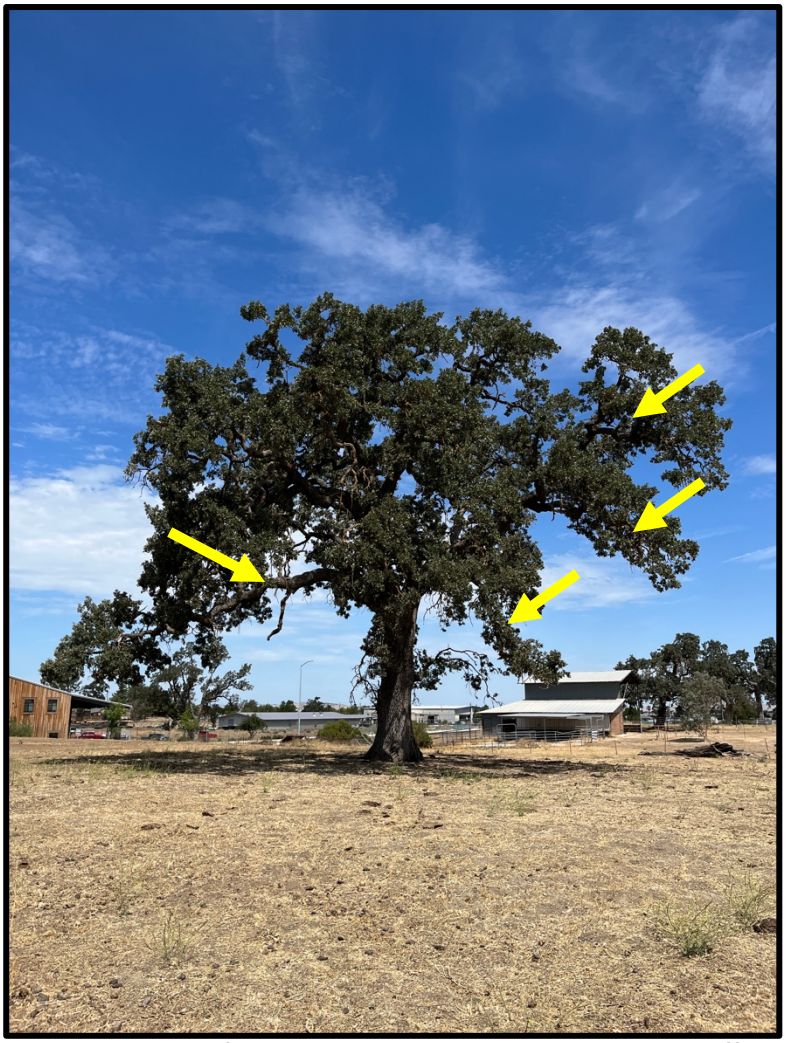


Photo 25 - View of Tree 13 to north. Note overextended scaffold branches indicated by arrows.

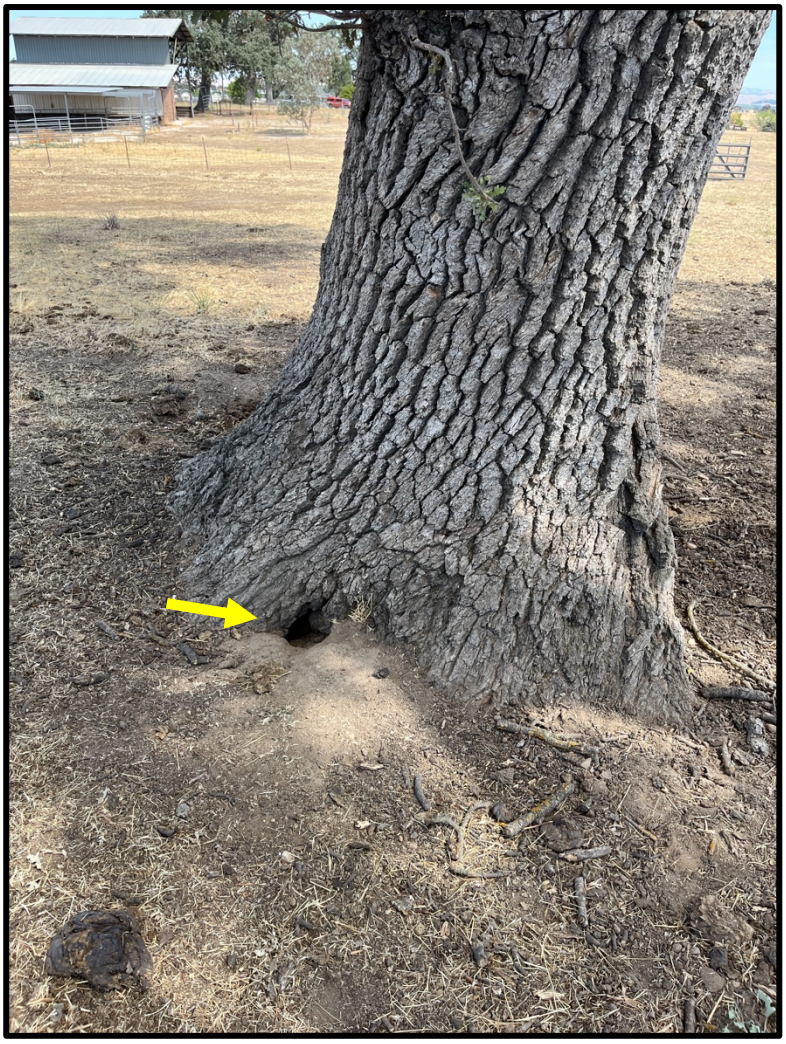


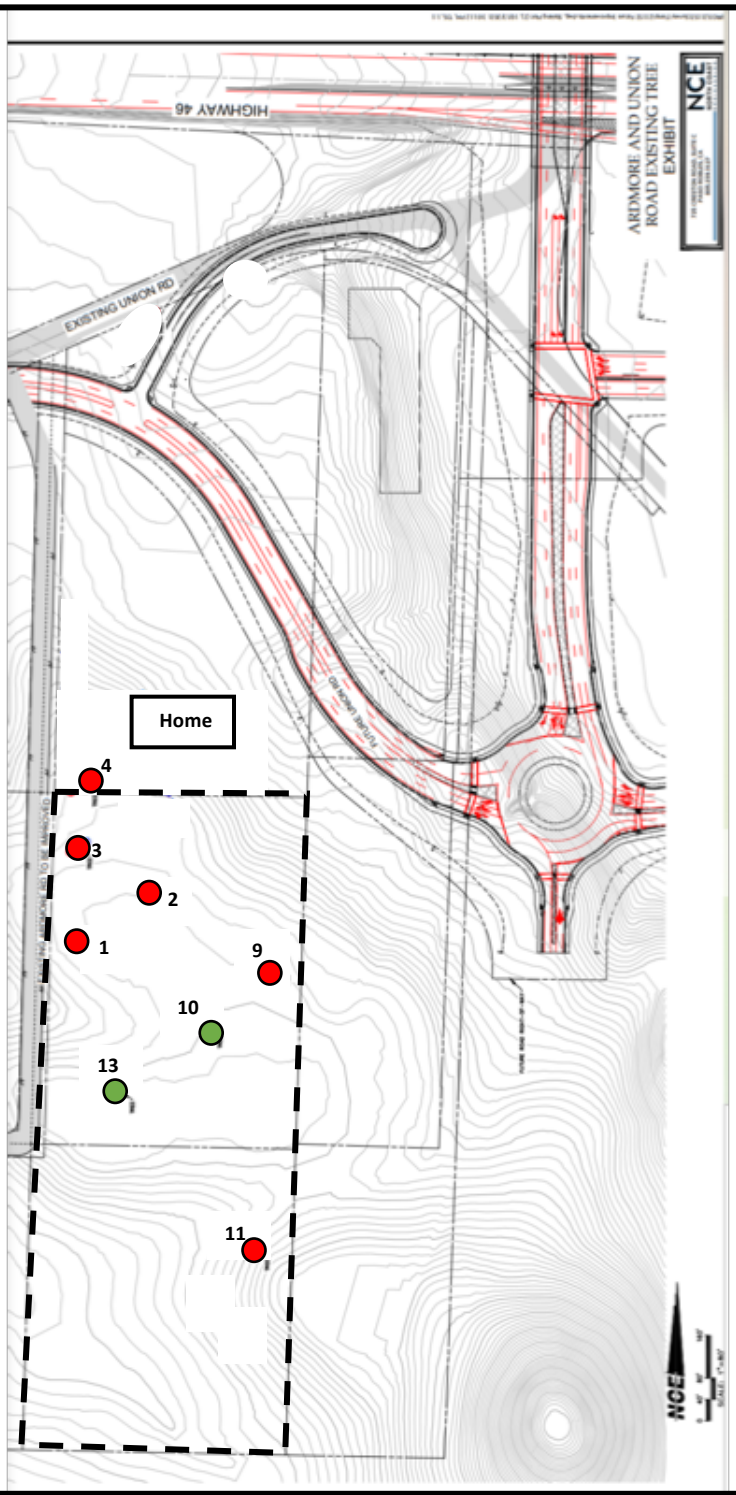
Photo 26 - Tree 13 with root decay cavity on south side of tree indicated by arrow.

Photo 27 - Tree 13 with bulging root-crown indicating possible butt-rot.

Photo 28- Tree 13 with decaying scaffold branch east side of canopy indicated by arrow. Line indicates locations for removal

Photos 29 & 30 - Example of oak tree that failed due to root and butt-rot. Photo 29 shows failed roots. Photo 30 shows internal decay of trunk.

Appendix B – Tree Map



Tree Locations Map – Red = removals, Green = retain and protect, Dashed line delineates property boundaries.