

South Bay HOA Tree Inventory and Risk Assessment Report II

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Introduction

Summary

At the request of the Home Owners' Association (HOA) Board of Directors, a tree inventory and risk assessment was made of 242 trees in common areas in South Bay in Orlando, Florida. This was the second Tree Risk Assessment completed for the HOA. The first risk assessment was made in May, 2014. We used techniques and methods described in ANSI A300 Standards¹ and Best Management Practices: Tree Risk Assessment².

Because of the predominance of relatively short-lived but large laurel oaks (*Quercus laurifolia*) in the common areas, the South Bay tree population is maturing and has the accompanying problems of increased decay and weak branch structure caused in many cases by the way trees were pruned and raised in the nursery before planting in the field years ago when South Bay was created. Recent Hurricanes Matthew (October, 2016) and Irma (September, 2017), stressed tree health, reduced tree leaf cover, broke branches and left hangers on the trees that survived.

Fortunately, since the first risk assessment in May, 2014, South Bay HOA has been working on the trees with one or more qualified tree services. (We observed an exception to using qualified tree workers on Sept. 25 and 26, 2018 while performing the risk assessment. More details are found on page 10 of this report under the subtitle "Improper pruning by over-lifting and topping".) Consequently, the overall tree health and structural conditions have improved. Tree maintenance is not a "one time deal." Trees continue to grow and problems and defects continue to occur. But regular and competent maintenance makes for a safer tree canopy that provides many environmental, economic and even personal health benefits to a community. The results of the South Bay HOA maintenance program are evident in the 2018 results when compared with the results of the 2014 risk assessment. Both the Tree Risk Assessment of 2014 and 2018 were done by the same two arborists helping to make sure the same observation techniques were utilized for both studies.

Background

We were asked to provide a proposal to do a second risk assessment for the HOA. The survey and risk assessment was performed between September 24 and 26, 2018.

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Assignment

Our assignment was to:

- Do a risk assessment of common area trees initially estimated to be around 240
- Recommend an appropriate course of action for maintenance and remediation

Limits of the Assignment

We visually inspected each tree for the inventory and assessment. We did not survey any broadleaf trees under 8 inches in diameter or any pine trees or palm trees.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees, below ground or not clearly visible from the vantage point on the ground. Arborists cannot guarantee that a tree will be healthy, safe or adequately protected under all circumstances or for a specified period of time. Likewise, remedial, protective and mitigating treatments and recommendations cannot be guaranteed.

Purpose and Use of the Report

The main purpose of the tree inventory is risk assessment. A tree inventory identifies apparent tree problems and provides the starting point for a long-term management plan, which allows for effective use of tree maintenance funds, and allows for more accurate budget projections. This tree inventory and assessment provides information on the species, size and condition of the common area trees in South Bay. If recommended tree maintenance is followed and additional risk assessments are continued on a three to four year cycle, an additional benefit is the HOA is on record as having risk assessment procedures in place and an on-going risk assessment program that follows national standards.

Assumptions

The tree survey was done between September 24 and 26, 2018. Our observations and conclusions are as of that period. A severe storm or other environmental factors can change the observations and maintenance recommendations.

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Testing and Analysis and Data Collection

Because testing and analysis procedures as well as data collection performed in the current risk assessment followed the same procedures performed in the risk assessment in May, 2014, we will not repeat those descriptions and detail in this report. More information on those procedures can be found in our report of May 2014. We can make copies of that previous report available upon request.

Observations

Tree Species Distribution

The tree species distribution closely mirrored that observed in 2014. The five predominant species are the laurel oak (*Quercus laurifolia*) with 47 percent, the live oak (*Quercus virginiana*) with 24 percent, the sweetgum (*Liquidambar styraciflua*) with seven percent and the bald cypress (*Taxodium distichum*) with six percent.

Problems and Defects

Tree Health and Structural Condition

Each tree was also evaluated as to its overall health and structure. It is important to understand that health and structure are two separate and independent considerations. A tree can be healthy yet have poor and hazardous structure. Live (green) trees can fail and sometimes do. Structurally sound trees sometimes decline and die from poor health.

In 2014 most of the trees evaluated (67 percent) had only fair or poor structure mostly because of codominant leaders (Figure 2). Twenty five percent of the trees had good structure. In 2018 that structural condition came down slightly with trees in the fair or poor structural condition at 53 percent. However, the continued routine and priority pruning has improved the overall structure with the number of trees with good structure increasing from 25 percent in 2014 to 40 percent in 2018 (Figure 4).

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In spite of the two recent hurricanes, tree “good” health, which is evaluated largely by leaf cover and color, increased from 70 percent to 83 percent with trees with fair health decreasing from 20 percent in 2014 to eight percent in 2018 (Figure 1 and 3). This improvement occurred in spite of having two recent hurricanes. Structurally the trees with good structure increased from 25 percent in 2014 to 40 percent in 2018, a reflection of the improved pruning techniques by the tree service(s) hired by the HOA. The relatively high “fair” rating for structure is due to the large number of laurel oaks with codominant leaders which are more prone to splitting.

A description of what each category (good, fair, etc.) means for both health condition and structural condition can be found in Appendix B at the end of this report.

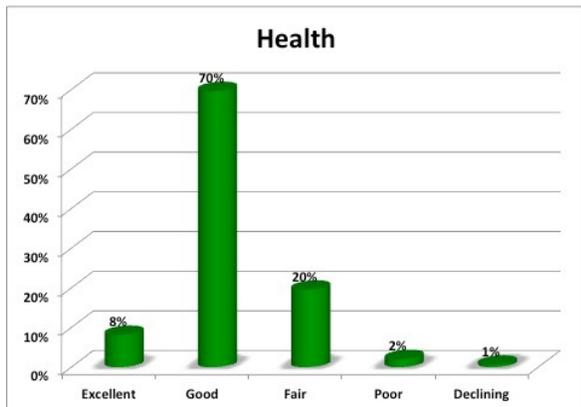


Figure 1 2014 data on health condition

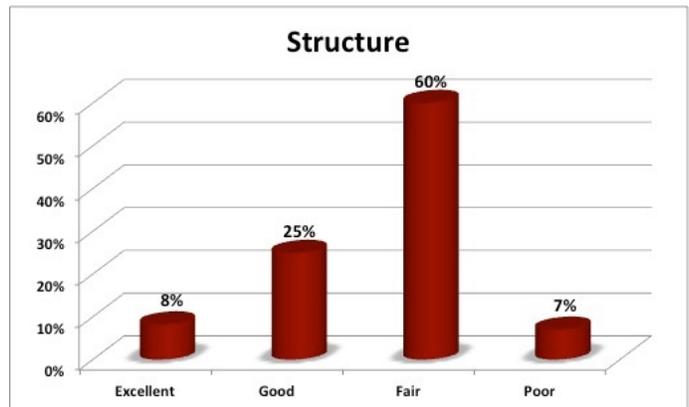


Figure 2. 2014 data on structural condition

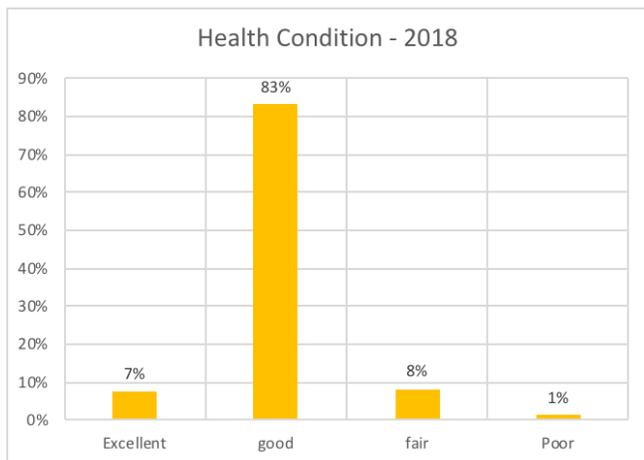


Figure 3. 2018 data on health condition

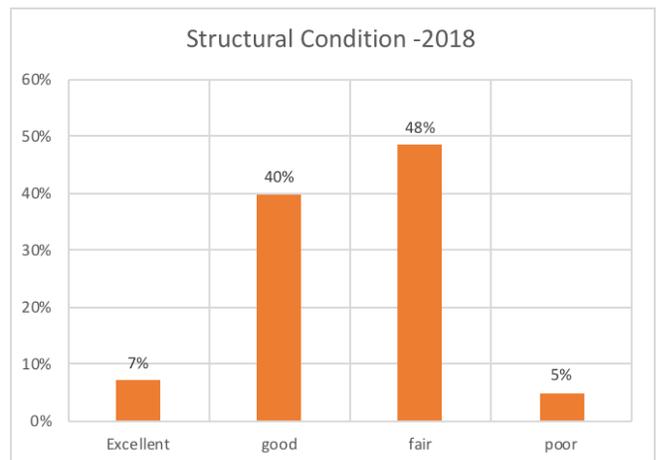


Figure 4. 2018 data on structural condition

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Tree Defects Observed

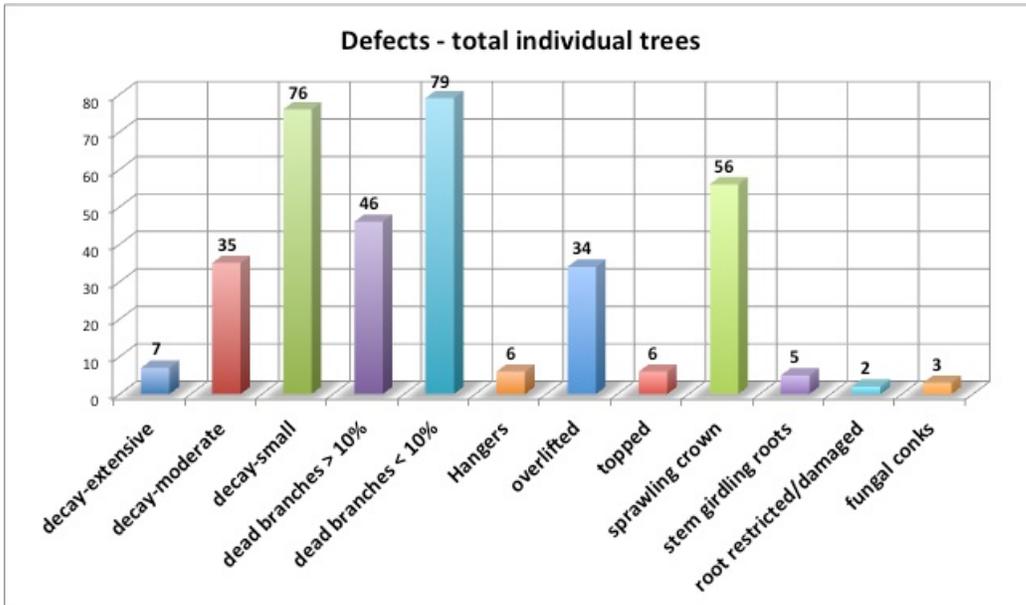


Figure 5. 2014 data

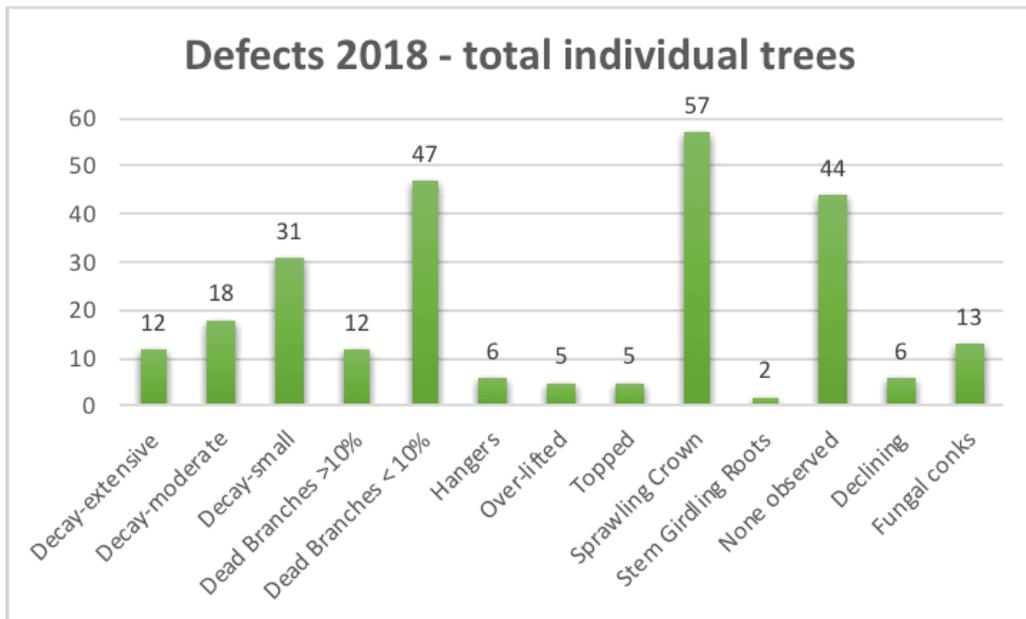


Figure 6. 2018 data

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When viewing Figure 5 (2014 tree defect data) and Figure 6 (2018 tree defect data), keep in mind that one tree can have more than one defect and they often do. Nearly every tree had some degree of decay, which is common with all older oak tree species. But trees with “extensive decay” are relatively rare in South Bay.

Trees with small amounts of dead branches (dead branches < 10%) are not unusual especially after two hurricanes in the period of one year. Even healthy trees have dead branches because a healthy tree will shed branches that are shaded and do not produce sufficient sugar through photosynthesis. Trees with more than 10 percent dead branches (dead branches >10%) are now 12 compared with 46 trees in 2014, again a reflection of good tree work since 2014.

Maintenance

Maintenance - Maintenance needs and recommendations are shown in Figure 8 for 2018 data and can be compared with similar data for 2014 in Figure 7. Individual tree information is found in the data sheets that were sent separately but are part of this report.

None recommended - The number of trees that did not require even routine pruning increased from only nine percent in 2014 to 29 percent in 2018. This data illustrates the results of the increased level of maintenance and competency of the tree service(s) hired by the HOA.

Tree Removal - In all 9 trees were marked for removal in either Priority 1, Priority 2 or Priority 3 removals. There was only one Priority 1 Removal which is the most urgent. Unfortunately, the laurel oak (tree #6425) in the center island on South Bay Drive near Southwind Court has deteriorated to the point that it should be removed. We also listed another tree that is on private property at 8632 South Bay Drive for removal. That tree overhangs the street.

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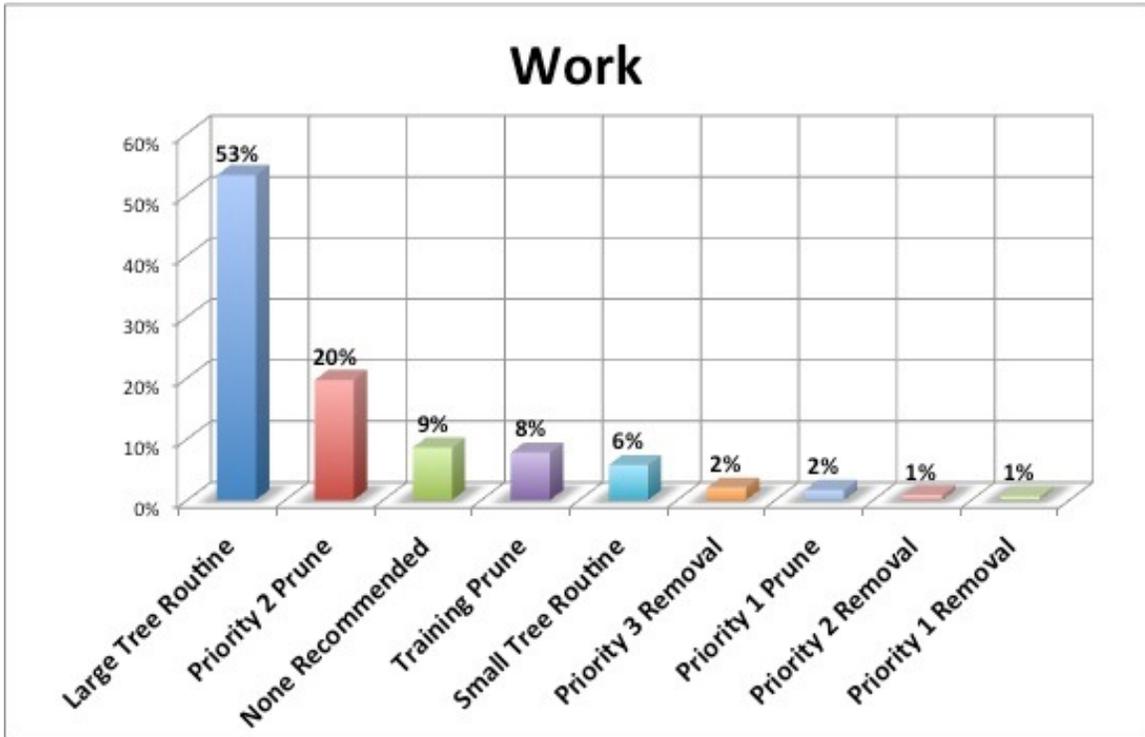


Figure 7. 2014 data

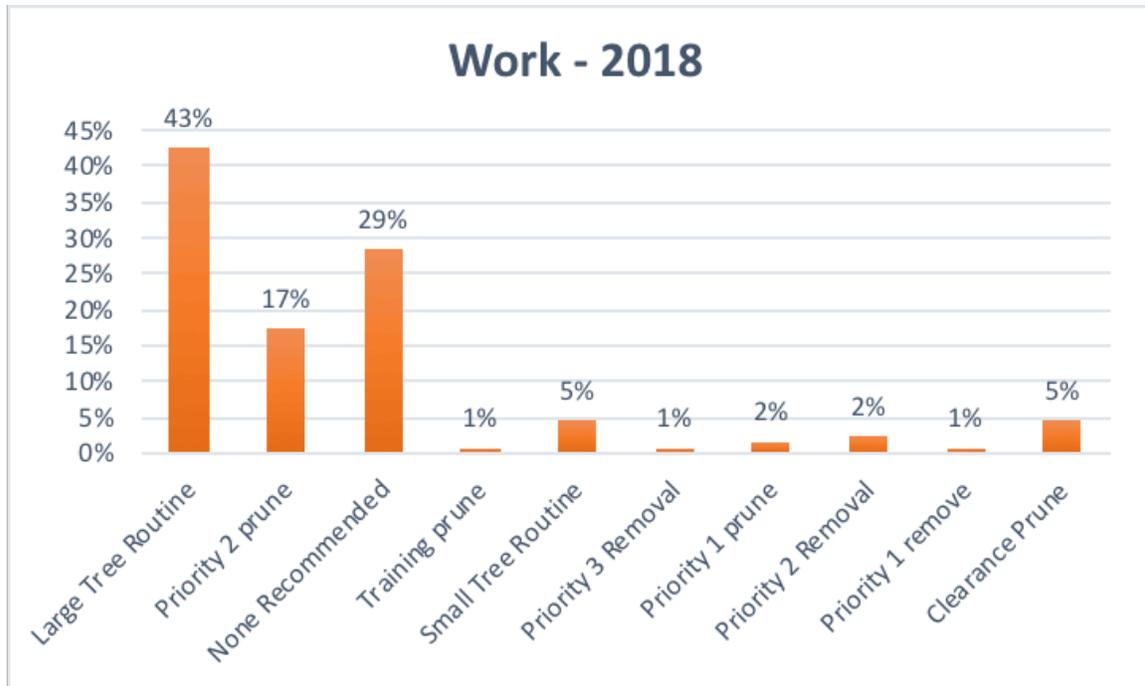


Figure 8. 2018 data

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Tree Pruning - About 48 percent of trees needed regular large tree (43 percent) or small tree (five percent) routine pruning. Only four trees needed a Priority 1 Prune usually due to a hanger over a street or path and 42 trees (17 percent) needed a Priority 2 Prune usually because of dead branches over a street or path.

Improper pruning by over-lifting and topping - When we encountered these improperly pruned trees, it at times appeared to us that the work was ordered done by an individual homeowner who hired an incompetent tree service.

We did, however, note an incident where improper tree work was being done to common area trees along South Bay Drive in the park across from 9012 South Bay Drive. A company that was clearly not a tree service but a landscape maintenance company that had another service completely unrelated to trees listed on their trucks and equipment. The trees were overlifted and they had made stub cuts without any regard to nearby dead branches that had not been removed. Their work was completely unprofessional and did not follow ANSI A300 Pruning Standards. Because we had observed the results of good pruning during most of our assessment, we were completely surprised and disappointed by the work that was being done. Because they were working on trees along the street in the park, we assume they were hired by the HOA. We hope this was an isolated incident and these untrained people are not going to be hired for more tree work.

Clearance prune - We added this category this year. In the 2014 report we considered clearance prune as part of Routine Prune and it still is. But we identified trees that needed clearance prune soon in order to avoid damage to passing trucks or damage to the trees caused by passing trucks pulling down branches.

Conclusions

A tree inventory and risk assessment provide valuable information for managing and maintaining an urban forest. Although no tree can be deemed safe and risk-free, a properly executed tree inventory and risk assessment can provide an organized and methodical way to deal with the trees that present the greatest risk. It allows for using limited resources to take care of the trees in greatest need of maintenance first and then taking care of trees with lower risk assessment scores as the budget and time permit. Use the tree inventory as a baseline for your on-going tree maintenance. Update each tree record when pruning work,

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sidewalk work or any excavation around a tree is done. Also record tree branch failures and have a well-trained arborist inspect tree failures as soon as possible after they occur. That way you can gradually build up a historical knowledge base of the most common species that fail and the most common tree defects.

We are often asked, "How long is a risk assessment good?" Our answer is always, "That depends." Usually if no violent wind storms occur in the area, a risk assessment is good for about 3 years but that also depends upon your budget and the weather. A high wind event can make existing defects worse or create new defects. Cracks in branches and forks can occur as well as hangers can be created by wind events.

End Weight Reduction Pruning - There has been a lot of pruning research in the last few years on how to reduce the failure risk on mature trees with large codominant limbs. Much of that work has been done by Dr. Ed Gilman, University of Florida Environmental Horticulture Professor Emeritus. He has been cited several times in the 2014 report. Several years ago Gilman recommended reduction of codominant leaders by 15 to 25 percent to reduce end weight. More recently he has been teaching that the amount of cure for large codominant limbs and long lateral sprawling limbs should be the removal of 40 up to 60 percent of the end weight. In our opinion, with the predominant laurel oak species many with poor structure, it is important for the HOA and South Bay property owners to be more aggressive in reducing branch end weight on trees with higher risk scores.

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Appendix A Definitions

Codominant Leaders – a tree with multiple trunks often beginning as a single leader and dividing into two or more leaders of similar size higher up on the trunk. Codominant leaders are considered a structural defect because they can be prone to failure (splitting). Codominant leaders with included bark are at greater risk of failure than codominant leaders without included bark.

Compartmentalization – the ability of a tree to isolate (wall off) damage and decay and continue to grow around the damaged area. Trees that are good compartmentalizers are better able to withstand damage from injuries such as pruning cuts, gashes, lightning strikes, etc.

Condition – an evaluation of a tree's structure and health. Structural condition is not the same as health condition. You can have a healthy tree with poor structure that is prone to failure.

Critical Root Zone – this an area around a tree where roots must be protected and is another term for Tree Protection Zone

DBH – diameter at breast height, a measurement of a tree's diameter usually measured approximately four and one half feet above the ground

Epicormic sprouts – Excessive sprouting. Short twigs and small leaves growing along the upper surface of one or more main branches. The presence of epicormic sprouts are an indication of poor tree health, over-pruning, a weakened tree.

Included Bark – Bark pinched or embedded between two adjoining stems or between a branch and trunk, preventing or reducing the intermingling of branch and trunk collars, and preventing formation of a branch bark ridge. An indication of a weak union. A crack in the union.

Reduction Pruning – A recommended pruning method that reduces (subordinates) codominant leaders and large side branches by reducing their size from the outside in. Reduction pruning is often the preferred method of taking weight off the ends of branches versus the commonly utilized but undesirable method known as "lion tailing" which removes interior branches and keeps only the branches out at the end creating instability and increasing risk of branch or trunk failure. Also called End Weight Reduction Pruning.

Resistograph – a diagnostic tool that utilizes a 1/8-inch diameter drill bit to measure decay inside a tree trunk or branch by measuring and graphing the resistance of the drill bit as it moves through the different layers of sound and decayed wood.

Routine Prune - Removal of dead wood and/or clearance pruning only.

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Appendix B Health Condition and Structural Condition Categories

Health

An **excellent health condition** means the tree has high vigor, nearly perfect health with little or no pest activity, decay, defoliation, discoloration or twig/branch dieback.

A **good health condition** means vigor is normal for the species. There is no significant damage due to pests or decay, no more than minor discoloration, defoliation and twig or branch dieback.

A **fair health condition** means the tree has reduced vigor and significant damage from insects, decay or diseases associated with defoliation but is not likely to be fatal. Foliage discoloration can be significant. There could also be up to 50 percent twig dieback and possible branch dieback.

A **poor health condition** means the tree has poor vigor, low foliage density and poor foliage color. It could also have a fatal pest and significant twig and branch dieback.

Structure

Excellent structural condition means the tree structure is nearly ideal and free of defects. Failure is *improbable*.

Good structural condition means the tree has a well-developed structure and defects such as decay are minor and can be corrected with pruning or support. Failure is *improbable*.

A **fair structural condition** means there is either a single significant defect or multiple moderate defects. Branch or trunk failure is *possible to probable*. Defects are not practical to correct or would require multiple treatments over several years.

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A **poor structural condition** indicates there is a single serious defect or multiple significant defects. It could also indicate a recent change in trunk angle. Branch, root or trunk failure is *probable*. Defects cannot be corrected.

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Certification of Performance

I, Chuck Lippi, certify that:

- Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy, safe or adequately protected under all circumstances or for a specified period of time. Likewise, remedial, protective and mitigating treatments and recommendations cannot be guaranteed.
- I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the party or parties involved.
- I certify that all the statements made in this report are true, complete and correct to the best of my knowledge and belief and are made in good faith.
- The analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts.
- My analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.
- My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party nor upon the results of the assessment, the attainment of stipulated results or the occurrence of any subsequent events.
- 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.
- I reserve the right to change my reports/opinions on the basis of new or different evidence.
- Loss or alteration of any part of this report invalidates the entire report.

I further certify that I am a member in good standing of the American Society of Consulting Arborists (ASCA), the International Society of Arboriculture (ISA) and the Florida Urban Forestry Council and am an ISA Board Certified Master Arborist FL-0501B and an ASCA Registered Consulting Arborist #443.

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References

¹ American National Standards Institute (ANSI) A300 Risk Assessment Part 9 Tree, Shrub, and Other Woody Plant Management Standard Practices (***Tree Risk Assessment*** a. Tree Structure Assessment), 2011.

² Thomas Smiley, Nelda Matheny and Sharon Lilly, ***Best Management Practices Tree Risk Assessment***, International Society of Arboriculture, Champaign, Illinois, 2011.