

# **Arborist Report**

## **Tree Inventory and Assessment**

**3508 96<sup>th</sup> Ave SE Mercer Island, WA 98040**

Prepared for:

**Sam Adams**

Prepared by:

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## Summary

This report assesses 15 established trees found on the on the lot owned by Mr. Sam Adams at 3508 96<sup>th</sup> Ave SE and 3 trees in the right of way (ROW) to the west of the site. Of the 15 trees on the site, 4 were in poor condition and not suitable for retention (trees 16, 18, 21), 2 small trees will not be retained (trees 12, 19). Of the remaining trees, 6 trees (trees 13, 14, 15, 17, 20, 24) are large by the 10” DBH or larger standard, but are not suitable for retention because they are either in the proposed building footprint or too near to the building to not have a high likelihood for long-term survival. Additionally, 3 small replacement trees were inventoried (trees Cs-1, Cs-2, Cs-3). These replacement trees are regulated by MICC 19.10.070 and must be maintained for 5 years per MICC 19.10.070.D, so they will be retained and relocated on site. One small unregulated tree (tree 5) was inventoried and will also be retained. MICC 19.10.010.C.2 requires at least 30 percent of regulated trees to be retained and prioritizes the retention of exceptional trees, large trees, and trees that have the best chance for survival. Of the 9 remaining regulated trees (trees 13, 14, 15, 17, 20, 24, Cs-1, Cs-2, Cs-3), 3 or 33% will be retained. Of the 3 small ROW trees, 2 will be removed as part of the project as they block driveway and site access. MICC 19.10.010.C.3 required replacement trees for these 2 removed ROW trees and the 6 removed on-site regulated trees following the standards outlined in MICC 19.10.070. Tree removals and replacements are detailed in the city provided worksheet titled “Mercer Island Tree Inventory & Replacement Submittal Information.”

## Introduction

### Background and History

I was contacted by Sam Adams to provide an updated tree inventory and assessment report for his vacant property at 3508 96<sup>th</sup> Ave SE Mercer Island, WA 98040. I had previously provided him with a similar Arborist Report on March 23, 2022. On May 2022, I provided him with another report that included a tree retention and protection plan. This new report reflects the current tree inventory and conditions onsite. Several trees from the original report were removed from the east end of the property by a King County utility project. There were also trees removed from the south side of the property and adjacent to it as part of a Mountains to Sound Greenway paved trail project. This latest report will include only trees that are currently present.

Mr. Adams was proposing to build a house on the property and this report will be part of the permit application process with the City of Mercer Island. It was located at the end of the short dead-end street, 96<sup>th</sup> Ave SE. The street ends at the paved Mountains to Sound Greenway Trail to the south. Just past the trail is the Interstate 90 Freeway. The house will be constructed using shipping containers. Using prefabricated structures limits the ability to make minor size adjustments to the design of the house.

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According to Mr. Adams, the property was vacant because the previous owner demolished a house that had previously stood there. The western half of the property had been mostly cleared, with just a few smaller trees remaining. The eastern half of the property was vegetated with mostly native trees and smaller plants, as well as a few invasive species, including English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus discolor*).

Mr. Adams provided me with a Topographic Survey/site map dated 9/30/20. In addition to the property lines, it showed the locations of the significant trees onsite. The trees were labeled and their diameter was included.

## **Assignment**

My assignment was to:

- Update the tree inventory, including counting, measuring, tagging, identifying and assessing all of the significant trees on the site.
- Provide a site map with the trees numbered according to the inventory.
- Provide an arborist report that notes the condition and viability of the trees. Note any trees that are in poor condition would not be viable to retain, or that would be a hazard (high risk) to the proposed development or to neighboring properties. Also identify any that would become hazardous due to damage or exposure that the trees would receive as part of the development.
- Provide a tree retention and replacement plan.

## **Methodology**

I examined the trees using the standard visual tree assessment method, as outlined in the *Tree Risk Assessment Manual* published by the International Society of Arboriculture. This is considered a Level 2 Basic Tree Risk Assessment. All of my observations were made from ground level. I did not climb the trees, perform any invasive tests on them or excavate any soil from around them. A few trees near the building footprint had their roots exposed using an air spade to determine a suitable protection zone; the advanced root analysis may be found in a later in this document.

The tree risk assessment methodology is based on three factors:

- How likely is the tree (or a tree part) to fail?
- How likely is the tree (or tree part) to hit a target of value when it fails?
- How likely is the tree (or tree part) to damage or injure the target if it hits it?

Tree structure, as well as health, plays a role in the risk determination. The proximity of a target of value is also considered. The presence of people and the duration of that presence (occupancy) is also factored in to the risk level determination.

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Tree risk is categorized as Low, Moderate, High or Extreme. A normal healthy tree is generally considered low risk, because it is not likely to fail. It is the presence of defects in the tree that increases the likelihood of failure. If no one would be harmed or nothing of value would be damaged by the tree failure, it is also considered low risk. A tree that is likely to fail, but is unlikely to strike a target, is not a high risk tree.

Most trees are either Low Risk or Moderate Risk and are not considered Hazard Trees. However, a property owner's tolerance for risk may be low and a tree of Moderate Risk may be out of their comfort zone. In such cases, removal of the tree should be sought through other permitted means, not hazard tree removal. The definition of a Hazard Tree varies by jurisdiction. High Risk and Extreme Risk trees are hazard trees.

Tree diameter measurements are taken at 4.5' above ground. This is known as Diameter at Breast Height – DBH. I used a diameter tape for this measurement. I used metal tags and flagging tape for tagging and numbering the trees.

## **Purpose and Use of this Report**

The purpose of this report is to provide the tree information I gathered from my site visit and inspection for the purposes of generating a report to meet the permit requirements of the City of Mercer Island. This report is for the sole use of my client and may not be reproduced, used in any way, or disseminated in any form, without prior consent of the client and Alan Haywood – Arborist & Horticulturist, LLC.

## **Observations**

I visited the site on March 4, 2022. I found the site to mostly level from the street heading east. In the northeast corner of the property, there was a gentle downhill slope. The site was dominated by several bigleaf maples (*Acer macrophyllum*) and one large Douglas fir (*Pseudotsuga menziesii*), with a few other smaller trees present. The understory was a mix of vine maple, beaked hazelnut, small bitter cherries, a small western redcedar, western sword fern, salal, salmonberry and trailing blackberry. There were also a few non-native trees and invasive plant species (ivy and blackberry) present.

I revisited the site on May 27, 2024 and I reassessed the trees and updated the inventory for my notes at that time. I remeasured the trees that were still present and deleted the ones that had been removed from my report. I replaced missing tags on some of the trees present on the site. There were 12 trees over 6" DBH remaining onsite after the trail and utility line projects were completed. Two were on the street ROW and one was close to the property line and shown as the

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neighbor's tree. Three onsite trees were in Poor condition and not viable for retention. Taking these trees out of the total.

None of the trees met the City of Mercer Island Exceptional Tree criteria. Six of the onsite trees were less than 10" DBH and may be considered small trees by City of Mercer Island standards. The tree inventory chart is included in Appendix A. It includes the details of the individual trees. The inventory includes four trees that are below 6" DBH.

## **Discussion and Recommendations**

MICC 19.10.010.C.2 requires at least 30 percent of regulated trees to be retained and prioritizes the retention of exceptional trees, large trees, and trees that have the best chance for survival. No exceptional trees are found on site. Poor condition trees are not considered viable candidates for retention. Of the 9 remaining regulated trees on site, at least 3 must be retained. Trees #14, 15, 17, 20, 24 will be removed because they are in the proposed building footprint. Tree #13 is outside of the footprint but is not a good retention candidate as it is too close to the structure and has a poor chance for survival long term. Trees Cs-1, Cs-2, and Cs-3 are replacement trees and are regulated by MICC 19.10.070, and subsection D requires them to be maintained healthy for at least 5 years. Trees Cs-1, Cs-2, and Cs-3 are in fair condition, have the best chance for survival. Trees Cs-1, Cs-2, and Cs-3 are recommended to be retained. Tree 5 is recommended to be retained, although it is not considered large or otherwise regulated by some other code standard. Of the 3 small ROW trees, 2 will be removed as part of the project as they block driveway and site access.

The current methodology most commonly used for tree root protection is the Critical Root Zone (CRZ) formula. A CRZ is developed for an individual tree by measuring its DBH and measuring one foot out from the trunk in all directions for every one inch of trunk diameter. Using this formula, a 10" diameter tree would have a CRZ of 10' extending out from the trunk in all directions.

In some circumstances, it isn't possible to develop the property as proposed and protect this much of the root zone. What has been found successful is to allow encroachment into the CRZ on one side of the tree by up to 50%. This will still preserve over three quarters of the CRZ and most healthy trees can withstand this. This is particularly true when the other side of the tree is not disturbed at all. The same 10" DBH tree could have soil disturbance up to 5' away from its trunk on one side and be expected to survive, if the rest of its CRZ is left undisturbed. This 50% measurement of the CRZ is known as the "Interior Critical Root Zone" (ICRZ).

To prevent unintended disturbances in the CRZ, a Tree Protection Zone (TPZ) should be established where no significant disturbance will take place. Ideally, this is at or beyond the CRZ. If the TPZ is reduced by up to 50% on one side, that would be the border of the TPZ. If the TPZ can't be set up to preserve at least three quarters of the CRZ, the tree is probably not a good

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candidate for retention. This should be done for trees #4, and 5 as well as the two Douglas firs that are located offsite to the north.

Best management practices to reduce impacts to CRZs can include:

- Fencing of the TPZ - this is often required by the permitting jurisdiction.
- Cantilevering over root zones rather than installing a solid foundation wall.
- Use of pier piling construction methods instead of solid foundation walls.
- Cutting of large roots (over 2" diameter) that need to be removed, not tearing them out with excavation equipment
- Keeping Cut roots moist to prevent dehydration and further dieback. Covering them with moist organic mulch, wood chips or moist fabric (burlap, cloth tarp, etc.) until they are covered with soil.
- Tunneling under roots when possible.
- Using compressed air or water and vacuum excavation methods to preserve roots, rather than open trenching with excavation equipment.
- Prohibiting the storage of materials and the use of heavy equipment within the TPZ.
- Providing extra irrigation during the summer dry season.
- Providing supplemental organic fertilizer and root bio-stimulant products to promote root growth.

All of the above practices should be considered and implemented as is deemed appropriate by the City of Mercer Island. Agencies sometimes require an arborist to be onsite to monitor work done within the protected CRZs of trees. If any of the trees can't be saved due to unforeseen circumstances during construction, then the arborist can help make that determination. Tree replacement or other mitigation measures can be required by the permitting agency. Again, the arborist can help advise on what would be appropriate under the existing circumstances.

The proposed utility connection to the house is shown to run through the CRZ of the neighbor's two large Douglas firs. I recommend either tunneling or compressed air excavation through the CRZ of these two trees to minimize root disturbance and successfully preserve these two trees.

Tree #13 CRZ will be impacted by the house construction, particularly the foundation excavation. As previously described, excavation disturbance should not encroach into the ICRZ, which is approximately 9' out from the trunk for tree #13. The trees should be able to tolerate three quarters of the CRZ being removed from one side. TPZ should be established to protect the ICRZ and at least three quarters of the CRZ for these trees. If the foundation excavation would encroach on the prescribed TPZ, depending on the soils, required excavation slopes, etc., some type of shoring may be required to maintain the recommended TPZ.

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On July 26, 2024, I met with a staff member of Bartlett Tree Service onsite. He excavated a trench along the interior critical root zone (ICRZ) of tree #13. Based on my analysis of the exposed roots, damage to the CRZ from the proposed foundation excavation would hurt its chances for long-term survivability making it not a good candidate for retention.

## **Tree Replacement**

The proposed tree removal will require 14 tree replacement trees: 12 for the removed onsite trees, and 2 replacements for the 2 small trees removed in the ROW. At least Fifty percent of the replacements are required to be native species. The trees proposed as replacements are 5 shore pines and 5 vine maples for native species and 4 Japanese flowering cherries as non-native ornamental species. The trees will be planted in the dormant season and will be mulched per City specifications and will be given supplemental organic fertilizer with bio-stimulants for enhanced root growth.

## **Conclusion**

The information in this report is based on my site visit and inspection completed on July 26, 2024 and the plans for the project that I have reviewed. I attest that all of the information within this report is accurate, to the best of my knowledge. It does not provide any guarantees or implications that the conditions of the trees on the site won't change over time. All trees eventually fail and even sound, healthy trees fail during severe weather events.

Thank you for the opportunity to be of service to you with this project. Please feel free to contact me if you have any questions about this report or if you have any further need for my services.

Sincerely,

Alan Haywood – Arborist & Horticulturist, LLC.

ISA Certified Arborist/Municipal Specialist – PN 0330-AM

ISA Qualified Tree Risk Assessor

ASCA Qualified Tree and Plant Appraiser

WSNLA Certified Professional Horticulturist - 2332

ecoPRO Certified Sustainable Landscape Professional – 6017

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## Appendix A: Tree Chart

Tree #	Species	DBH "	Cndtn	Excptnl	Comments & Recommendations
1	NS	6	Fair	No	Located in ROW, sparse crown due to previous crowding and shading, proposed for removal – located in proposed driveway foot print – <b>To be removed</b>
2	NS	4	Fair	No	Located in ROW
4	BL	9	Fair	No	Adjacent to the property line – could be a shared tree. Leans to the west, ivy on trunk, growing next to a Hawthorn tree on adjacent property. <b>Retain.</b>
5	CH	7 & 4	Fair	No	Trunk forks at 1', leans to the south, ivy on trunk, over topped by neighbor's 24" Douglas fir. <b>Retain.</b>
12	BS	7	Fair	No	Leans to the west with an uneven crown. Sparse foliage and low vigor due to past spruce aphid damage. New growth has improved its condition. <b>To be removed.</b>
13	BLM	19	Fair	No	Ivy on trunk. <b>To be removed – Too close to the house footprint.</b>
14	BLM	18	Fair	No	Ivy on trunk. <b>To be removed – In house footprint.</b>
15	BLM	18	Fair	No	Ivy on trunk. <b>To be removed – In house footprint.</b>
16	BLM	14	Poor	No	Decay in trunk from 10 – 15'. <b>To be removed – In house footprint.</b>
17	BLM	11	Fair	No	Uneven crown due to crowding. <b>To be removed – In house footprint.</b>
18	BLM	15	Poor	No	Main trunk dead at 15'. <b>To be removed – In house footprint</b>
19	BLM	7	Good	No	<b>To be removed – In house footprint..</b>
20	BLM	11 & 14	Fair	No	Ivy on trunk, bark inclusion at fork. This tree could be successfully retained by reducing encroachment into its CRZ <b>To be removed – In house footprint..</b>
21	BLM	7, 12, 7 & 7	Poor	No	Brittle Cinder fungus ( <i>Kretzchmaria deusta</i> ) present, dead wood in crown. <b>To be removed.</b>
24	DF	22	Good	No	Ivy on trunk. <b>To be removed – In house footprint.</b>
Cs-1	Cs	2	Fair	No	Replacement Tree. <b>Retain. To be relocated on site.</b>
Cs-2	Cs	2	Fair	No	Replacement Tree. <b>Retain. To be relocated on site.</b>
Cs-3	Cs	2	Fair	No	Replacement Tree. <b>Retain. To be relocated on site.</b>

### Abbreviations

As = Ash sp. (*Fraxinus* sp.)

DF = Douglas Fir (*Pseudotsuga mensiezii*)

BL = Black Locust (*Robinia Pseudoacacia*)

BLM = Bigleaf Maple (*Acer macrophyllum*)

BS = Colorado Blue Spruce (*Picea pungens*)

CH = Common Hawthorn (*Crataegus monogyna*)

Cs = Cascara (*Rhamnus purshiana*)

PM = Pacific Madrone

VM = Vine Maple (*Acer circinatum*)

NS = Norway Spruce (*Picea pungens*)

