

Arborist Report

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**Prepared
For:**

Maya Nader

5472 W Mercer Way
Mercer Island, WA
206.399.6184
manader@hotmail.com

**Prepared
By:**

Davey Resource Group Inc.

18809 10th Ave NE
Shoreline, WA, 98155
Contact: Todd Beals
todd.beals@davey.com
Local Office: 253.656.1650
Corporate Office: 800.966.2021



Notice of Disclaimer

Assessment data provided by Davey Resource Group is based on visual recording at the time of inspection. Visual records do not include testing or analysis and do not include aerial or subterranean inspection unless indicated. Davey Resource Group is not responsible for discovery or identification of hidden or otherwise non-observable risks. Records may not remain accurate after inspection due to variable deterioration of surveyed material. Risk ratings are based on observable defects and mitigation recommendations do not reduce potential liability to the owner. Davey Resource Group provides no warranty with respect to the fitness of the trees for any use or purpose whatsoever.

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Introduction

Background

The client contracted Davey Resource Group Inc. (DRG) to provide an arborist report on the health, size, and location of the trees at the site as well as identify tree protection and retention measures. The trees are being evaluated following a fire that requires the client to make modifications to their home and utility service which will impact some trees on the site.

Using a pen tablet computer, a DRG International Society of Arboriculture (ISA) Certified Arborist inspected all the trees on the property. Each tree was visually assessed and the required tree data was collected within a GIS database. Following data collection, specific tree preservation plan elements were calculated that identified each tree's Tree Protection Zone (TPZ) and the measures required to help ensure tree survival. The data collection and arborist report includes:

- A numbering system of all existing significant trees on the subject property.
- Tree type or species and DBH (Diameter at 4.5' above soil level).
- A complete description of each tree's health, condition and viability.
- Determination of significant and exceptional trees.
- Any trees recommended for removal along with justification.
- Any trees requiring pruning prior to construction. This includes special consideration of exceptional trees that may require pruning to accommodate the proposed renovations.
- A description of methods used to establish a Tree Protection Zone (TPZ).
- A discussion of timing for installation of tree protection measures.
- Any special instructions for tree care when work may be required within the TPZ.
- Map illustrations of tree locations and TPZ.

Limits of the Assignment

There are many factors that can limit specific and accurate data when performing evaluations of trees, their conditions, and values. The determinations and recommendations presented here are based on current data and conditions that existed at the time of the evaluation and cannot be a predictor of the ultimate outcomes for the trees. A visual inspection was used to develop the findings, conclusions, and recommendations found in this report. Values were assigned to grade the attributes of the trees, including structure and canopy health, and to obtain an overall condition rating. No physical inspection of the upper canopy, sounding, root crown excavation, and resistograph or other technologies were used in the evaluation of the trees.

Methods

Data was collected on May 4, 2020 by an **ISA Certified Arborist (Todd Beals NE-6913A)**. A visual inspection was used to develop the findings, conclusions, and recommendations found in this report. No physical inspection of the upper canopy, sounding, root crown excavation, and resistograph or other technologies were used in the evaluation of the trees.

The following attributes were collected for each site:

Tree Number: Tree ID number was assigned.

Location and Unique ID: An X and Y coordinate was generated for each tree site.

Species: Trees were identified by genus and species, cultivar if evident, and by common name.

Diameter at Breast Height (DBH): Trunk diameter was recorded to the nearest inch at 4.5 feet (standard height) above grade except where noted. When limbs or deformities occurred at standard height, measurement was taken below 4.5 ft.

Height: Tree Height estimated to the nearest <5ft.

Avg. Dripline Radius: Average dripline distance was measured.

Condition: The general condition of each tree was recorded in one of the following categories adapted from the rating system established by the International Society of Arboriculture:

- **Good:** A fully branched and leafed canopy; branches over 2 inches in diameter exhibit little to no dieback; little to no epicormic growth (i.e., sprouting from the trunk, limbs, or roots); and little to no aesthetic damage from insect or disease. The tree displays a growth habit characteristic of the species. The wood has no major structural problems and no significant mechanical damage. The tree exhibits good overall vigor.
- **Fair:** The canopy is thinning and there is less than average new growth present; or there is noticeable dead wood over 2" diameter or dieback throughout the majority of the crown; or there is significant mechanical damage to the trunk or root system; or the tree is otherwise exhibiting significant signs of stress and potential decline. The following signs or symptoms may be present in the tree: significant damage from non-fatal or disfiguring diseases, minor crown imbalance or thin crown, and/or stunted growth compared to adjacent trees. This condition also includes trees that have been topped but show reasonable vitality and no obvious signs of decay.
- **Poor:** The tree is in obvious decline or poses significant risk which requires immediate mitigation. There are significant amounts of dieback or dead/dying limbs greater than 2" diameter; there is minimal to no growth; or there is extensive decay to the trunk or root system, raising concerns of structural integrity. A tree in this category may also have severe mechanical damage or poor vigor threatening its ability to thrive.
- **Critical:** The tree is in decline and/or presents an unacceptable risk which necessitates immediate removal.
- **Dead or Dying**

Maintenance Task: The suggested method of pruning and/or removal for sustained return on investment is identified.

- **Priority 1 Removal:** These trees have defects that cannot be cost-effectively or practically treated, have a high amount of deadwood, or pose an immediate hazard to property or person. Davey recommends that these trees be removed immediately.

- **Priority 2 Removal:** These trees are not as great of a liability as Priority 1 Removals, being smaller and/or less hazardous, although they are also recommended for removal. Davey recommends that they be removed as soon as feasible.
- **Priority 3 Removal:** Trees designated for Priority 3 Removal do not pose a public hazard and are small, dead, or poorly formed. Smaller dead trees and failed transplants are in this category. Large trees in this category are generally poorly sited, and/or of inferior quality,
- **Priority 1 Pruning:** Trees in this category need pruning to remove hazardous deadwood limbs greater than 3 inches in diameter and/or have broken, hanging, or diseased limbs.
- **Priority 2 Pruning:** These trees need pruning to remove hazardous deadwood limbs greater than two but less than 3 inches in diameter.
- **Large Tree Routine Prune:** Trees in this category have characteristics that could become hazardous if not corrected. Deadwood limbs are less than 3 inches in diameter.
- **Small Tree Routine Prune:** This category includes small-growing trees that can generally be maintained from the ground, i.e., redbud, etc., and other trees 20 feet or less in height.
- **Training Pruning:** This category includes trees under 20 feet tall with correctable structural problems or minor amounts of deadwood that pose minimal threat of personal injury or property damage. Inexpensive pruning at this stage significantly affects the future of these trees. Young trees in this category that will be large at maturity generally require an annual pruning or inspection.
- **Stump Removal:** Stumps are identified separately since they may not be removed at the time of a tree removal.
- **No Priority:** No priority maintenance required.

Maintenance Detail

- **Clean/Deadwood:** Maintenance to remove dead, dying, broken or diseased wood.
- **End Weight/Thin:** Reduce overall weight of tree canopy, most often removing water sprouts.
- **Remove:** Remove the tree.
- **Raise:** Tree requires pruning to remove low branches that may interfere or cause obstructions with sight or traffic. Typical standards for clearance are 8' over sidewalks and 14' over roads.
- **Fertilize:** Tree would benefit from fertilization
- **Install/Inspect Cables:** Tree needs cabling to reduce risk of branch failure, or tree has cables that require routine inspection
- **Reduce:** Tree requires selective pruning to decrease the height and/or the spread of the crown
- **Remove Stakes:** Identifies where a new planting has stakes that should be removed
- **Stake:** Identifies a new planting that needs stakes to stabilize tree
- **Structural Prune:** Identifies a young tree that would benefit from pruning to improve structure and health.
- **Treat Pest/Disease:** Tree exhibiting pest or disease symptoms.
- **Water:** Tree exhibiting symptoms of drought stress and will benefit from watering.
- **None:** No (specific) maintenance required
- **Observations:** The primary observation impacting the health and condition assessment of the tree.
- **Cavity/Decay:** Tree has a cavity and suspected structural decay.
- **Large/Small Deadwood:** Dead or dying branches visible in the canopy.
- **Mechanical Damage:** Tree has mechanical damage.
- **Poor Location:** Tree is in an unsuitable location for its size.
- **Poor Root System:** The root system of the tree appears to be compromised.
- **Poor Structure:** The overall tree structure is poorly developed.
- **Remove Hardware:** Tree has hardware in it such as cabling or bracing.
- **Serious Decline:** Tree is in serious decline.
- **Signs of Stress:** Tree is exhibiting signs of stress.

Additional Inspection Required: Tree warrants a secondary inspection beyond the scope of this inventory. The arborist will record any structural defect observed, as defined in ANSI A300, Part 9(a) 92.27, and will incorporate the observations into recommendations for future action.

Notes: Additional information may be included in this field at the discretion of the arborist.

Tree Preservation Priority: In order to capture the priority for preservation of an individual tree, DRG utilized a rating scale of one to four, with one being the highest priority for preservation and four being of least concern. The condition rating of an individual tree is an important component of the priority rating, but several other variables are factored in: species desirability, species longevity, species sensitivity to root loss and construction impacts, uniqueness, and aesthetics both of the tree itself and its relation to the site. It is important to note that these are qualitative ratings based solely on the site, individual tree, and existing conditions at the time of the inventory. Proposed development and construction plans are not considered when assigning ratings. The following criteria constituted the basis of tree placement in a particular category of priority:

- **Priority 1:** Highest priority for protection (i.e. particularly good condition, unique tree and/or should be protected at all reasonable cost).
- **Priority 2:** Good or high fair condition tree well worth protecting though not uniquely valuable.
- **Priority 3:** Fair condition average tree that will not be missed if it were gone, not worth any special protection measures.
- **Priority 4:** Trees that should be removed under most any circumstances (i.e., invasive or undesirable species, poor condition or critical trees, particularly high-risk situations, etc.).

Quality Control Procedures

Data was collected and verified with the following quality control measures:

Personnel Training: Quality control procedures ensure quality data. The first step in DRG's quality control is to provide proper training to qualified individuals. All personnel associated with this project were ISA Certified Arborists with up-to-date credentials.

Data Collections Specification: A clear understanding of the data and the methods for collection and categorization ensure high-quality, standardized collection. DRG worked with the client to develop a detailed specification before actual data collection began.

Quality Control Methods: Quality control of data was completed electronically. Errors were corrected as they were found.

Observations

Tree condition is important to evaluate because the preservation of healthy trees should take priority over trees in poor condition. In addition, it may not be of value to try to preserve trees in poor condition when removal is a better option for the aesthetic value and health of the tree population as a whole.

A recent fire on the property consumed a small building and a grouping of trees just south of the house. Wind loading on the remaining trees in this area has changed because of the recent removals and the remaining trees should be monitored for potential windfall. Renovations to the home and installation of utility service lines will require trenching along the edge of the driveway.

A total of thirty-six (36) trees were inventoried near the proposed site renovations. Six (6) trees were considered exceptional and thirty (30) trees were considered significant according to [Mercer Island Municipal Code \(MICC\)](#). Thirteen (13) trees were in good and sixteen (16) trees were in fair condition. The remaining trees were in poor (4 trees) and critical (2 trees) condition. One (1) tree was dying.

Analysis & Recommendations

Successful tree preservation efforts begin in the planning and design phase. In order to select the appropriate trees for preservation, site managers and designers need detailed information on the health and status of the existing trees. This report satisfies the conditions of the critical first step in the preservation process: a tree inventory, assessment, and analysis conducted by a qualified professional. The resulting findings guide the beginning stages of the preservation process.

Condition rating and preservation priority rating help nominate potential candidates for preservation. Development plans should ensure that no impact or root damage occurs within the inner root zone and plans should take into consideration the significant reduction in likelihood of tree survival when the root zone is impacted.

Tree ID# 550 will be removed to allow for construction of the garage. Utility trenching near the top of the driveway, to the north of **Tree ID#'s 1101-1103** along the driveway towards the rental unit in the rear of the property, will not adversely affect the trees on the upper slope.

During the inventory, the inspecting arborist recognized two (2) large trees (**Tree ID#'s 1106 & 1107**) within striking distance of the rental unit in the rear of the property. These trees were in an advanced state of decline, have defects that cannot be cost-effectively or practically treated, have a high amount of deadwood, and pose an immediate hazard to property or person. It is recommended that these trees be removed as soon as feasible.

Similarly, **Tree ID#'s 569, 1100-1104, 1108 & 1109** require pruning to remove hazardous deadwood limbs greater than 3 inches in diameter and have broken, hanging, or diseased limbs. Lower priority pruning is recommended for **Tree ID#'s 550-552 and 570** as resources allow. These trees pose no immediate hazard to property or person.

Additionally, the following action steps are recommended;

- **Limit trenching** to the smallest extent possible.
- **Root prune** when large roots (≥ 2 " in diameter) are encountered during trenching using sharp bypass pruners to make a clean cut near a lateral.
- **Retain a Certified Arborist** on site to monitor activities and assess impacts to trees. The arborist can make as-needed recommendations to improve tree preservation activities throughout the construction process. This is particularly important in order to make a timely response when a preserved tree is accidentally damaged or otherwise impacted during development.
- A successful tree preservation effort continues well past the conclusion of development activities. The preserved trees should be **re-inspected** for signs of impact that may have gone undetected during construction and mitigation measures assigned accordingly. Annual monitoring should continue for several years, as the effects of construction may take anywhere from 3 to 7 years to become visibly apparent.

Tree Protection Zone

A tree relies upon small, non-woody roots called feeder roots for the absorption of water and nutrients. These roots predominantly reside in the upper several inches of soil, just below grade. Soil compaction, even from light foot traffic, can compromise their ability to function and compromise tree health. Remediating soil compaction can be an expensive process with limited efficacy, typically to the detriment of tree health and structural stability.

Tree Protection Zone (TPZ) fencing should be installed at the dripline of the trees nearest the proposed construction activity and remain in place for the entirety of the project. Where the TPZ overlaps impervious surfaces, the TPZ may be installed at the edge or just inside to allow for pipe trenching. Access into the TPZ should not be allowed unless determined to be necessary and only under the supervision of a certified arborist. The tree protection area may be reduced according to a plan prepared by a certified arborist and approved by the city. Such reduction shall be limited to one-third of the area within the outer half (outer root zone) of the area within the drip line. In no case shall the reduction occur within the inner root zone.

- It is recommended that the Tree protection zones (TPZs) be **installed at the dripline of the tree**.
- TPZ shall be a minimum of **4 feet high**, constructed of chain link or polyethylene laminar safety fencing or similar material subject to approval by an ISA Certified Arborist.
- **"Tree Protection Area - Keep Out"** or similar signs shall accompany the TPZ fencing at regular intervals.
- TPZs shall be constructed in such a fashion as to **not be easily moved or dismantled**.
- **TPZs shall remain in place for the entirety of the project** and only removed, temporarily or otherwise, by an ISA Certified Arborist after submittal and approval of intent.
- **Add a 3-inch layer of mulch** to the portion of the root zone protected by the TPZ. Be sure not to cover/bury the tree root collar. Mulch aids the soil in water retention and also helps insulate the soil from hot and cold weather extremes.

Concluding Remarks

This report, along with the tree inventory, is the first step in preserving the health, function, and value of the trees on the site during and after development. Trees and green spaces provide benefits and add value to residential properties. Tree preservation starts with a basic understanding of the health and structure of the trees on the site. With proper care and protection, these trees can continue to thrive. Tree protection guidelines and strategies should be shared with contractors and employers prior to any disturbance at the site.

A tree inventory and arborist report provides a snapshot in time of each individual tree assessed across many of the most important observable factors relative to preservation. Healthy, vigorous trees better tolerate impacts from construction. Additionally, tolerance to impact from construction activities varies across species and sites. The percentage impact to the root zone also greatly influences the suitability of a particular tree for preservation.

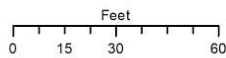
A successful tree preservation plan requires a team effort to find the right balance and select the appropriate trees. Using the findings of this report as a guiding foundation, planners are equipped to design, prepare, and implement a tree preservation plan tailored to achieving the optimal outcome.

Appendix A: Map

Map A1. Site Map showing tree locations and average canopy dimensions.



- Tree Sites**
Proposed Status
- Retain
 - Remove - Condition
 - Remove - Impacted
 - TPZ



Tree Inventory

Nader Residence
 5472 W Mercer Way
 Mercer Island, WA

May 2020



Prepared by:



Appendix B: Inventory Tables

Table B1. Tree Inventory Table of observations. An Excel spreadsheet is available upon request.

Tree ID#	Species	DBH (in)	Height (ft)	Avg Dripline Radius (ft)	Condition	Observations	Maintenance Task	Maintenance Detail	Preservation Priority	Exceptional Status	Proposed Status
550	Birch, European (<i>Betula pendula</i>)	20	85	20	Fair	Onesided, Weak Union, Overextended Branches, Restricted Grow Area	Large Tree Routine Prune	Structural Prune	2	Significant	Remove - Impacted
551	Apple (<i>Malus spp.</i>)	15	25	20	Poor	Onesided, Small Deadwood (-3"), Overextended Branches, Lean, Extensive Sapsucker Damage	Large Tree Routine Prune	Structural Prune	3	Significant	Retain
552	Douglas-fir (<i>Pseudotsuga menziesii</i>)	10	55	5	Poor	Onesided, Small Deadwood (-3"), Suppressed	Large Tree Routine Prune	Structural Prune	3	Significant	Retain
553	Cedar, Western-red (<i>Thuja plicata</i>)	16	90	15	Good	Onesided, Suppressed	No Priority	None	2	Significant	Retain
554	Spruce, Norway (<i>Picea abies</i>)	12	70	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
555	Spruce, Norway (<i>Picea abies</i>)	12	70	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
556	Spruce, Norway (<i>Picea abies</i>)	13	70	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
557	Spruce, Norway (<i>Picea abies</i>)	13	70	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
558	Cypress, Lawson (<i>Chamaecyparis lawsoniana</i>)	17	50	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
559	Cypress, Lawson (<i>Chamaecyparis lawsoniana</i>)	18	50	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
560	Spruce, Norway (<i>Picea abies</i>)	10	50	10	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
561	Douglas-fir (<i>Pseudotsuga menziesii</i>)	14	50	20	Fair	Onesided, Suppressed	No Priority	None	2	Significant	Retain
562	Pine, Lodgepole (<i>Pinus contorta</i>)	10	50	10	Fair	Onesided, Suppressed	No Priority	None	2	Exceptional	Retain
563	Spruce, Norway (<i>Picea abies</i>)	19	70	15	Fair	Full Crown	No Priority	None	2	Significant	Retain
564	Spruce, Norway (<i>Picea abies</i>)	18	70	15	Fair	Full Crown	No Priority	None	2	Significant	Retain
565	Spruce, Norway (<i>Picea abies</i>)	17	60	15	Good	Full Crown	No Priority	None	2	Significant	Retain
568	Maple, Bigleaf (<i>Acer macrophyllum</i>)	44	40	10	Dying	Trunk Decay, Topped	No Priority	None	3	Significant	Remove - Condition

Tree ID#	Species	DBH (in)	Height (ft)	Avg Dripline Radius (ft)	Condition	Observations	Maintenance Task	Maintenance Detail	Preservation Priority	Exceptional Status	Proposed Status
569	Maple, Bigleaf (<i>Acer macrophyllum</i>)	17	100	20	Good	Full Crown, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
570	Katsura (<i>Cercidiphyllum japonicum</i>)	20	120	20	Good	Codominant Stem, Full Crown, Poor Structure	Large Tree Routine Prune	Structural Prune	2	Significant	Retain
999	Spruce, Norway (<i>Picea abies</i>)	14	60	10	Fair	Onesided, Poor Structure	No Priority	None	2	Significant	Retain
1085	Douglas-fir (<i>Pseudotsuga menziesii</i>)	23	90	20	Good	Onesided, Suppressed	No Priority	None	2	Significant	Retain
1087	Douglas-fir (<i>Pseudotsuga menziesii</i>)	16	90	10	Good	Onesided, Suppressed	No Priority	None	2	Significant	Retain
1088	Cedar, Western-red (<i>Thuja plicata</i>)	37	90	15	Good	Onesided, Suppressed	No Priority	None	2	Exceptional	Retain
1089	Cedar, Western-red (<i>Thuja plicata</i>)	34	90	20	Good	Onesided, Suppressed	No Priority	None	2	Exceptional	Retain
1090	Maple, Bigleaf (<i>Acer macrophyllum</i>)	16,1 7,12	20	10	Poor	Onesided, Mechanical Damage, Topped	No Priority	None	3	Significant	Retain
1100	Maple, Bigleaf (<i>Acer macrophyllum</i>)	19,8	100	20	Good	Full Crown, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
1101	Maple, Bigleaf (<i>Acer macrophyllum</i>)	10	100	20	Good	Onesided, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
1102	Maple, Bigleaf (<i>Acer macrophyllum</i>)	15,1 2	100	20	Good	Onesided, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
1103	Maple, Bigleaf (<i>Acer macrophyllum</i>)	11	100	20	Good	Onesided, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
1104	Maple, Bigleaf (<i>Acer macrophyllum</i>)	16,5	100	20	Good	Onesided, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
1106	Maple, Bigleaf (<i>Acer macrophyllum</i>)	40	100	20	Critical	Mechanical Damage, Large Deadwood (+3"), Serious Decline, Fruiting Bodies,	Priority 1 Removal	Remove	4	Exceptional	Remove - Condition
1107	Spruce, Norway (<i>Picea abies</i>)	21	100	20	Critical	Mechanical Damage, Large Deadwood (+3"), Serious Decline, Fruiting Bodies	Priority 1 Removal	Remove	4	Significant	Remove - Condition
1108	Maple, Bigleaf (<i>Acer macrophyllum</i>)	14,1 5,15	100	20	Fair	Onesided, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain

Tree ID#	Species	DBH (in)	Height (ft)	Avg Dripline Radius (ft)	Condition	Observations	Maintenance Task	Maintenance Detail	Preservation Priority	Exceptional Status	Proposed Status
1109	Spruce, Norway (<i>Picea abies</i>)	22	100	20	Poor	Stressed, Large Deadwood (+3")	Priority 1 Prune	Crown Clean	2	Significant	Retain
1137	Douglas-fir (<i>Pseudotsuga menziesii</i>)	41	120	30	Fair	Onesided, Full Crown, Poor Structure	No Priority	None	2	Exceptional	Retain
1138	Douglas-fir (<i>Pseudotsuga menziesii</i>)	38	120	30	Fair	Onesided, Full Crown, Poor Structure	No Priority	None	2	Exceptional	Retain