Arborist Report

Tree Risk Assessments - Chestnut Trails

Prepared For:

Chestnut Trails HOA

Ashley Rider
Brink Property Management
12011 Bel-Red Road, Suite 101
Bellevue, WA, 98005
425.458.4848, ext. 33

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: 800.828.8312

DAVEY Resource Group

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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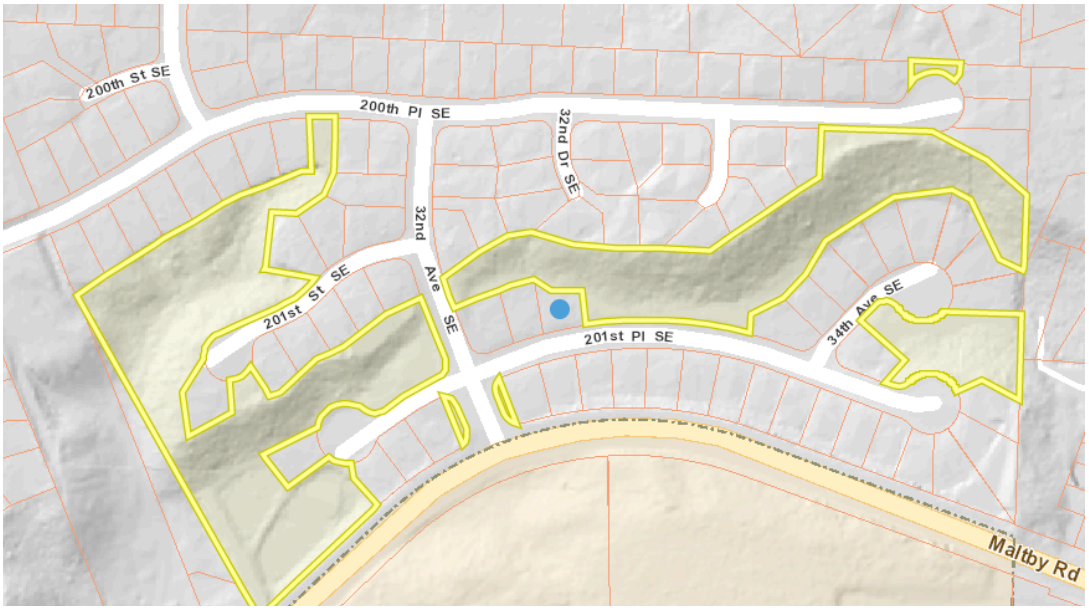
Introduction

Background

Davey Resource Group Inc. (DRG) was contracted by Ashley Rider to perform a Level 1 Tree Risk Assessment of the trees that exist in the Native Growth Protection Area (NGPA) within Chestnut Trails residential community of Bothell. An initial Level 1 Tree Risk Assessment was performed by DRG in November of 2021 & December 2022. The details of this current report are intended to support the additional trees that have been identified as hazardous. On December 5 and 6, 2023, an International Society of Arboriculture (ISA) Certified Arborist (NE-6913A) and Qualified Tree Risk Assessor from DRG conducted an assessment of the trees. The trees were assessed by their location, size, current condition, and overall health. The data was then used to determine a risk rating. The current edition of the Tree Risk Assessment Manual (ISA, 2013) was used to guide the risk rating of the tree as well as the potential strategies for care and risk abatement



Map illustrating the locations of the inspected trees.

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 by an ISA Certified Arborist & Qualified Tree Risk Assessor Todd Beals (ISA Certification NE-6913A) on December 5th and 6th in 2023. A limited visual inspection was used to develop the findings, conclusions, and recommendations found in this report. This level 1 assessment method is intended as a rapid assessment to identify trees with obvious defects or conditions of concern that could impact HOA properties. Only trees with imminent and/or probable likelihood of failure in a **2-year timeframe** had data collected. A Level Two Risk Assessment was then completed on those trees that were selected during the Level 1 Risk Assessment, and a risk rating was developed.

> **Level One:** A cursory review typically performed along one plane, as in a drive-through or walk-by assessment of tree health and condition.
> **Level Two:** A non-invasive 360 degree assessment of the above ground parts of the tree.
> **Level Three**: A more thorough investigation of tree health and condition that may include trunk/root excavation.

Data Collection

Tree Number: Tree ID number was assigned and an aluminum tag affixed to the tree.

Stems: The number of stems was recorded.

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

Diameter at Standard Height (DSH): 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.

Condition: Condition ratings were based on but not limited to:(1) the condition and environment of the tree's root crown; (2) the condition of the trunk, including decay, injury, callusing, or presence of fungus sporophore; (3) the condition of the limbs, including the strength of crotches, amount of deadwood, hollow areas, and whether there was excessive weight borne by them; (4) the condition and growth rate history of the twigs, including pest damage and diseases; (5) the leaf appearance, including abnormal size and density as well as pest and disease damage.

Using an average of the above factors together with the arborist's best judgment, 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 and 10th Edition of the Council of Tree & Landscape Appraisers (CTLA) *Guide for Plant Appraisal*[1] :

- **Excellent (81%-100%):** High vigor and near-perfect health with little or no twig dieback, discoloration, or defoliation. Nearly ideal and free of structural defects. Nearly ideal form for the species and generally symmetrical.
- **Good (61%-80%):** Vigor is normal for the species and has no significant damage due to disease or pests. Twig dieback, discoloration, or defoliation is minor. Well-developed structure with minor

[1] Council of Tree and Landscape Appraisers. (2019). *Guide for Plant Appraisal, 10th Edition, Second Printing.* Atlanta, GA: International Society of Arboriculture.

defects that can be corrected easily. Minor asymmetries/deviations from species norm. Function and aesthetics are not compromised.

- **Fair (41%-60%):** Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twig dieback, defoliation, discoloration, and/or dead branches may comprise up to 50% of the canopy. A single structural defect of a significant nature or multiple moderate defects. Structural defects are not practical to correct or would require multiple treatments over several years. Major asymmetries/deviations from species norm. Function and aesthetics are compromised.
- **Poor (21%-40%):** Unhealthy and declining in appearance. Poor vigor and low foliage density and poor foliage color are present. Potentially fatal pest infestation. Extensive twig or branch dieback. A single serious structural defect or multiple significant defects. Observed structural problems cannot be corrected. Failure may occur at any time. Largely asymmetrical or abnormal form. Form detracts from aesthetics or intended use to a significant degree.
- **Very Poor (6%-20%):** Poor vigor and appears to be dying. Little live foliage. Single or multiple severe structural defects. Visually unappealing and provides little or no function in the landscape.
- **Dead (0%-5%)**

Maintenance Task: The highest priority maintenance need was identified for sustained return on investment. Additional tasks may be identified by the arborist completing the work.

- **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 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 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.
- **No Priority**: No priority maintenance required.

Maintenance Detail

- **Crown Clean**: Maintenance needed to remove dead, dying, broken or diseased wood.
- **End Weight/Thin**: Reduce the overall weight of tree canopy, most often removing water sprouts.
- **Remove**: Remove the tree.
- **Clearance**: Tree requires pruning to remove or reduce branches that may interfere or cause obstructions with vehicles or pedestrians. Typical standards for clearance are 8’ over sidewalks and 14’ over roads. Building clearance will be determined on a case by case basis.
- **Fertilize**: Tree would benefit from fertilization
- I**nstall/Inspect Cables**: Tree needs cabling to reduce risk of branch failure, or tree has cables that require routine inspection
- **Remove Stakes**: Identifies where a new planting has stakes that should be removed
- **Structural Prune**: Identifies a 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 (Adding the word specific in there is very important, most trees we inventory don't need specific maintenance other than a routine trim schedule.

Observations: The primary observation impacting the health and condition assessment of the tree.

- **Cavity/Decay**: The tree has a cavity and suspected structural decay.
- **Large/Small Deadwood:** Dead or dying branches visible in the canopy.

- **Mechanical Damage**: The tree has mechanical damage.
- **Poor Location**: The 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**: The tree has hardware in it such as cabling or bracing.
- **Serious Decline**: The tree is in serious decline.
- **Signs of Stress**: The tree is exhibiting signs of stress.

Risk Assessment Methodology

This evaluation follows the tree risk assessment methods developed by the International Society of Arboriculture (ISA). It consists of an inspection of the visible tree parts including surface roots, trunk, scaffold limbs, and canopy. The hazard and risk assessment results in a risk rating for the tree to help quantify the level of risk accepted by the tree's owner. To summarize the information about the trees that received a hazard evaluation, an overall hazard rating is obtained by assessing and assigning a value to the failure potential, identifying the size of the tree part most likely to fail (e.g., branch, one stem, or whole tree) and determining site use around the affected tree. Each of these three characteristics is assessed as follows:

Condition of Concern – Describes the part most likely to fail. The larger the tree part, the greater the potential for damage; therefore, the size of the failure part affects the overall hazard potential, and is described according to:

- Part Size - Typically the diameter of the limb or tree part
- Fall Distance - The distance of the part from the ground
- Target - The presence of any target(s) that could be impacted by failure

Likelihood of Failure – Identifies the most likely point of failure and rates the likelihood that the observed defect(s) will result in part failure **within the next 2 years.** Failure potential is rated as:

- Improbable (defects are minor and unlikely to result in failure)
- Possible (defects are present and of concern)
- Probable (compounding and/or significant defects present)
- Imminent (defects are serious and imminent failure is likely)

Likelihood of Impact – Identifies the most likely point of failure and rates the likelihood that the structural defect(s) will impact the potential targets. Likelihood of impact is rated as:

- Very Low (Occasional use, as in a forest landscape)
- Low (e.g., tree lawn, sidewalk, park path)
- Medium (buildings or people within striking range more than 50% of the time)
- High (Constant and frequent use of the area within striking distance)

Consequences of Failure – Rates the level of damage caused by the defective part in the event of failure. The consequences of failure are rated as:

- Negligible (typically small branches <1" diameter, unlikely to cause damage)
- Minor (branches 1-2" diameter, may cause damage)
- Significant (damage would occur)
- Severe (failure would result in major damage)

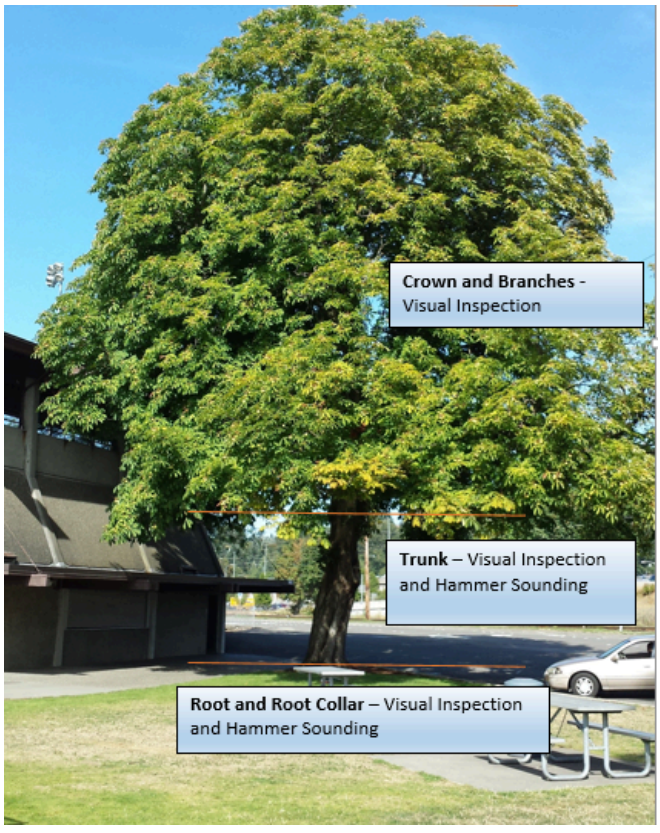
Overall Risk Rating - The values assigned to condition, likelihood and consequences are summarized into an overall risk rating of Low to Extreme for each tree:

- Low (risk is present, mitigation measures may not be required)
- Moderate (mitigation advised within normal maintenance cycle)
- High (mitigation advised within the year)
- Extreme (mitigation necessary as soon as practical)

In addition to a risk rating, the tree(s) were also prescribed maintenance recommendations based on general tree health and visual observations. A high-risk rating alone does not necessarily result in a removal recommendation. Conversely, trees with a lower rating may be prescribed for removal based on other factors such as location and species compatibility and/or the severity of specific defects. Whenever recommended tree maintenance would mitigate risk, the residual risk was also noted.

A visual inspection and mallet soundings from groundline to 8 feet on the trunk were the primary methods used to develop the findings, conclusions, and recommendations found in this report. Data collection included measuring the diameter of the tree at 4.5 feet above grade, height estimation, canopy radius estimation, a visual assessment of tree condition, structure and health, and a photographic record. Mallet sounding was used to determine the soundness of accessible roots, trunk and branches. Qualitative value assessments grade the attributes of the tree, including structure and canopy health, and to obtain an overall condition rating. No physical inspection of the upper canopy, root crown excavation, and resistograph or other technologies were used in the evaluation of the tree.

Example Illustration: Tree defects and conditions affecting the likelihood of failure were assessed around the Root Collar, the Trunk and the Crown.



Tree Risk Assessments

Observations

A Level 1 Tree Risk Assessment (TRA) was completed in the requested areas of the Chestnut Trails HOA. The primary focus of the assessment in these areas were trees with potential to fail and considered a threat to property and safety along trails, walkways, and homes.

The trees in both subject areas were mostly large and mature bigleaf maple (*Acer macrophyllum),* Douglas-fir *(Pseudotsuga menziesii)* & cottonwood *(Populus spp.)* trees. The trees were in mostly fair condition. The areas were natural areas with limited evidence of previous tree care. Dead broken branches and stumps were prolific in the trees and along the forest floor. Undergrowth was largely unmaintained and consisted of small native shrubs, young trees, invasive blackberry and English ivy. The following table lists eighteen (18) trees that require mitigation to lower tree risk. The location of each tree is shown in the Appendix A.

Table 1. The following table lists the trees of concern requiring mitigation.

Tree #	DSH (in)	Common Name	Botanical Name	Approx Canopy Radius (FT)	Approx Tree Height (FT)	Condition Rating	Condition Notes
769	6	Red Alder	*Alnus rubra*	10	25	Fair	Full Crown, Suppressed, Low Vigor
770	18	Douglasfir	*Pseudotsuga menziesii*	10	75	Fair	Narrow Crown, One Sided, Suppressed, Co-Dominant Stems, Small DW (1-2")
771	24	Douglasfir	*Pseudotsuga menziesii*	10	75	Fair	Narrow Crown, One Sided, Suppressed, Co-Dominant Stems, Small DW (1-2")
772	8	Red Alder	*Alnus rubra*	0	25	Dead/Dying	Suppressed, Trunk Decay, Low Vigor, Serious Decline, Fungal Fruiting Bodies
773	6	European white Birch	*Betula pendula*	0	0	Dead/Dying	Mechanical Damage, Serious Decline
774	7	Red Alder	*Alnus rubra*	7	40	Dead/Dying	Narrow Crown, One Sided, Suppressed, Included Bark/Weak Union, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay
775	25	Douglasfir	*Pseudotsuga menziesii*	12	90	Poor	Narrow Crown, One Sided, Trunk Decay, Co-Dominant Stems, Stressed, Broken Limbs, Branch Decay, Fungal Fruiting Bodies

Tree #	DSH (in)	Common Name	Botanical Name	Approx Canopy Radius (FT)	Approx Tree Height (FT)	Condition Rating	Condition Notes
776	9	European white Birch	*Betula pendula*	10	35	Very Poor	Narrow Crown, One Sided, Suppressed, Excessive Lean, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Insect/Disease Problem
777	21	Douglasfir	*Pseudotsuga menziesii*	10	95	Very Poor	Narrow Crown, One Sided, Suppressed, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay
778	5	Alder	*Alnus rubra*	0	55	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay
779	8	Red Alder	*Alnus rubra*	0	55	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies
780	4	Red Alder	*Alnus rubra*	0	55	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay
781	4	Red Alder	*Alnus rubra*	0	30	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies
782	6	Red Alder	*Alnus rubra*	0	30	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies
783	5	Red Alder	*Alnus rubra*	0	30	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies
784	5	Red Alder	*Alnus rubra*	0	30	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies

Tree #	DSH (in)	Common Name	Botanical Name	Approx Canopy Radius (FT)	Approx Tree Height (FT)	Condition Rating	Condition Notes
785	3	Red Alder	*Alnus rubra*	0	30	Dead/Dying	Narrow Crown, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies
4963	22	Red Alder	*Salix spp.*	15	25	Very Poor	One Sided, Suppressed, Root Damage/Decay, Basal Decay, Trunk Decay, Included Bark/Weak Union, Co-Dominant Stems, Mechanical Damage, Small DW (1-2"), Low Vigor, Serious Decline, Broken Limbs, Branch Decay, Fungal Fruiting Bodies

Analysis & Recommendations

It is recommended that any additional inspections be completed at various times throughout the season. Historically, DRG has inspected the site in the dormant season (leaf-off). While this season is good for viewing branch structure and coniferous trees, deciduous trees show signs and symptoms of many diseases or decline during the leaf-on season. In many cases, catching a foliar disease early may help to prevent serious decline and hazardous situations.

The inspecting arborist Identified the most likely point of failure and rated the likelihood that the observed defect(s) will result in part failure **within the next 2 years.** The following tables identify the trees of concern that require mitigation. In addition to the detailed recommendations in the following table, it is also recommended that the areas receive a Level 1 TRA annually or following extreme weather events to identify and mitigate any changes to tree conditions or identify new conditions of concern.

Table 2. The following table details the tree risk matrix for the inspected trees.

Tree #	Likelihood of Failure	Likelihood of Impact	Likelihood of Failure & Impact	Consequences	Risk Rating
769	Improbable	High	Unlikely	Minor	Low
770	Possible	Medium	Unlikely	Significant	Low
771	Possible	High	Somewhat likely	Severe	Moderate
772	Imminent	Medium	Likely	Significant	High
773	Imminent	Medium	Likely	Significant	High
774	Imminent	Medium	Likely	Significant	High
775	Probable	Medium	Somewhat likely	Severe	Moderate
776	Probable	High	Likely	Significant	High
777	Probable	High	Likely	Severe	High
778	Probable	High	Likely	Significant	High

Tree #	Likelihood of Failure	Likelihood of Impact	Likelihood of Failure & Impact	Consequences	Risk Rating
779	Probable	High	Likely	Significant	High
780	Probable	High	Likely	Significant	High
781	Probable	Medium	Somewhat likely	Significant	Moderate
782	Probable	Medium	Somewhat likely	Significant	Moderate
783	Probable	Medium	Somewhat likely	Significant	Moderate
784	Probable	Medium	Somewhat likely	Significant	Moderate
785	Probable	Medium	Somewhat likely	Significant	Moderate
4963	Probable	High	Likely	Significant	High

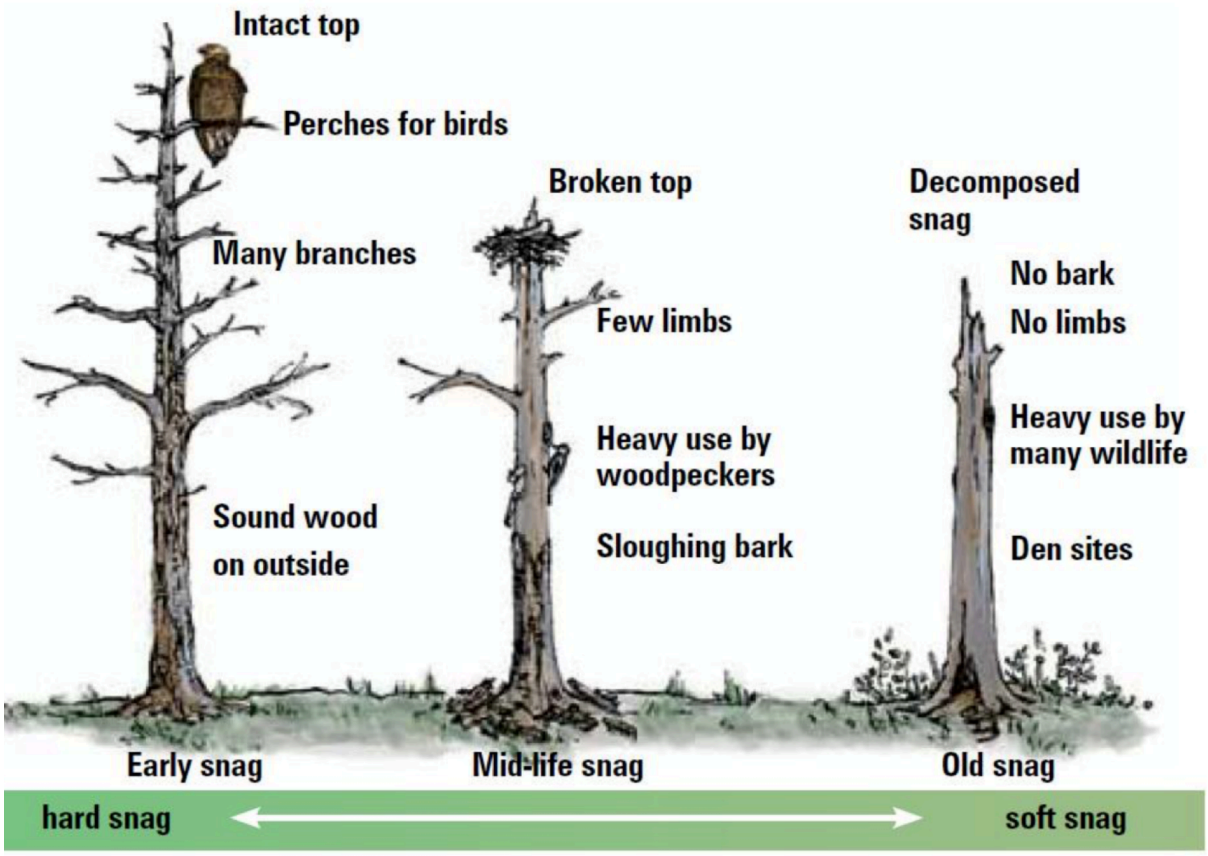
Table 3. Risk Rating and Priority Maintenance along with Tree Identification Number for the inspected trees.

Priority Maintenance	Risk Rating	Tree #	Count
Priority 1 Removal	High	772, 773, 774, 777, 778, 779, 780, 4963	8
Priority 1 Removal	Moderate	775, 781, 782, 783, 784, 785,	6
Priority 2 Removal	High	776	1
Priority 2 Prune	Low	770	1
Priority 2 Prune	Moderate	771	1
Training Prune	Low	769	1
TOTAL			18

There are two options to mitigate the risk of the trees determined to be dead:

- **Option #1** - Remove the tree and all the above tree parts.
- **Option #2** - Trees to be removed at the project site may be topped at a safe height and left as habitat snags for wildlife food, nesting, or shelter. Standing or downed deadwood plays an important role in the landscape. Tree removals at the site present an opportunity to promote and increase wildlife activity and diversity at the site. The arborist performing the removals will be consulted to decide the potential for a habitat snag designation on a tree-by-tree basis. In some cases, guy wires may be attached to the tree and anchored in the ground to create a safe snag out of a taller tree. **This option is only recommended if the client is willing to accept the level of risk from the failing snag.**

Image 1. An example image of a habitat snag life stages and wildlife potential.



Concluding Remarks

If not managed properly, snags can pose a risk to people and structures. If a dead or dying tree threatens something that can be moved, such as a swing set or patio furniture, consider moving those items before cutting the tree down. An alternative to eliminating the entire tree is to remove only the dangerous section(s). Consulting with a certified arborist with experience in wildlife snags is the first step in managing potential habitat snag trees. **This option is only recommended if the client is willing to accept the level of risk from the failing snag.**

When a tree must be cut down, maximize its habitat value by placing as much of the debris as possible near the area where the tree was removed. In hot, dry areas, move the material into the shade of nearby trees or large shrubs. Bringing branches in contact with the ground will cause them to rot faster.
Large conifers such as cedar and fir make excellent habitat snags. These species tend to rot more slowly than deciduous trees. Large deciduous trees such as cottonwoods and bigleaf maples can last many years as snags. While alive, they tend to develop cavities in their live and dead branches and trunks.

Large snags more than 12 inches in diameter and 15 feet tall offer ideal hunting perches for hawks, eagles, and owls. They function as resting perches for swallows, band-tailed pigeons, mourning doves and other birds; food storage for mice, squirrels, woodpeckers, and jays; and song perches for tanagers and flycatchers. In addition to nesting, woodpeckers use large dead tree trunks as a way to announce their presence during courtship, hammering their bills against the tree's resonating surface.

Small snags may be used as song posts by bluebirds, hummingbirds, and other songbirds to attract mates and proclaim nesting territories. Black-capped chickadees nest in small tree snags as little as six feet tall and four inches in diameter. Small trees rot rapidly, creating wildlife habitat. Black-capped chickadees nest in snags as small as six feet tall and four inches in diameter.

Because individual snags may have only one wildlife habitat feature (perch, cavity, etc.), retaining and promoting small clumps of snags throughout a larger property is more likely to provide all of these features. Small dead ornamental and fruit trees can be left in the landscape where they are not a safety hazard because they will be used as perches for preening, resting, foraging, and singing[2].

[2] https://wdfw.wa.gov/species-habitats/living/snags#hazards

Appendix A: Maps

Map A1.

Appendix B: Risk Rating & Likelihood

The technique used to define the risk of failure and the likelihood of failure involves a determination within two matrices. These matrices are reproduced here from the International Society of Arboriculture datasheets for Tree Risk Assessment, 2013. Appendix 1 Using the ISA Basic Tree Risk Assessment Form

Matrix I. Likelihood Matrix

Likelihood Of Failure	**Likelihood of Impacting Target**			
	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 II. 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