

TECHNICAL MEMORANDUM

Date February 16, 2026

To Jason Manges
Village Green District Park

From John Bornsworth
Principal with Peninsula Environmental
ISA Board Certified Master Arborist® #PN-7955BM
Registered Consulting Arborist #724
Tree Risk Assessment Qualified
Tree & Plant Appraisal Qualified
WSDA Pesticide Operator

Subject Forest Assessment at Village Green Park



1 Summary

Jason Manges, representing the Village Green Metropolitan Park District (VGMPD), requested Peninsula Environmental Group, Inc. (the Consultant) conduct a forest health assessment and tree risk assessment within forested portions of Village Green Metropolitan Park in Kingston, Washington. The assessment focused on conifer-dominated forest stands located primarily to the west and north of the existing parking area, including areas containing formal and informal walking trails.

The objectives of this assessment were to evaluate individual tree risk related to potential failure, assess overall forest health and stand conditions, identify trees requiring management actions, and provide recommendations to improve forest resilience while maintaining public safety. Individual trees of importance were tagged and inventoried to support future monitoring and management. The assessment also considers the presence of regulated critical areas, including wetlands, wetland buffers and riparian corridors, and provides recommendations intended to be consistent with Kitsap County critical area requirement.

Three forest stands are identified in this Report. The western coniferous stand is separated into north and south stands. The amphitheater area north of the parking lot is a third stand. Appendix C, the tree inventory, is separated into these three stands.

In total, this Report recommends removal of 43 trees across multiple forest stands within Village Green Metropolitan Park. Of these, 26 trees are located within regulated wetland or stream buffers. Due to protected buffers, a total of 78 mitigation trees are required per Kitsap County critical area codes. Mitigation planting within the Douglas-fir-dominated stands is not recommended, as additional planting in these areas would result in a net loss of wetland function due to existing suppressed understory conditions and excessive stem density. All mitigation planting should consist of red alder (*Alnus rubra*) and should occur within wetland buffers or wetlands.

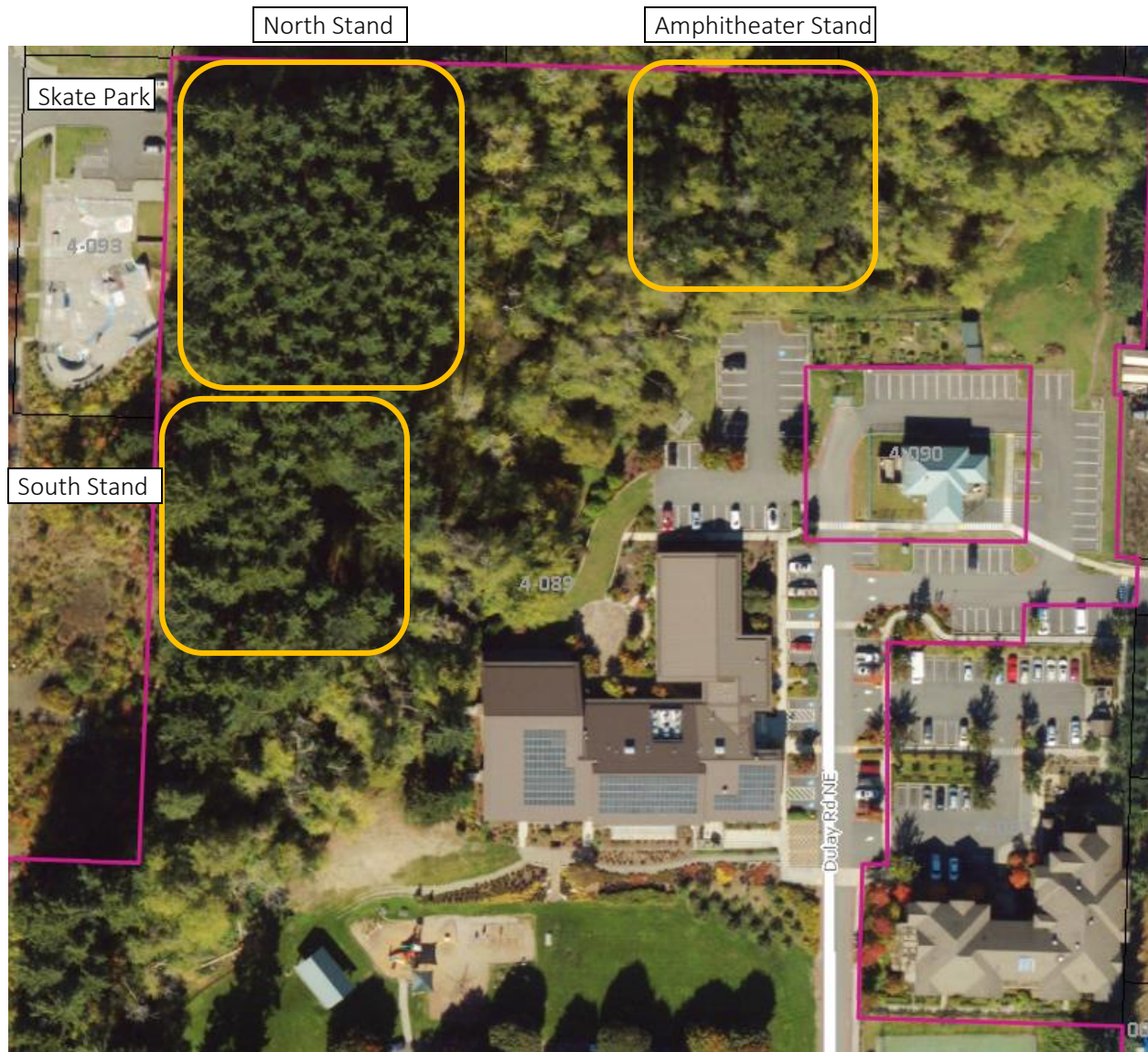


Figure 1: Snip of the Village Green Forest Stands.



2 Background

Client

VILLAGE GREEN METRO PARK DIST

Location:

Site Address: 10878 NE WEST KINGSTON RD KINGSTON WA 98346

Kitsap Parcel 262702-4-089-2009

Assignment

- 1) Conduct forest assessment and tree risk analysis of trees in upper portion of parcel.

Author Qualifications:

John Bornsworth is a consulting arborist and ecologist at Peninsula Environmental Group, Inc., based in Port Angeles, Washington. He is an ISA Board-Certified Master Arborist (BCMA), one of the first ten professionals in the Pacific Northwest Chapter to earn the credential. He is also an ASCA Registered Consulting Arborist (RCA), Tree and Plant Appraisal Qualified (TPAQ), Tree Risk Assessment Qualified (TRAQ), and a Certified Erosion and Sediment Control Lead (CESCL). John has worked full-time as a consulting arborist, forester, and ecologist since 2015, with a professional background in environmental and natural resources industries dating to 2003. John has evaluated tens of thousands of individual trees and forested tracts up to 5,000 acres across Washington, Colorado, and Michigan.

John leads shoreline and wetland assessment and restoration projects across the Puget Sound region. Since 2015, he routinely applies the USACE 1987 Wetland Delineation Manual (with the Western Mountains, Valleys, and Coast Region Supplement) and the Washington State 2014 Wetland Rating System to support wetland area evaluation and mitigation. He provides technical support to Shore Friendly programs and nonprofit partners for shoreline ecology, critical area impacts and mitigation design.

He is one of only a dozen approved TPAQ instructors nationwide and frequently lectures on tree management, ecology, ecosystem restoration and site development around environmental assets. His work includes arboricultural and forestry-related litigation support, construction planning around trees, and ecological studies.

A curriculum vitae is available upon request.

Report specific assumptions and limitations:

- The Consultant visited the Site on November 4th and November 11th, 2025. This Report discusses site characteristics as they were observed those days only.

Definitions

Tree “removal” is a broad term that is often misunderstood in construction, permitting, and arboricultural contexts. Removal can occur through several distinct methods, each with different equipment, levels of precision, and potential impacts to surrounding vegetation and soils. To avoid ambiguity during project planning and implementation, the following terminology is used throughout this document:



1. **Tree Removal (General):**

The complete takedown of a tree to ground level by any approved method. This term does not, by itself, define whether the tree is felled from the ground, dismantled aerially, or cleared using mechanized equipment. Tree removal implies Stump Retention.

2. **Ground Felling:**

The removal of a tree by cutting it at the base and allowing it to fall in a single piece. This method requires adequate laydown area and carries higher potential for damage to adjacent trees or protected vegetation.

3. **Mechanical or Ground-Based Clearing:**

The use of heavy equipment such as excavators, ground fellers, feller-bunchers, or similar machinery to remove trees. This method is typically applied to groups of trees or clearing zones and is less precise than climbing-based removal.

4. **Climber-Assisted Tree Dismantling (CTD):**

A controlled, sectional removal of a tree by a qualified climber or aerial operator. Portions of the tree are removed in pieces to prevent collateral damage to nearby trees or sensitive areas. CTD is required when ground felling or mechanical clearing would risk injury to preserved vegetation.

5. **Stump Removal:**

The extraction or grinding of the remaining tree stump following removal. Stump removal is not automatically included in “tree removal” and must be specified separately. Stump management requirements are determined by project design, restoration goals, or soil stability considerations.

6. **Stump Retention:**

Leaving the stump in place after the above-ground portion of the tree is removed. Stump retention may be required for erosion control, slope stability, habitat functions, or other site-specific reasons.



3 Observations

The assessed forested stands at Village Green Metropolitan Park are dominated by Douglas-fir (*Pseudotsuga menziesii*), with occurrences of red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*) within wetlands and their associated buffers. The forest structure is densely stocked, even-aged conifer stand commonly described as a “dog hair forest,” characterized by a high density of tall, slender stems with minimal taper and very low live crown ratios. Live crown ratio is the ratio between tree height and living crown. In several locations, Douglas-fir exceeding approximately 100 feet in height are spaced as closely as 8 to 10 feet apart, equating to an estimated 500 to 700 trees per acre. This density exceeds target stocking levels for such forests, which are more typically intended to grow in the range of 200 trees per acre.

Understory conditions within the conifer-dominated portions of the forest are notably sparse. Shrub-layer development is largely absent, and the understory is dominated almost entirely by ground cover. This condition is driven by prolonged canopy closure, excessive stem density, and limited light penetration to the forest floor. Within wetlands shrubs are observed.

Invasive species among the ground cover including English laurel, English holly, Himalayan blackberry, Scotch broom, and English ivy in localized patches. Ladder fuels are present in portions of the Southern Stand.

Trails and targets

Formal and informal walking trails traverse portions of the assessed forested areas. These trails represent the primary targets for tree risk evaluation.

Trees within the conifer stands are not capable of reaching the parking lots.

Tree condition and defects

Individual tree assessments identified a range of conditions, including dead trees and declining trees, and trees that are excessively suppressed due to nearby competition.

Numerous trees retain hardware and throwlines from the Elevated Adventure vendor.

Evidence of deliberate damage, including notching and wounding, was observed on some trees, particularly within the Amphitheater Stand and North Stand.

In the amphitheater stand, which is located within a wetland buffer, red alder is present within portions of the overstory. Alder debris was observed on the forest floor, and there was evidence that duff and branches had been raked into piles.



4 Discussion

Douglas-fir Beetle and Associated Decay Pathogens

Dendroctonus pseudotsugae (Douglas-fir beetle, DENPSE) and *Cryptoporus volvatus* (veiled polypore, CRPVOL) are frequently associated organisms in Douglas-fir forests of the Pacific Northwest and are often observed together during tree inspections. While the Douglas-fir beetle is a bark beetle that colonizes stressed, injured, or recently fallen Douglas-fir, it does not directly cause wood decay. CRPVOL is a decay fungus that lives symbiotically on the wings of DENPSE. Over time, this fungal colonization will result in internal decay of the tree. Beetles alone do not equate to decay; however, they increase the likelihood that decay fungi, including CRPVOL, will establish.

From a tree risk and forest health perspective, the presence of Douglas-fir beetle activity is typical at low levels. Trees with DENPSE should be monitored every few years for the presence of the fungal colonization.

Field identification of these organisms relies on distinct indicators. DENPSE activity is commonly identified by small (1-3 mm) holes in the bark of the trunk and fine reddish-brown boring dust (frass) at the base of the tree or within bark crevices.

CRPVOL is identified by its distinctive round to kidney-shaped fruiting bodies that form anywhere on the trunk. These fruiting bodies are 1-3 inches wide and protrude from the trunk 1-2 inches. These fruiting bodies are initially enclosed by a thin veil that later ruptures, exposing a porous underside. Generally, the fruiting bodies will be observed in vertical patterns up a tree trunk, with white conks forming every 2-8 feet upwards on the trunk.

Forest health and stand structure

The current forest condition reflects prolonged overcrowding and limited active management. Excessive stem density has resulted in suppressed crown development, reduced vigor, and heightened competition-induced stress. Trees with low live crown ratios are less capable of responding to environmental stressors, are more susceptible to insects and disease, and have reduced mechanical stability under wind loading. Slender stems with minimal taper further exacerbate the potential for whole tree failure (failure of the roots).

Selective thinning, including removal of suppressed and poorly structured trees, is an appropriate and necessary intervention to improve stand health, redistribute growing space, and promote crown development in retained trees. In several locations, thinning also serves a risk-reduction function by removing trees with identifiable defects or elevated probability of failure toward trails.

Tree risk considerations

See Appendix A for tree risk information.

Crime Prevention Through Environmental Design (CPTED) and Forest Management

Crime Prevention Through Environmental Design (CPTED) is a land-use planning and site-management framework that reduces the likelihood of undesirable or damaging behavior through intentional design and maintenance of the built and natural environment. CPTED principles emphasize natural surveillance and visibility to discourage vandalism. In park and urban forest settings, CPTED strategies commonly include



improving sightlines, reducing concealed areas, and managing vegetation in a way that encourages passive observation by legitimate park users.

At Village Green Metropolitan Park, limited visibility into the North Stand adjacent to the Skate Park contributes to repeated tree vandalism. Dense Pacific Madrone sapling growth along the western forest edges reduces sightlines into the North and South Stands. Selective clearance pruning and thinning of these madrone saplings would improve visibility into the forest.

The limited understory within the North and South Stands reinforces the applicability of these sight lines. Because shrub cover is largely absent and ground cover remains low-growing, selective pruning and thinning of madrone saplings along forest edges will substantially increase sightlines not only into the forest but through large portions of the forest interior.

Evidence of vandalism is a recurring issue within the park's forested areas. Such vandalism includes graffiti on trees and cutting into bark with knives and other cutting tools. From a tree risk perspective, these impacts do not inherently increase risk unless they compromise structural integrity of the tree. Retaining certain low- or moderate-risk trees that already exhibit vandalism will usually reduce pressure on non-injured trees by concentrating repeated damage on already compromised individuals. Individuals who vandalize trees will often repeatedly vandalize the same tree. These vandalized trees have determinate life spans due to the damage, and they can often be retained safely with periodic monitoring.

Critical areas and mitigation

Trees proposed for removal that are located within wetland buffers will require mitigation consistent with Kitsap County Code. Thirteen trees identified for removal are within Kitsap County regulated wetland buffers. Removal of these trees must be mitigated at a ratio of three replacement trees for each tree removed. Mitigation planting should consist of red alder installed within wetland buffers. Douglas-fir is not recommended for mitigation planting due to existing excessive conifer density.



5 Conclusions

The forested areas assessed at Village Green Metropolitan Park exhibit characteristics of an overstocked, even-aged Douglas-fir stand with limited structural diversity, reduced vigor, and localized tree risk concerns adjacent to trails. Without intervention, continued stagnation is expected to further reduce forest health and increase the likelihood of future tree failures. Trees identified for removal generally present elevated risk to trail users or contribute to chronic overcrowding that undermines long-term forest resilience.

Trees were recorded in three different ways:

- 1) In the field, trees were either:
 - a. flagged with pink ribbon, or
 - b. were affixed had a circular metal disc engraved with a number, or
 - c. most commonly, had both a pink ribbon and metal disc affixed to them.

Trees that are highly visible to public and parking areas, and that are easily recognizable from the field, were only affixed with the engraved metal tag. This will allow tree contractors to locate those trees but not alarm park users unnecessarily. Trees that are more difficult to locate only with the engraved metal tag were also wrapped in pink ribbon, so their location is easier to identify. Some trees, generally smaller than 6" in diameter, or dead trees, were just wrapped in pink ribbon. All trees were collected individually or in a group via GPS and show on the map included in this Report.

Retention of selected damaged or vandalized trees is appropriate where tree risk remains low. In these cases, existing damage caused by vandalism is not acting as a primary driver of failure or fungal colonization. Retaining certain visibly vandalized trees can reduce the likelihood of vandalism being redirected to unvandalized trees, provided those trees are monitored regularly (2-4 years) and do not develop elevated risk conditions over time.

Selective pruning and thinning of madrone saplings along northwestern forest edge adjacent to the existing Skate Park may be a useful design method. In this area, dense madrone sapling growth is not providing meaningful understory structure and instead functions primarily as a visual screen. Reducing or thinning this screening improves sightlines into and through the conifer-dominated forest which shows signs of vandalism. Creating these sightlines is expected to reduce vandalism by increasing passive observation.

Where specified, wood debris should be removed from the site, and/or chipped. This woodchip can be used along trails, or for additional control of English ivy growing on the ground. Where wood removal is not specified, the wood debris should remain on site un-limbed and un-bucked. This will allow for natural regeneration of soils from that decomposing wood debris.

Critical areas are present within and adjacent to the assessed forest. Tree removals within wetland buffers will require mitigation, and recommendations provided herein are intended to support compliance with Kitsap County critical area regulations.

Review Appendix A for methodology on tree risk assessment.

Review Appendix B for Best Practices & Specifications on both wetland mitigation and tree removal.

Review Appendix C for a detailed list of trees and their individual recommendations.



6 Recommendations

We recommend the following:

- 1) Implement selective tree removals as identified in Appendix C to address elevated tree risk to trail users and to improve overall forest health.
- 2) Remove hardware and throwlines from identified trees where feasible and where removal can be safely completed. Hardware located beyond safe ladder access does not require removal.
- 3) Retain selected vandalized trees that do not currently pose elevated risk. Retained vandalized trees should be monitored on a two- to four-year cycle to confirm that conditions do not progress to elevated risk.
- 4) Conduct selective pruning and thinning of madrone saplings along the western edge of the North Stand, near the Skate Park, to improve visibility into and through the conifer-dominated forest. These actions are intended to reduce concealed areas and discourage continued vandalism without materially altering forest structure.
- 5) For trees removed within regulated wetland buffers, implement mitigation planting at a ratio of three replacement trees for each tree removed (3:1). Based on the proposed removals, 43 trees are recommended for removal, including 26 trees within wetland buffers, requiring a total of 78 mitigation trees.
- 6) Mitigation planting within Douglas-fir dominated stands is not recommended, as additional planting in these areas would result in a net loss of wetland function due to existing suppressed understory conditions and excessive stem density. All mitigation planting shall consist of red alder (*Alnus rubra*) and shall occur within the open patches of wetland or wetland buffer. Specifically, these planting should occur where the existing wetland buffer tree canopy is sparse. This sparse canopy is predominantly south of the South Stand.
- 7) Conduct all tree removal, pruning, and mitigation activities in accordance with the impact avoidance and minimization measures outlined in Appendix B to prevent unnecessary disturbance to wetlands, wetland buffers, and retained trees.
- 8) Follow the BMPs and Specifications in Appendix B to avoid and minimize impact to the wetlands and surrounding forest.
- 9) Continue invasive species mitigation, as outlined in previous reports, concentrating on the South Stand while targeting English ivy and English laurel.

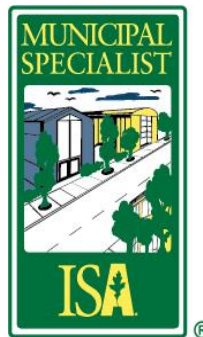
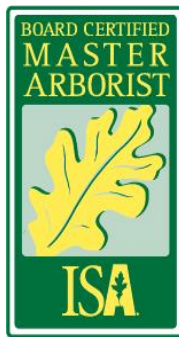


7 Closing

Thank you for the opportunity to evaluate your trees. If you have questions, please contact us.

Respectfully,

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1. This Report summarizes data collected during the Consultant's site assessment, project-related communications, and referenced materials; it presents the Consultant's professional opinions and recommendations derived from biological forensics, information provided to the Consultant, current literature, and the Consultant's experience. All conclusions are developed in accordance with industry standards, best-available science, and accepted best management practices. The Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or any particular finding.
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8 Appendix A: Tree Risk Evaluation Methodology

Tree risk assessment methods used on this project were developed by the International Society of Arboriculture. The Tree Risk Assessment Manual authored by Dr. Julian Dunster and published by the ISA is the standard for qualifying and managing tree risk. This systematic approach to tree risk incorporates *likelihood of failure*, *likelihood of impact* and *consequence of failure* to measure the tree risk of specific targets. See Table 1 for details. The ANSI standard for risk assessment and ISA's Best Management Practices: Tree Risk Assessment defines three levels of tree risk assessment:

Level 1: Limited visual
Level 1 is typically a tree analysis from a single perspective taken from a vehicle, while walking, aerially, or other mode of limited eyesight. They are the least thorough means of tree assessment. Level 1 is used to ascertain high-priority, conspicuous tree features and defects, rapidly from a large population of trees. Some risk-inducing tree features or defects may not be observable with this type of assessment resulting in some high-risk trees not accurately qualified.
Level 2: Basic
Level 2 involves a detailed visual inspection and evaluation of a tree. The method requires a 360° view of the tree with a canopy assessment performed from the ground. Level 2 allows the tree assessor to identify conspicuous and some inconspicuous features, defects, conditions, diseases, and pests on a tree. Tree health, structure, form, compensatory growth, and external influences are outlined in Level 2. Some limitations of the Level 2 method include internal, non-externally observable features or defects, some fungi and pathogen, below ground defects, or defects high in the canopy unnoticeable to a ground observer with or without binoculars.
Level 3: Advanced
Level 3 can be used when tree features/defects/conditions cannot be determined by other assessments. Level 3 includes aerial inspections, resistance-drill tests, sonic-tomography, UAVs, LIDAR, ground penetrating radar and more.

Targets & Exposure

Tree risk is identified through targets and exposure to tree failure consequences. For a tree to have risk, it must have some exposed target that produces a consequence when interacting with a tree part. Targets may include structures, vehicles, driveways, roads, public trails, utility wires, infrastructure, other plants, and some chronic targets like foundations, steep slopes, and wildfire. Exposure, or occupancy, is the potential exposure to risk a target has. Occupancy may be constant, frequent, occasional or rare.



Risk Matrix

Tree risk is qualified through the following two matrices. First by we identify a likelihood of tree part failure. This can be root, trunk, branch, or other tree part failure. We then evaluate the likelihood of this failure impacting a predetermined target. Finally, we evaluate the consequences shall a tree part both fail and impact a target.

Matrix 1. Likelihood of Failure and Impact (Dunstser, 2013)

<u>Likelihood of Failure</u>	<u>Likelihood of Impacting Target</u>			
	Very Low	Low	Medium	High
<i>Imminent</i>	Unlikely	Unlikely	Likely	Very likely
<i>Probable</i>	Unlikely	Unlikely	Somewhat likely	Likely
<i>Possible</i>	Unlikely	Unlikely	Unlikely	Somewhat likely
<i>Improbable</i>	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk Rating

<u>Likelihood of Failure and Impact</u>	<u>Consequences of Failure</u>			
	Negligible	Minor	Significant	Severe
<i>Very likely</i>	Low	Moderate	High	Extreme
<i>Likely</i>	Low	Moderate	High	High
<i>Somewhat likely</i>	Low	Low	Moderate	Moderate
<i>Unlikely</i>	Low	Low	Low	Low

Vocabulary used in Overall Risk Ratings

Extreme risk applies in situations in which failure is imminent, there is a high likelihood of impacting the target, and the consequences of the failure are severe.

High risk situations are those for which consequences are significant and likelihood is very likely or likely; or consequences are severe and likelihood is likely.

Moderate risk situations are those for which consequences are minor and likelihood is very likely or likely; or likelihood is somewhat likely and consequences are significant or severe.

Low risk situations are those for which consequences are negligible and likelihood is unlikely; or consequences are minor and likelihood is somewhat likely.

Limitations

The Science of Arboriculture cannot detect and predict with certainty tree failure or timing of tree failure. An “Act of God” is when a tree fails after tree owner due diligence and Standard of Care have been met. As always, during extreme weather events, we recommend staying away from large trees, whether healthy or not. Even healthy trees that have a low potential for failure under normal conditions could fail if their load limits are surpassed.

The only way to eliminate all tree risk is to eliminate all trees.

Some options for mitigation of tree risk include



Acceptance of risk: All vegetation comes with some inherent risk. Most often this risk is tolerable and will have no significant effects on risk potential. Normally, tree benefits far outweigh associated risks.

Retain and monitor for changes: When a tree has some level of potential risk but not enough to warrant a more extensive mitigation. Most retain and monitor plans recommend a return timeframe of 1-10 years.

Move offending target from damage radius: If target is not fixed, this can be the simplest of mitigation techniques.

Modify probability of failure: This mitigation includes techniques like stress-load-reductions, propping, cabling, bracing and habitat conversions.

Full removal of tree risk: Full removal of offending tree or tree parts.

Roles and Responsibilities of Tree Risk

The proper roles of Tree Risk Assessors (Certified Arborists with additional training and qualification as a Qualified Tree Risk Assessor) and Tree Risk Managers (owners of trees) are very different. These roles are clearly delineated in two publications which are generally accepted guidelines for tree risk assessment in the arboricultural industry, Tree Care Industry Association (2011) and Smiley et al. (2011).

The Tree Risk Assessor's role includes the following responsibilities, as defined in a scope of work or project assignment:

Evaluate and classify the likelihood of a tree failure impacting a target, evaluate the potential consequences of a tree failure, record and explain findings to the client, determine tree risk, and provide options for treatment to mitigate risk.

Responsibilities of Tree Risk Managers (tree owner or controlling authority) may include the following:

Meet a duty of care, determine the scope of work, specify the desired level of assessment, choose among risk mitigation options, decide the level of acceptable risk, and prioritize work.

Tree Risk Definitions

Consequences of impact: The amount of damage or harm caused by a tree or tree part failing and impacting a target. It may be personal injury, property damage, or disruption of an activity. There are four possible ratings:

Severe: Hospitalization or death of a person, or extensive property damage.

Significant: Personal injury that requires professional medical care, or substantial property damage.

Minor: Very minor personal injury, or property damage that can be easily repaired or replaced.

Negligible: Inconsequential property damage. No personal injury.

Extreme Weather: Based on the 30-year historical average weather for the site, extreme weather is uncommon weather events that fall outside the range of storms and wind ordinarily expected to occur within the time frame.

Likelihood of failure: The chance that a tree or tree part could fall within a specified time frame. There are four possible ratings:



Imminent: Without regard to the assessed time frame, the tree or tree part has already started to fail or is likely to fail in the near future under normal weather conditions.

Probable: Within the assessed time frame, the tree or tree part may be expected to fail in ordinary weather conditions.

Possible: Within the assessed time frame, the tree or tree part may fail in extreme weather. It is unlikely to fail in normal weather.

Improbable: Within the assessed time frame, the tree or tree part may not fail, even in extreme weather.

Likelihood of impact: The chance that the subject tree would impact the target if it were to fail. This is primarily determined by the occupancy rate of the targets, the direction of the tree's fall, and any potential protection factors. There are four possible ratings:

High: If the tree or tree part were to fail, it is likely to impact the target.

Medium: If the tree or tree part were to fail, it may impact the target, but it is not expected to do so.

Low: If the tree or tree part were to fail, there would be a slight chance of impacting the target.

Very Low: If the tree or tree part were to fail, the chance of impacting the target is remote.

Mobile target: A target that is constantly moving or stopping intermittently. Such targets include people, animals, bicycles, and vehicles.

Movable target: A target that may be relocated as a mitigation strategy.

Normal weather: Based on the 30-year historical average of weather for a given location, including all ordinary storms and wind that may be expected to occur within a given time frame.

Occupancy rate: The amount of time that a mobile target is present in the target zone. There are four possible ratings:

Constant: Within the assessed time frame, the target is always or nearly always present in the target zone.

Frequent: Within the assessed time frame, the target is present in the target zone for a large portion of the day, month, week, or year.

Occasional: Within the assessed time frame, the target is infrequently or intermittently present in the target zone.

Rare: Within the assessed time frame, the target is present in the target zone for a very small portion of time.

Risk Rating: The combination of likelihood of failure, likelihood of impact, and consequences of impact. There are four possible ratings:

Extreme: access to the target zone should be restricted immediately and mitigation should take place as soon as possible.

High: mitigation should take place as soon as practical.

Moderate: mitigation should take place as soon as pruning cycle allows.

Low: The risk may be mitigated as pruning cycle allows, or the tree may be retained and monitored.



Static Target: A target that does not move. It is present 24 hours per day, seven days per week. Building and landscape fixtures are considered fixed or static targets.

Target: A person that could be injured, property being damaged, or activities that could be disrupted by a failure of a tree or tree part.

Target zone: The area in which a tree or tree part can reasonably be expected to fall if it were to fail.

Time frame: The period of time over which the likelihood of failure is assessed. Time frame is often one year, but it may be modified to meet the needs of the client. For this assignment, I used a time frame of one year.

References

Dunster, J., Smiley, E. T., Matheny, N., and Lilly S. 2013. *Tree Risk Assessment Manual*. Champaign, Illinois: International Society of Arboriculture.

Smiley, E. T., N. Matheny, and S.J. Lilly. 2011. *Best Management Practices: Tree Risk Assessment*. International Society of Arboriculture, Champaign, IL. 81 pp.

Tree Care Industry Association. 2011. *American National Standard for Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Tree Risk Assessment a. Tree Structure Assessment) (A300, Part 9)* Tree Care Industry Association, Manchester, NH. 14pp.



9 Appendix B: Best Practices & Specifications

A-1 General Applicability

All best management practices (BMPs) and construction specifications outlined herein shall be followed by contractors, subcontractors, and agents during all phases of tree removal, thinning, and related forest management activities at Village Green Metropolitan Park. These BMPs are intended to avoid and minimize impacts to regulated critical areas, including wetlands and wetland buffers, and to prevent inadvertent damage to retained trees and forest resources.

A-2 Temporary Erosion and Sediment Control

1. Prior to initiating tree removal activities within or adjacent to wetland buffers, install temporary erosion and sediment control measures along the downgradient edge of work areas, where applicable.
2. Silt fence shall be installed where soil disturbance could result in sediment transport toward wetlands, streams, or wetland buffers.
3. Silt fence shall remain in place for the duration of tree removal and site stabilization activities and shall only be removed after disturbed soils are stabilized.
4. Straw wattles, straw bales, or equivalent measures shall be installed as needed to intercept surface water and prevent sediment-laden runoff from reaching silt fence or regulated areas.
5. At no time shall sediment, stormwater, or process water be allowed to enter wetlands, streams, or wetland buffers.

A-3 Access, Staging, and Equipment Use

1. Existing trails and access routes shall be used to the maximum extent practicable. Creation of new access routes within wetlands or wetland buffers is prohibited.
2. Equipment staging, fueling, stockpiling, and laydown areas shall be located outside of wetlands and wetland buffers.
3. Heavy equipment use shall be minimized within forested areas and is not permitted within wetlands or wetland buffers unless explicitly authorized.
4. All tree removal activities within wetland buffers shall be conducted using low-impact methods, including hand cutting or climber-assisted tree dismantling, as appropriate.

A-4 Protection of Retained Trees

1. Trees not identified for removal shall be protected from damage during all phases of work.
2. Contractors shall avoid wounding retained tree trunks, branches, and root systems.
3. No equipment, materials, or debris shall be placed against retained trees.
4. If inadvertent damage occurs to retained trees, work shall stop in the affected area and the Project Arborist shall be notified for evaluation and direction.

A-5 Debris Management



1. Construction debris, woody debris, and slash shall not be placed within wetlands or wetland buffers unless explicitly directed for habitat purposes.
2. Where specified, woody debris may be retained onsite and placed in upland forested areas or within wetland buffers in a manner that supports habitat function and does not impede hydrology.
3. Duff, litter, and forest floor materials shall not be raked, piled, or removed from wetland buffers unless explicitly directed by the Project Arborist.

A-6 Spill Prevention and Response

1. All equipment shall be inspected daily for leaks.
2. Emergency spill response materials suitable for petroleum products shall be available onsite during all work activities.
3. Refueling, equipment maintenance, and spill clean-up shall occur outside of wetlands and wetland buffers.
4. Any spills shall be immediately contained and cleaned, and the Project Arborist notified.

A-7 Light, Noise, and Dust

1. Tree removal activities generating noise shall be limited to daylight hours.
2. Dust generation shall be controlled using water or other appropriate BMPs as needed.
3. Lighting used during operations shall be directed away from wetlands and adjacent habitat areas.

A-8 Replanting and Mitigations

1. Applicability and timing

Mitigation planting associated with tree removals shall be conducted in accordance with Kitsap County critical area requirements. Planting should ideally occur during the late fall through winter, generally within the October through March planting window. If planting occurs outside of the rainy season, irrigation should be considered where hand watering alone is not practical. Any irrigation shall be performed by hand using hand-operated equipment only.

2. Installation methods

All plant installation shall be completed by hand using hand-operated tools. Planting pits shall be excavated to the depth of the existing root system and to a width approximately 1.5 times the diameter of the unaltered root ball. Prior to final installation, the sides of the planting pit shall be scarified to a depth of approximately 1 inch. Soils shall be hand-compacted only; the use of feet or mechanical compaction equipment is prohibited.

3. Soil amendments

Compost and mycorrhizal fungi are recommended to be incorporated into planting holes prior to installation to improve soil structure, nutrient availability, and root establishment.



4. Species selection and substitutions

Permittee shall install 78 mitigation trees.

Species: Red alder (*Alnus rubra*)

Size: 1-gallon or bareroot.

Local nursery stock should be used when available to ensure plant material is acclimated to local conditions and genetically comparable to native populations. If specified plant species are unavailable due to limited nursery inventories, or if certain species perform poorly during monitoring, substitutions may be allowed provided the replacement plants are native or native equivalents within the same general plant stratum (tree, shrub, or groundcover).

5. Spacing, grouping, and facilitative planting

Plants shall be installed at the quantities and spacing specified. Estimated quantities are based on the available planting area and average on-center distances. Shrubs and groundcover should be installed using facilitative planting principles, meaning plants are installed in small clusters or “patches” that support establishment through shared microclimate benefits (e.g., shade, humidity retention, and reduced soil temperature fluctuations) and improved resistance to disturbance. Where feasible, shrubs and groundcover should be installed in small groups of three to five individuals of the same species, rather than as isolated individuals distributed uniformly across the site.

6. Mulching

All newly installed plants shall be mulched with uncomposted hardwood chips, such as alder, or equivalent materials such as hog fuel. Mulch shall be free of weed seed, sawdust, inorganic contaminants, and any materials detrimental to plant growth. Mulch shall be applied beginning approximately 3 to 6 inches away from the base of the plant and extending outward to a radius of approximately 1 to 2 feet. Mulch shall not contact or bury plant stems; mulch volcanos are prohibited. Mulch depth shall generally be maintained at approximately 2 to 3 inches. High-bark content mulches, “beauty bark,” and partially composted mulches shall not be used. Mulch should be reapplied annually or as needed to maintain coverage.

7. Browse protection

Where grazing or browsing pressure from wildlife, such as deer, is observed or anticipated, protective barriers should be installed. Fencing of planting areas immediately before or after installation is strongly encouraged to improve plant survivorship and reduce the need for future replanting.

10 Appendix C: Tree Inventory

Tree ID	Species	DBH (in)	Observations / Condition	Recommended Action	Within Buffer
Northern Stand Forest stand located on the northern half of the western forest, near Elevated Adventures and the skate park. All large trees near Elevated Adventures have hardware and throwlines still installed in trees. Tree vandalism within this area may be reduced by clearance pruning and thinning the pacific madrone sprouts growing along the border of the skate park and the forest. This pruning work will increase visibility into the forest. Currently, the madrone sprouts act as a visual block looking into the forest.					
6501	DF	23.5	Throwline and hardware present; DENSPE visible; potential decay at base (S & N) observed through sounding mallet.	Monitor. Reassess tree annually for CRYVOL growth. Remove throwline and climbing hardware.	Y
6504	DF	25	Subordinate codominant stem failed in Summer of 2025. Dominant codominant stem remains. Failure at approximately 30 feet. Remaining tree appears healthy. Sounded for decay; non detected.	Monitor. Reassess in 2-4 years. Monitor for canopy decline or fungal colonization on remain stem.	N
6505	DF	12	DENSPE holes; decay present at base as observed through sounding.	Remove	Y
6506	DF	14	Crowded, suppressed. Very low LCR. Forest health thinning.	Remove Fell towards open space to the west.	Y
6507	DF	17	Crowded, suppressed. Very low LCR. Forest health thinning.	Remove Fell towards open space to the west.	Y
6508	DF	9	Tree is dead	Remove	Y



Tree ID	Species	DBH (in)	Observations / Condition	Recommended Action	Within Buffer
				Fell towards open space to the west.	
6509	DF	13	Low LCR; significant DENPSE entry holes. Forest health thinning.	Remove	N
6510	DF	10	Tree is dead	Remove	N
6511	DF	10	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	N
6512	DF	9	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	N
6513	DF	9.5	Tree is dead	Remove Retain all wood on site.	N
6514	DF	9.5	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove Retain all wood on site.	N
6515	DF	11	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove Fell towards open space to west.	Y
6516	DF	13	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove Fell towards open space to west.	Y
6517	DF	7	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove Fell towards open space to west.	Y
6518	DF	8	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove Fell towards open space to west.	Y



Tree ID	Species	DBH (in)	Observations / Condition	Recommended Action	Within Buffer
6519	DF	12	Tree has low LCR, suppressed canopy. Sounded mallet revealed internal decay.	Remove	N
6520	DF	14	Narrow-angle bifurcation with high probability of failure.	Convert to habitat snag. Cut at around 20-30 feet to retain lower trunk. Perform only if climber can safely climb tree.	N
6521	DF	7	Crowded, suppressed. Low LCR and vigor.	Remove	N
PEN01	DF	27.5	Narrow-angled bifurcation with included bark; LCR 10–15%. Failure potential is perpendicular to trail as opposed to parallel with trail (reduced risk expose).	Monitor for declining LCR, splitting of codominant stems, decay. Reassess in 2-4 years.	Y
6522	DF	7	Dead; leaning against another tree.	Remove. Retain wood on site.	Y
6523	DF	15	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove. Dismantle tree in sections towards the open area to the north. Retain wood on site.	Y
6524	DF	9	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove tree prior to removing 6523. Fell into cleared area in the north.	Y
6525	DF	7.5	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	Y



Tree ID	Species	DBH (in)	Observations / Condition	Recommended Action	Within Buffer
Southern Stand Southern half of the western forest. South of the main trail going towards Skate Park & Elevated Adventures. Area has substantially more invasive than the northern half. Managing English ivy growing on trees is important in this area. Removal of ground ivy is secondary to removal of ivy growing up trees. Ladder fuel reduction recommended in western portion of this stand. Ladder fuels are lower, normally dead branches on conifers trees. These lower branches should be pruned off and chipped. Do not recommend staging this material into habitat piles.					
PEN02	DF	<6	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Tree is flagged only. No tag/number.	Remove	Y
PEN03	DF	<6	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Tree is flagged only. No tag/number.	Remove	Y
PEN04	DF	<6	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Tree is flagged only. No tag/number.	Remove	Y
PEN05	DF	<8	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Tree is flagged only. No tag/number.	Remove. Fell to the east after ladder fuel reductions in the area.	Y
PEN06	DF	<8	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Tree is flagged only. No tag/number.	Remove. Fell to the east after ladder fuel reductions in the area.	Y

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6600	DF	~10	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	N
6599	DF	<10	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	N
PEN07	DF	≤6	Tree is dead. Tree is flagged only. No tag/number.	Remove	N
PEN08	DF	≤6	Tree is dead. Tree is flagged only. No tag/number.	Remove	N
PEN09	DF	≤6	Tree is dead. Tree is flagged only. No tag/number.	Remove	N
PEN10	DF	~6	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	N
6597	DF	~18	Three codominant leaders at ~20-feet. Structural defect elevates potential failure.	Remove	N
6596	DF	~18	Two codominant leaders at ~40-feet. Structural defect elevates potential failure.	Remove	N
PEN11	DF	~6	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Tree has arching canopy/upper trunk.	Remove	N
PEN12	DF	~6	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	N



Tree ID	Species	DBH (in)	Observations / Condition	Recommended Action	Within Buffer
Amphitheatre Stand. Forest stand to the north of the parking lot, near the amphitheater. All trees are growing inside wetland buffer. Red alder debris should all remain inside wetland or wetland buffer. Stages and staked to appear natural and not substantially damage existing understory plants. Two Douglas-fir in the center of the stand, growing near downed alder logs used as bordering, have significant external damage from vandalism. These trees do not pose a high risk. Recommend retaining these to draw vandals' attention away from undamaged trees.					
6594	RA	33	Two codominant trunks. Attachment of trunks is structural defect. One of the largest red alders in stand. Tree is not flagged with ribbon due to public location. Tree is tagged with 6594.	Remove	Y
PEN13	DF	<6	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Adjacent to PEN13 and PEN14 are two dead red alders: one leaning and one vertical. These red alders could not be tagged.	Remove. Remove the adjacent leaning and dead red alder. Retain the vertical, dead, red alder.	Y
PEN14	DF	<6	Crowded, suppressed. Low LCR and vigor. Forest health thinning. Adjacent to PEN13 and PEN14 are two dead red alders: one leaning and one vertical. These red alders could not be tagged.	Remove. Remove the adjacent leaning and dead red alder. Retain the vertical, dead, red alder.	Y
6593	RA	15	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	Y



PEN15	DF	13	Crowded, suppressed. Low LCR and vigor. Forest health thinning.	Remove	Y
6595	RA	21	Tag is on south side of tree. Not flagged due to public location. Wounding on southside of tree trunk. Tree is leaning over public path.	Remove	Y
PEN16	DF	6	Tree has a significant notch on one side, roughly 35% through trunk. Notch is from an axe or other tool. Adjacent to this tree is another similar sized DF with a much smaller notch. Retain the tree with the smaller notch.	Remove	Y



Notes:

Species RA = Red alder (*Alnus rubra*)

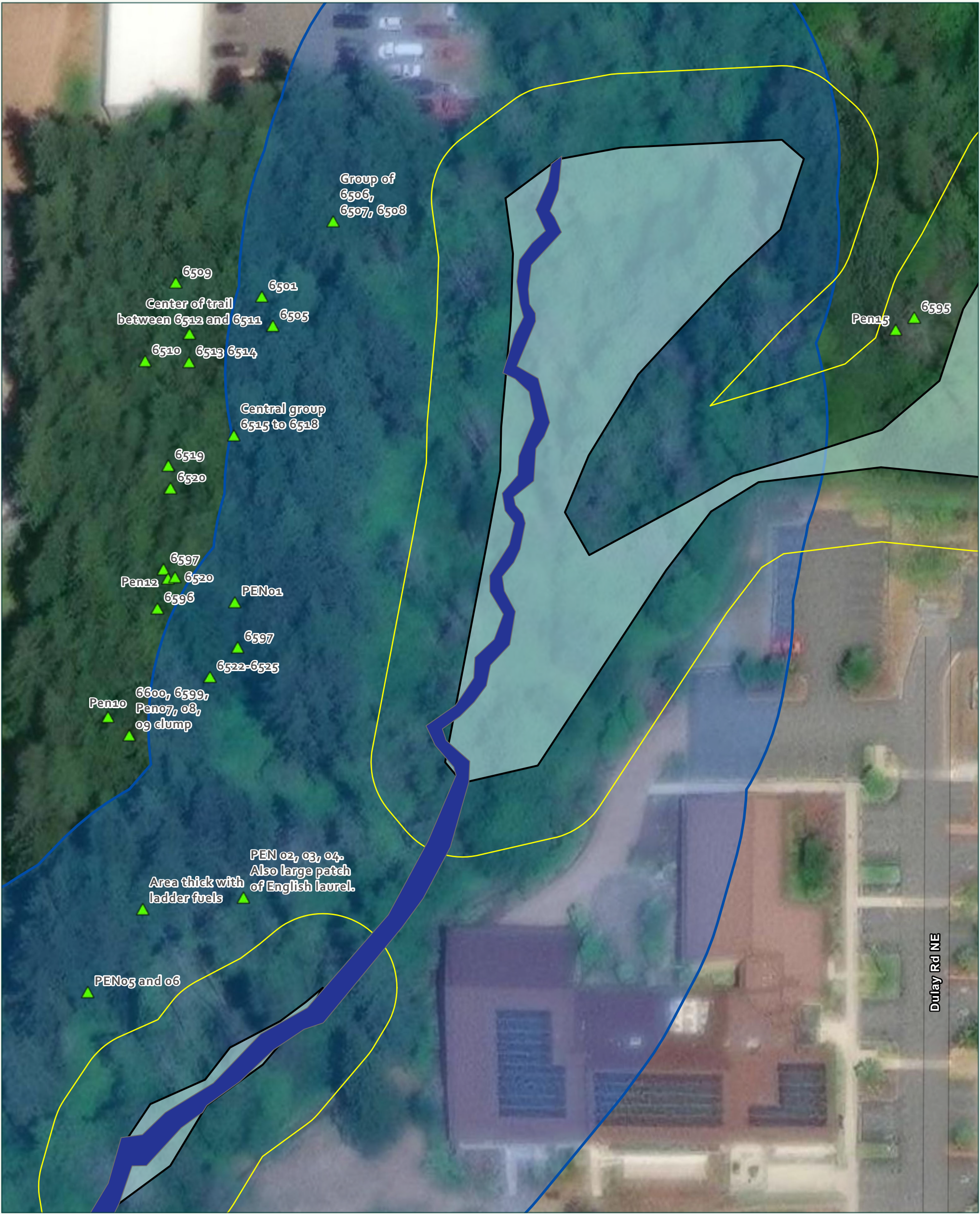
Species DF = Douglas-fir (*Pseudotsuga menziesii*)

DENPSE = *Dendroctonus pseudotsugae* (Douglas-fir bark beetle)

CRYVOL = *Cryptoporus volvatus* (veiled polypore)

LCR = Live Crown Ratio

Village Green 2025 Tree Assessment



Map created February 2026
Map data collected by
Consultant, parcel data
sourced from Kitsap County,
basemap sourced from
ESRI.



1" = 50'

0 50 100 Feet



Map Legend

- Category III Wetland Boundaries
- 40-ft Low Intensity Wetland Buffer
- Kingston Creek
- 150-ft Stream Buffer
- Trees