City Of Stevenson Street Tree Inventory and Management Plan

Prepared for:

The City of Stevenson, Washington

March 2, 2022

Prepared by:

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Executive Summary

In June 2021, the Urban Forestry Services | Bartlett Consulting (UFS|BC) team from Bartlett Tree Experts conducted an inventory of publicly owned and managed trees growing within the street Right of Way (ROW) throughout the City of Stevenson. Selected city parks, the Stevenson community library, the Skamania County courthouse where future city development is planned and Stevenson-Carson School district properties within the city limits were included in the data collection.

Through our inventory, we identified 562 trees including 10 tree groups in the Stevenson (ROW) and properties managed by the city. This includes 102 street trees in the downtown business district, the city park trees, county courthouse trees and community library trees. An additional 419 trees were collected on the partnering school district (SD) property. The school district data are discussed throughout this report, however summarization and specific management planning were beyond this scope. Data tables and work prioritization guidance for the school district trees can be replicated using the ArborScope™ program inquiries.

We collected individual tree location using sub meter Global Positioning Satellite Receivers (GPSr) paired with smart phone and tablet devices. We also utilized manual touch-locate point collection and adjustment methods using aerial imagery base maps. The attributes that we collected include tree location, size, age and condition class, and a Limited Visual Assessment of tree structure, health, and vigor and are summarized within this report. Individual tree details are included in the tree inventory maps, spreadsheets in the appendix or the online ArborScope™ inventory for individual tree details.

39 species were identified along the Stevenson ROW. 90% of the ROW trees were in good condition while just 10% of the trees (57) were considered poor condition or dead. Most ROW trees are smaller in size less than 15 inches diameter. Where the School district trees contain a greater number of larger trees in the 20 to 30 inch diameter range

Our recommendations for the inventoried trees are organized according to work phase priority. All tree work activities we recommend within this document shall comply with current American National Standards Institute (ANSI) A300 standards for tree care practices and ANSI Z133.1 requirements for safety during tree care operations.

The following line items summarize the primary recommendations that came out of the inventory and post inventory analyses:

ISA Level 2 Basic Assessment and Level 3 Advanced Assessment

Complete ISA Level 2 Basic and ISA Level 3 Advanced Assessment(s) for 45 ROW trees and for 72 SD trees. We found defects or concerns that prompted the need to recommend a higher level of assessment to inform management recommendations.

Removals

Remove and replace 30 ROW and 11 SD trees due to their, poor condition, or their location in relation to infrastructure to invest in growing a healthy canopy. A recommended street tree list with planting guidelines is provided to improve future planting areas and long term tree health.

Root Invigoration™
Perform Bartlett's patented Root Invigoration™ or similar pneumatic air soil decompaction and amendment process for 32 ROW trees and 16 SD trees. This will improve aeration and promote more efficient root growth. High value trees in disturbed areas are prioritized.

Mulching
Most trees in this inventory will benefit from a mulch application within the tree root zones to help moderate soil temperatures, reduce soil moisture loss, reduce soil compaction, and keep mowers and string trimmers away from tree trunks and surface roots. Trees in good condition with roots damaged by mowers were prioritized to protect first.

Root Collar Excavations
Perform root collar excavations to 117 ROW trees and nine (9) SD trees that have either been planted deep or buried in soil or mulch over time. This will lower the risk of damaging conditions such as girdling roots, lower-stem decay, and lowering tree health, predisposing them to various insect and disease pests. Planting new trees higher will decrease future issues.

Pruning
Prune 321 trees for safety, structure, and appearance. 125 of these trees are considered a higher management priority on the ROW and 52 are high priority SD trees. Improving pruning practices during storm response is the easiest way to improve tree structure and future storm resilience. A recommended pruning rotation is included with this report.

Structural Support
Cabling, bracing, or prop structural support systems were recommended for 11 ROW trees to reduce the risk of stem, branch or whole tree failure. The system(s) used should be designed and installed by an ISA Certified Arborist® with experience in support system design, installation and management.

Lightning Protection
At the time of our inventory, no (0) trees were recommended for lightning protection systems. Typically, in the Columbia River Gorge region trees do not require lightning protection unless a tree of extremely high value also exhibits significant prominence to surrounding trees and topography. As trees continue to grow and site changes occur, we recommend consultation with your local Arborist to determine if lightning protection systems are warranted in the future.

Plant Health Care (PHC)
We identified 24 ROW trees with pest or disease issues. None of these issues were a high priority or required to manage at this time. Bartlett's PHC program can assist you with providing treatment options and defining action thresholds for problematic pests and diseases.

Vine Removal
Remove vines from 19 trees on the ROW and 30 SD trees to expose potential hidden structural defects in the tree or visual evidence of declining health. Some vines may be poisonous or are noxious weeds and require additional planning for management.

Sunscald

35 trees in the ROW have sunscald damage. 13 trees have significant decay or wounding as a result and are recommended for removal and replacement. The remaining impacted trees should be monitored and managed to improve health and minimize continued damage. Guidance for planting and managing trees to decrease sunscald is provided in the Street Tree Planting List tree installation guidelines.

Sidewalk damage

Many sidewalks, curbs and/or planting pit areas in the downtown business district were likely damaged by the roots of trees or freeze thaw conditions around tree planter pits. Many of the tree planters had recent tree removal and replacement, or pavement modifications (i.e., grinding) to improve these conditions. Our observations made at the time of the inventory and recommendations to improve conditions may be found within the ArborScope™ database.

It is not unusual for a city to have limited resources to manage a tree inventory and often databases are not updated. Without updates, this inventory and the recommendations provide will likely lose its usefulness after 3-5 years. The following minimum recommendations are provided to maximize this investment.

- Develop a process to communicate field work to a database manager. The minimum information to include for database updates are: date, tree tag number (or tree location description) and action taken such as removal, or prune. Documentation is especially important during storm response.
- Use the tree values for disaster response relief. Tree values still require estimated staff costs for clean up and replanting added any loss assessment.
- Train staff in proper pruning cuts prior to storm season. Focus on minimizing work, and reducing topping and heading cuts.
- Manage the high-risk trees and the Phase 1 and ASAP tree removals before Autumn.
- Contract the ASAP and Level 1 Pruning Priorities before the next storm season. These will reduce storm impacts and response required.
- Contract Root collar excavations, soil and and support systems work for high value trees.
- Wood chip mulch application over the tree root zones are the cheapest and most effective action to improve long term tree health.
- Plant just 5 trees per year in currently empty spots to continue street tree growth. Planting just a little at a time will increase the cumulative effect. Planting and replacing more is recommended if possible.

This inventory includes just a piece of the urban forest resource within the City of Stevenson. Many old large trees will take multiple generations to replace if removed. Stevenson has many environmental challenges that make tree establishment and retention difficult. With training, management, partnership investment, and community education, this urban forest resource will grow and provide great value to the citizens in the decades to come.

Photo 1. Street trees in small planter pits along 1st street provide good fall color and shade over the sidewalk. a variety of maples with columnar form is common through the business district.

Introduction

In February 2021, the City of Stevenson retained Bartlett Consulting Services to conduct an inventory of publicly owned and managed trees growing within the street ROWs throughout the City. The project was managed by the Stevenson Public Works manager and was focused on trees on public properties and managed by the city. Partner organizations such as the Stevenson Community Library, The Skamania County Courthouse and the Stevenson School District were included to meet an original project goal to measure at least 300 and up to 1000 trees on public property within the city.

Consultants from Urban Forestry Services | Bartlett Consulting visited Stevenson and completed the inventory data collection from June 15 through June 19, 2021. Return visits were made on August 3rd and October 25th to complete additional inventory areas, provide a summary of results and product training to city and partnering organizations and provide both class and in field pruning training. ArborScope™ training was provided virtually to complete 10 hours of education time for both city staff and partnering agencies.

The methods and procedures we used to complete the above scope of work are detailed in the following sections.

Goals & Objectives

An effective street tree management plan communicates clear *goals* and the specific *objectives* designed to carry out those goals. We intend 'goal', in this case, to mean the overall aim or result we expect to achieve for the client in producing the inventory and management plan. The 'objectives' are the specific actions taken or recommended to support goal completion. The table below describes each goal and its corresponding objective(s).

Goal	Objectives To Accomplish Goal
Establish the street tree inventory (per numbers agreed) for the City of Stevenson.	• Use GPS receivers, combined with manual touch-location methods, with Trimble® smart phone/tablet application TerraFlex™ for field data collection. • Model data collection fields and attributes to align with ArborScope™ Inventory Management Tools. • Collect data such as tree species, location, size, age class, condition class, etc. • Assign a Tree ID number to each tree or group of trees inventoried for reference in the field.
Provide mechanism for managing inventory, recommendations, and related budget planning.	• Provide online map access for the inventoried trees and tree groupings to assist the client in managing areas. • Submit a management plan that documents and organizes findings and provides other resources to assist the client in efficient use of the information.

Goal	Objectives To Accomplish Goal
Maximize client understanding and implementation of the tree resource and management plan.	• Include specific explanations and visuals related to plan recommendations within the management plan. • Provide appended resources that address health, procedures, and standards related to tree care. • Provide training and outreach with client to answer questions about the inventory and management plan.
Maximize immediate and long-term tree health and aesthetics.	• Recommend plant-health-care (PHC) program that integrates: • soil care • maintenance pruning integrated pest management • Provide in-field training for managers relating to pruning and other tree care practices.
Manage immediate and long-term risk associated with trees in high-use areas.	• Implement recommended risk-management measures that include: • risk-reduction pruning • required removals • further tree evaluations • Provide guidance for tree planting including a species list for focus ROW areas. • Provide a project list

Data Collection and Tree Inspection Methodology

In conducting the inventory, we used specialized equipment and software and followed specific procedures to determine tree characteristics, risk evaluations, and recommendations. The following explanation will assist the reader in interpreting the findings of this management plan.

Data Collection Equipment and Attribute Data

Our inventory team used smart phone and tablet devices (iOS and Android) paired with Bad Elf GNSS Surveyor GPS receivers with the Trimble® smart phone/tablet application TerraFlex™ for field data collection. TerraFlex™ was configured to collect data compatible with Bartlett Tree Experts' ArborScope™ web-based management system. The attribute data we collected on site are listed below.

- Tree location based on GPS coordinate system and aerial imagery assisted manual touch-locating for sub meter accuracy.
- Tree ID number. Aluminum numerical tag were affixed to trees with a screw. Tree numbers ranged from 1 to 1000.
- Scientific name and regional common name according to the PNW ISA Chapter's Tree Species List. Cultivar or variety were identified where possible.
- Trunk diameter measured at 4.5-feet from grade (DBH)
- Canopy radius (average)
- Age class
- Height class
- Condition class

- Overhead utility line presence
- Location Value
- Infrastructure interaction (between trees and hardscape that may cause an undesirable condition
- *ISA* **Level 2 Basic Assessment** for tree risk where defects or concerns were observed that prompted a risk assessment to provide a risk rating
- *Recommendation for ISA Level 2 Basic Assessment, or Level 3 Advanced Assessment.*
- Noted defects/observations
- Observed pests/diseases
- Inclusion in prior inventory (1986 or 2009)
- Recommendations for tree management

Specifications / Definitions

Some definitions or specifications are detailed within a given section to explain how readers should interpret terms or classifications. We have appended a Glossary for other terms that appear throughout the document.

Age Class
Age class differs from size class in that size as it relates to age can vary widely among tree species. For example, old holly and cherry species are generally smaller in size compared to elms and oaks of the same age.

New Planting	Tree not yet established
Young	Established tree but not in the landscape for many years
Semi-mature	Established tree but has not yet reached full growth potential
Mature	Tree within its full growth potential
Over-mature	Tree that is declining or beginning to decline due to its age

Height Class
Height Class designations in the context of this report provide value in understanding management logistics. For example, a small tree typically requires fewer logistics and resources to prune/manage than a large tree.

Small	Less than 20 feet – accessible to prune from the ground
Medium	20-60 feet – accessible with a lift truck.
Large	Greater than 40 feet – may require a climber

Condition Class
Condition Class is a function of overall tree health and structure.

Dead	Tree has perished and will not recover
Poor	Most of the canopy displays dieback and undesirable leaf color, inappropriate leaf size or inadequate new growth. Tree or parts of tree are in the process of failure.
Fair	Parts of canopy display undesirable leaf color, inappropriate leaf size, and inadequate new growth. Parts of the tree are likely to fail.
Good	Tree health and condition are acceptable.

Tree & Shrub Work Phase
Tree & Shrub Work phase takes into consideration tree species, condition, location, age, and proximity to infrastructure. We intend for this rating system to assist decision makers in prioritizing risk mitigation, tree pruning, cabling and bracing, and tree lightning protection recommendations. Prioritization does not take into account management goals, resource availability, or budgetary or financial considerations.

Phase 1, 2, 3, 4, and 5 are all based on observations by the inventory arborist according to the manager's goals. Phase 1 and Trees identified as ASAP are considered high priority. The following additional information clarifies each priority:

ASAP	Trees with recommendations that should be addressed As Soon As Possible.
Phase 1	Typically addressed within the first year (first management cycle) from the date of this report. Includes trees located in high-use sites, have a high aesthetic value, have an elevated overall tree risk rating, and/or parts that are currently in conflict with infrastructure.
Phase 2	Typically addressed within the second and third year (second management cycle) from the date of this report. Includes trees with moderate aesthetic value, don't have an elevated overall tree risk rating, and/or parts that are anticipated to be in conflict with infrastructure.
Phase 3	Typically addressed within five years (third management cycle) from the date of this report. Includes tree parts that are anticipated to be in conflict with infrastructure and/or recommendations based on anticipated growth.
Phase 4	Typically addressed when convenient for managers. Fourth management cycle trees are prioritized above Phase 5 trees. Recommendations are for future consideration and anticipated growth.
Phase 5	Typically addressed in the fifth management cycle and when convenient for managers. Recommendations are for future consideration and anticipated growth.

Pruning Category
All trees identified in this management plan that have tree care recommendations are listed within a specific pruning category. Trees within each pruning category can be prioritized by the specific goals of the manager. It is recommended that specific goals be discussed prior to any pruning.

Risk Mitigation	This goal requires pruning of any tree where risk mitigation should take precedence over other pruning goals. Typically aims to reduce the overall tree risk rating by branch removal and/or branch reduction.
Maintenance	This goal typically requires routine pruning of large/mature trees. Includes branch removal and/or branch reduction to help reduce likelihood of failure and/or conflict with infrastructure. Trees with this goal are typically climbed or require the use of aerial lifts and/or other specialized equipment.
Developmental	This goal typically requires routine pruning of small/young trees. Includes structural pruning to develop a strong central stem, establish proper branch spacing, and/or develop branch structure.
Ornamental	This goal typically requires pruning of small trees. Includes reduction and/or shearing to its desired shape, size, and/or structure.

Specialized	Trees with this goal require a unique treatment that may include, but not limited to, targeted pruning cuts, removal of nuisance fruit/parasitic plants, and/or rejuvenation/internodal pruning.

Note: The listed descriptions of goals, tools, and/or techniques are not limited to these definitions. Specific individual goals and species profiles should guide the pruning recommendations.

Tree Risk Assessment

Unless otherwise identified, the trees included in the inventory were assessed using the International Society of Arboriculture (ISA) *Level 1 limited Visual Assessment Methods*. A *Level 1 Limited Visual Assessment* is performed from one specified perspective (i.e. from the sidewalk, street, parking lot, wood line, etc.). The specified tree or trees are visually assessed to identify obvious defects or specific conditions (i.e. dead trees, large cavities, large dead branches, etc.) that result in a likelihood of failure of probable or imminent and would impact the specified target(s). Level 1 Limited Visual Assessments are typically performed to assess large populations of trees to identify trees with the highest likelihood of failure ratings in the population, or trees that are recommended for higher level of assessment.

If a tree within this inventory has received a specific risk rating, this indicates that an ISA Level 2 Basic Assessment has been performed for the tree by UFS|BC at the time of the inventory. In accordance with industry standards, ratings included in the inventory are derived from a combination of three factors: the likelihood of failure, the likelihood of the failed tree part impacting a target, and the consequences of the target being struck. The guidelines used to classify each of these factors are presented in the ISA's BMP for Tree Risk Assessment and guidelines developed by the Bartlett Tree Research Laboratories. These factors are then used to categorize tree risk as Extreme, High, Moderate or Low**.** An explanation of terms used in this report appears in the glossary located in the appendix.

Stand Dynamics Results

We collected 393 data points, containing 565 individual trees, in the ArborScope™ right of way/ street tree inventory. In reviewing results and recommendations, the reader will find useful the specifications and definitions detailed in the preceding methodology above. We used the following categories to organize the stand dynamics results, which are displayed in tables. Subject trees are summarized according to:

- Tree Groupings
- Tree Species Identified
- Condition Class
- Age Class
- Tree Size per DBH
- Estimated Tree Asset Value
- Tree Location Value

Where appropriate, we have included explanations, photos, drawings, or other information to illuminate the table contents. The 390 data points containing 463 trees within the school district inventory are discussed but not summarized.

Tree Groupings

The following table displays inventoried trees that were recorded as groupings (10 Groups). Throughout the management plan, those trees recorded as groups will be displayed with the number of plantings in parentheses after the common name.

Tree/Group ID	Common Name	Total Trees
265	Douglas fir	8
282	Garry oak	4
372	bitter cherry	6
384	Douglas fir	35
385	Douglas fir	4
386	Douglas fir	15
387	Douglas fir	50
388	Douglas fir	30
389	Douglas fir	20
390	red alder	10

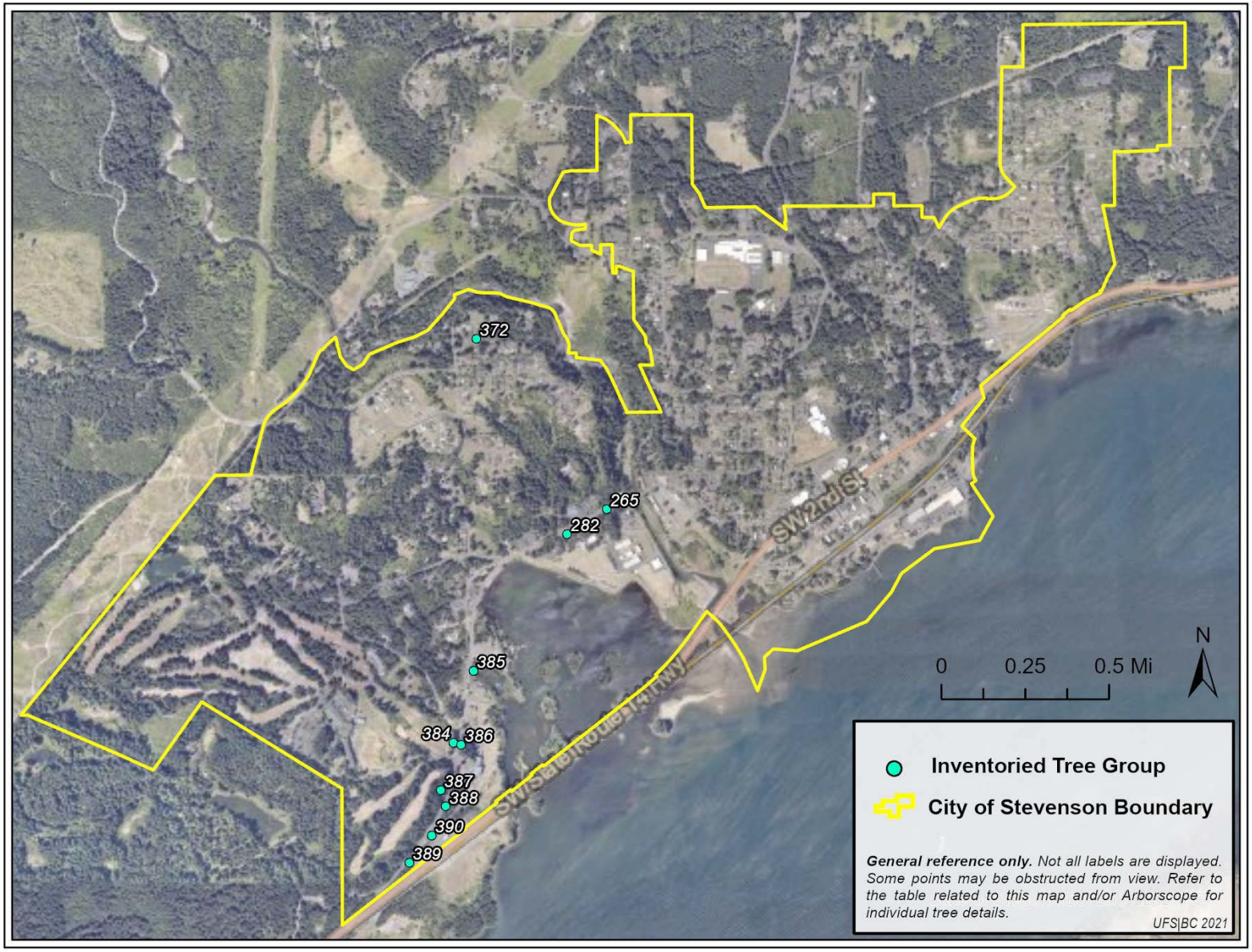
The School District inventory has 7 groups containing 80 trees. Many of these are part of the Holly hedge on the south property line of the elementary school.

Tree groups can often be managed similarly and at the same time. The groups identified in Stevenson were mostly native trees growing within the right of way. These tree groups may be managed by other entities but should still be monitored by the city for public safety. Some individual trees can be grouped together to simplify management in the future.

Inventoried Trees Recorded as Groupings

Photo 2. Tree #346-356 could have been identified and managed as a single group. This row of young Douglas fir all about the same size and age were all recently heavily pruned for power line clearance.

Photo 3. Trees 299-308 should be managed individually and not as a group. Trees along this rock face next to the power lines are different sizes and will likely require different management goals in the future.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Inventoried Tree Group
City of Stevenson Boundary
General reference only. Not all labels are displayed. Some points may be obstructed from view. Refer to the table related to this map and/or Arborscope for individual tree details.
UFS|BC 2021

Tree Species Distribution

Our inventory identified 26 genera and 39 species of trees in the ROW. Douglas fir (*P. menziesii*) and Garry oak (*Q. garryana*) are common native species that do well in the region, though most of these native trees are located outside the downtown center and in areas with ample space to grow large. The vast majority of street trees growing in planter pits are maple (*Acer*) hybrids.

A general threshold to measure urban forest diversity and resilience is to have less than 20% of a single genus and less than 10% of any species represented. There is flexibility in this general recommendation. And the dominance of the native trees on forest edges in Stevenson is an acceptable deviation from the recommendation.

Genus	Species	Common Name	Count	% Distribution
Acer	*campestre*	hedge maple	1	< 1%
	circinatum	vine maple	9	2%
	macrophyllum	bigleaf maple	4	1%
	platanoides	Norway maple	42	7%
	rubrum	red maple	11	2%
	tataricum	Tatarian maple	3	1%
	x freemanii	Freeman's maple	96	17%
		Acer (maple) Total	**166**	**30%**
Aesculus	*hippocastanum*	horse chestnut	1	< 1%
Alnus	*rubra*	red alder	12	2%
Amelanchier	*sp.*	serviceberry	1	< 1%
Calocedrus	*decurrens*	incense cedar	2	< 1%
Carpinus	*caroliniana*	American hornbeam	1	< 1%
Castanea	*sativa*	sweet chestnut	1	< 1%
Chamaecyparis	*nootkatensis*	Alaska yellow cedar	1	< 1%
Cornus	*kousa*	Kousa dogwood	1	< 1%
Fraxinus	*latifolia*	Oregon ash	4	1%
	pennsylvanica	green ash	8	1%
		Fraxinus (ash) Total	**12**	**2%**
Ilex	*aquifolium*	English holly	5	1%
Juglans	*regia*	English walnut	2	< 1%
Liquidambar	*styraciflua*	sweetgum	5	1%
Liriodendron	*tulipifera*	tulip tree	1	< 1%
Malus	*domestica*	apple - Common	2	< 1%
	sp.	crabapple	1	< 1%
		Malus (apple) Total	**3**	**1%**
Pinus	*contorta var. ssp. contorta*	Lodgepole pine	3	1%
	flexilis	limber pine	1	< 1%
	monticola	Western white pine	1	< 1%
		Pinus (pine) Total	**5**	**1%**
Populus	*balsamifera*	balsam poplar	3	1%
	nigra	black poplar	2	< 1%
	tremuloides	aspen	6	1%

Genus	Species	Common Name	Count	% Distribution
		Populus (poplar) Total	**11**	**2%**
Prunus	*avium*	sweet cherry	2	< 1%
	cerasifera	purple-leaf plum	6	1%
	emarginata	bitter cherry	6	1%
		Prunus (plum/cherry) Total	**14**	**2%**
Pseudotsuga	*menziesii*	Douglas fir	220	39%
Pyrus	*communis*	pear - common	1	< 1%
Quercus	*garryana*	Garry oak	58	10%
Sorbus	*americana*	American mountain ash	1	< 1%
Thuja	*plicata*	Western redcedar	1	< 1%
Tilia	*cordata*	little-leaf linden	20	4%
Ulmus	*americana*	American elm	17	3%

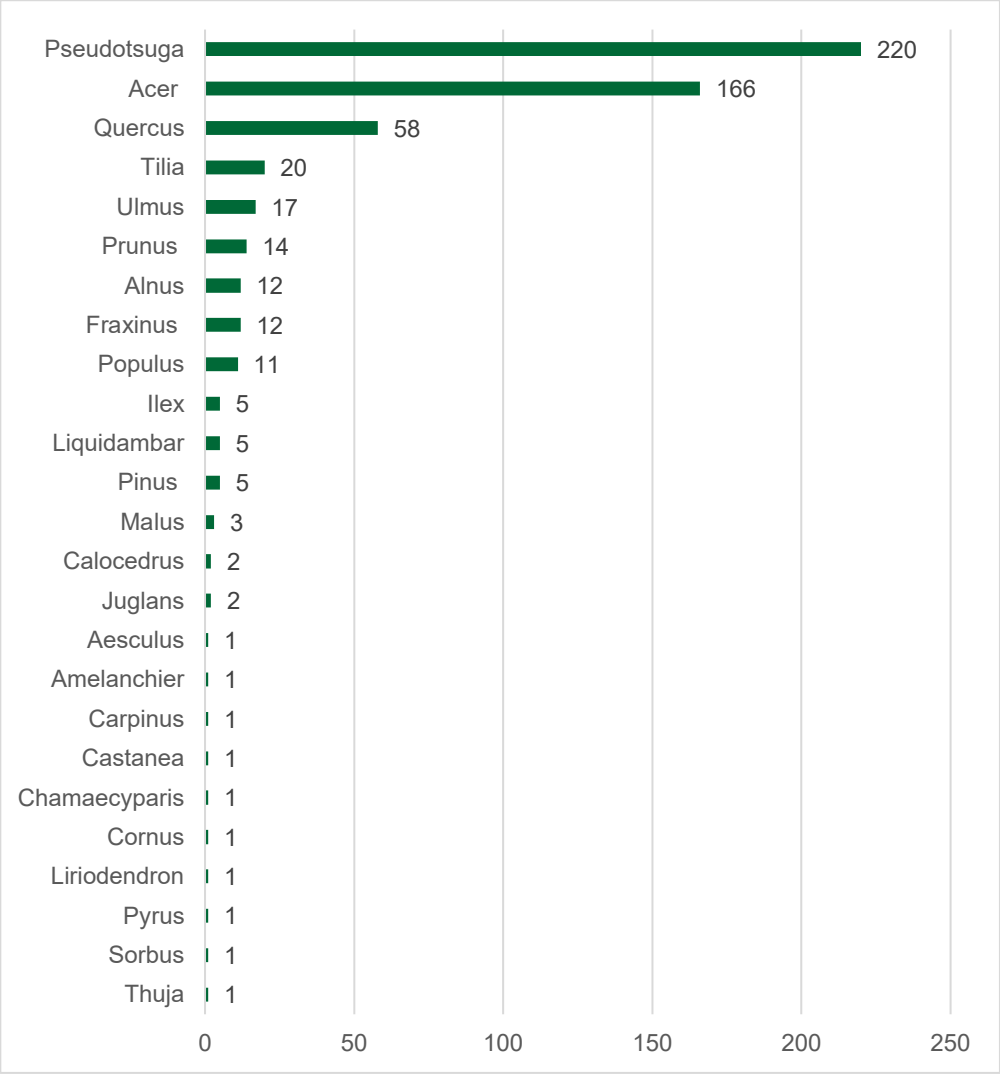


Figure 1. Tree Genera Distribution

Tree Size and Age Class

While the size of trees throughout an urban forest can be a valuable metric in understanding the general age of a community's urban tree resource, the Tree Diameter (DBH) Graph below only represents the trees in this inventory project. This is just a sample of the total population and may not provide the entire story of Stevenson's urban forest or even for all of Stevenson's right of way trees.

Many trees in this inventory are smaller in size, this appears to be directly associated with the existing, and newly replanted downtown street trees, many of which are species that will not exceed trunk diameters of over 20 inches DBH. Trees on the larger end of the size spectrum are mostly located outside of the downtown center or in non-City Park areas. The graph below indicates that Stevenson has planted or replaced many street trees in recent years. The graph also indicates that old trees growing within the city is a rare occurrence. Trees greater than 30 inches diameter should be well cared for and retained for as long as possible, as they are statistically uncommon and exceptional.

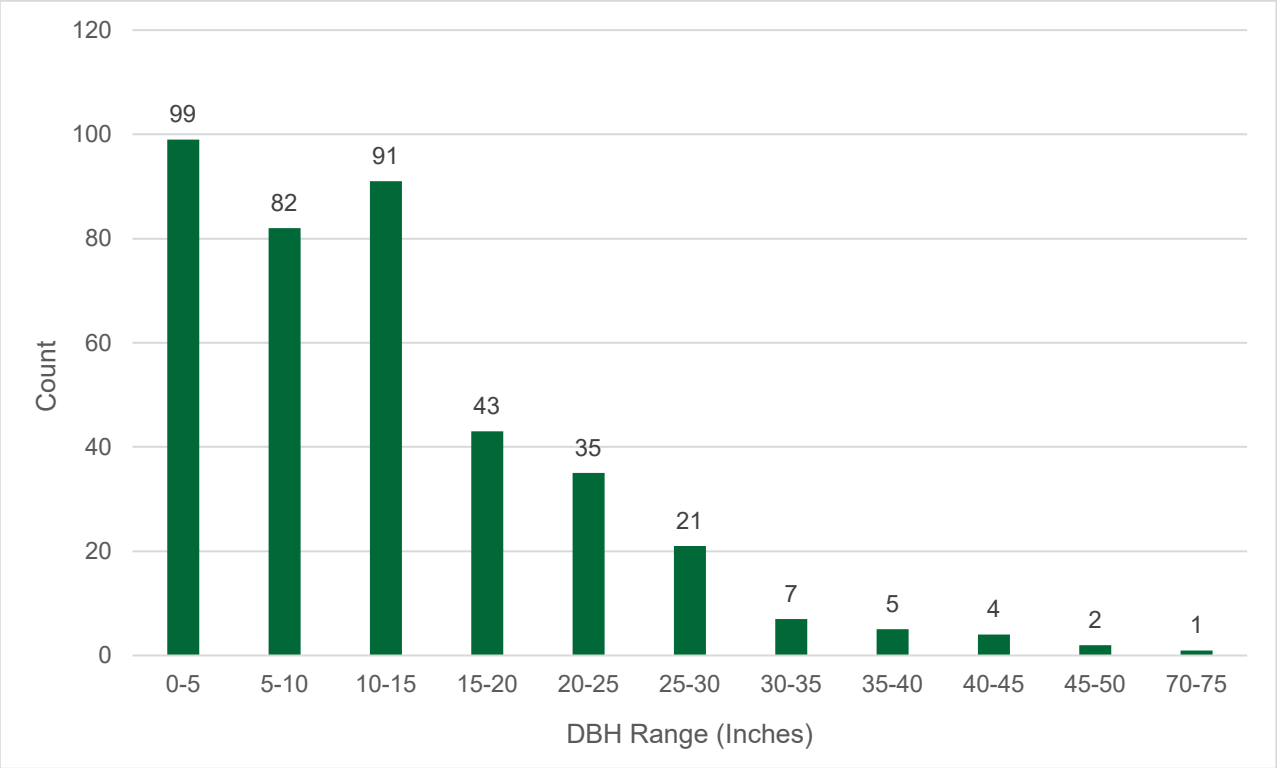


Figure 2. Tree Diameter (DBH) Distribution

Age Class

The Age class distribution of a tree differs slightly from the tree size (diameter) distribution as many smaller tree species do not grow to become large trees. Most of the trees in this inventory are mature and semi mature. The large number of mature trees (217 trees) relative to the smaller number of large diameter trees >20 inches (75 trees) identified in the diameter distribution indicates that many species in this inventory are smaller species. On-site observations show many of the smaller tree species are mature or over mature with very few newly planted smaller trees.

As mentioned above, larger trees provide greater benefits for shade cooling, stormwater, and pollution mitigation and carbon capture. Developing space and selectively finding locations to grow larger specimen trees will increase the benefits the urban forest will provide to Stevenson's community and ecosystem.

Any over mature trees that are significant to the community should be managed to retain safely as long as possible. Seeds and sprouts can be collected from overmature trees and planted now to retain the legacy of these trees for the future before they die, fail, or require removal.

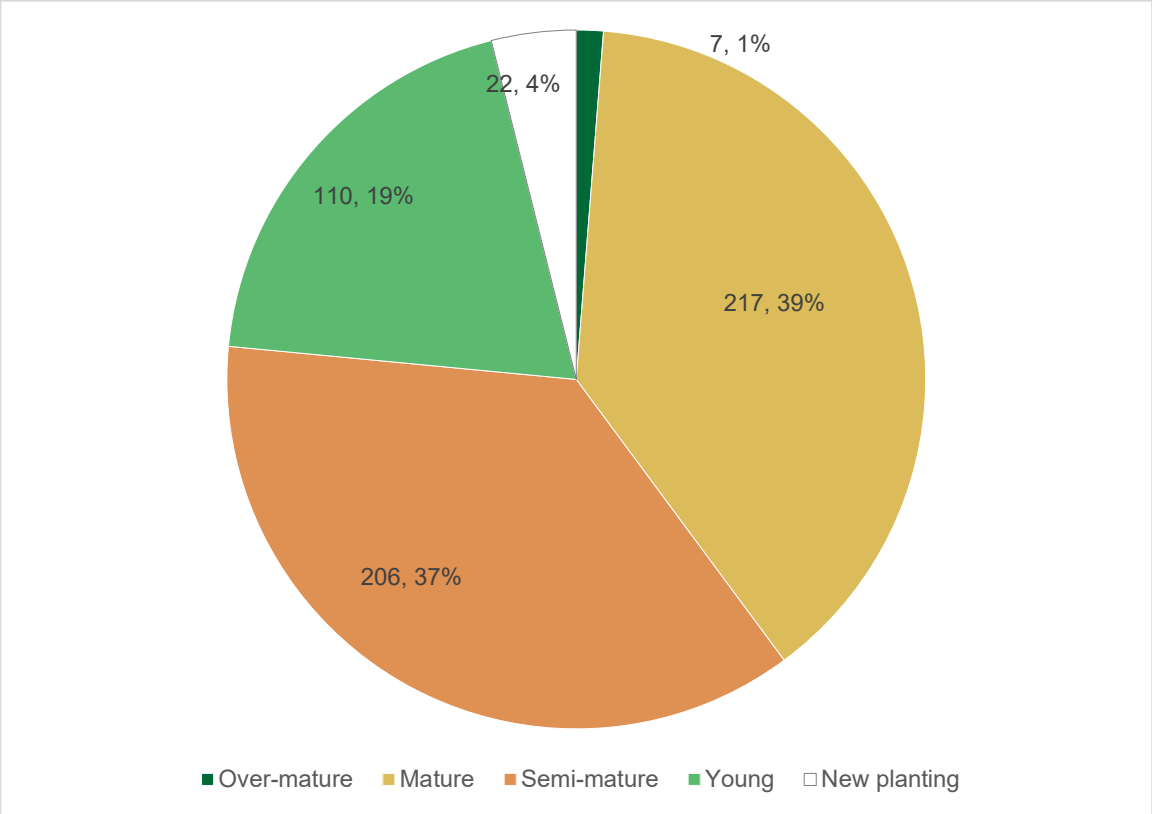


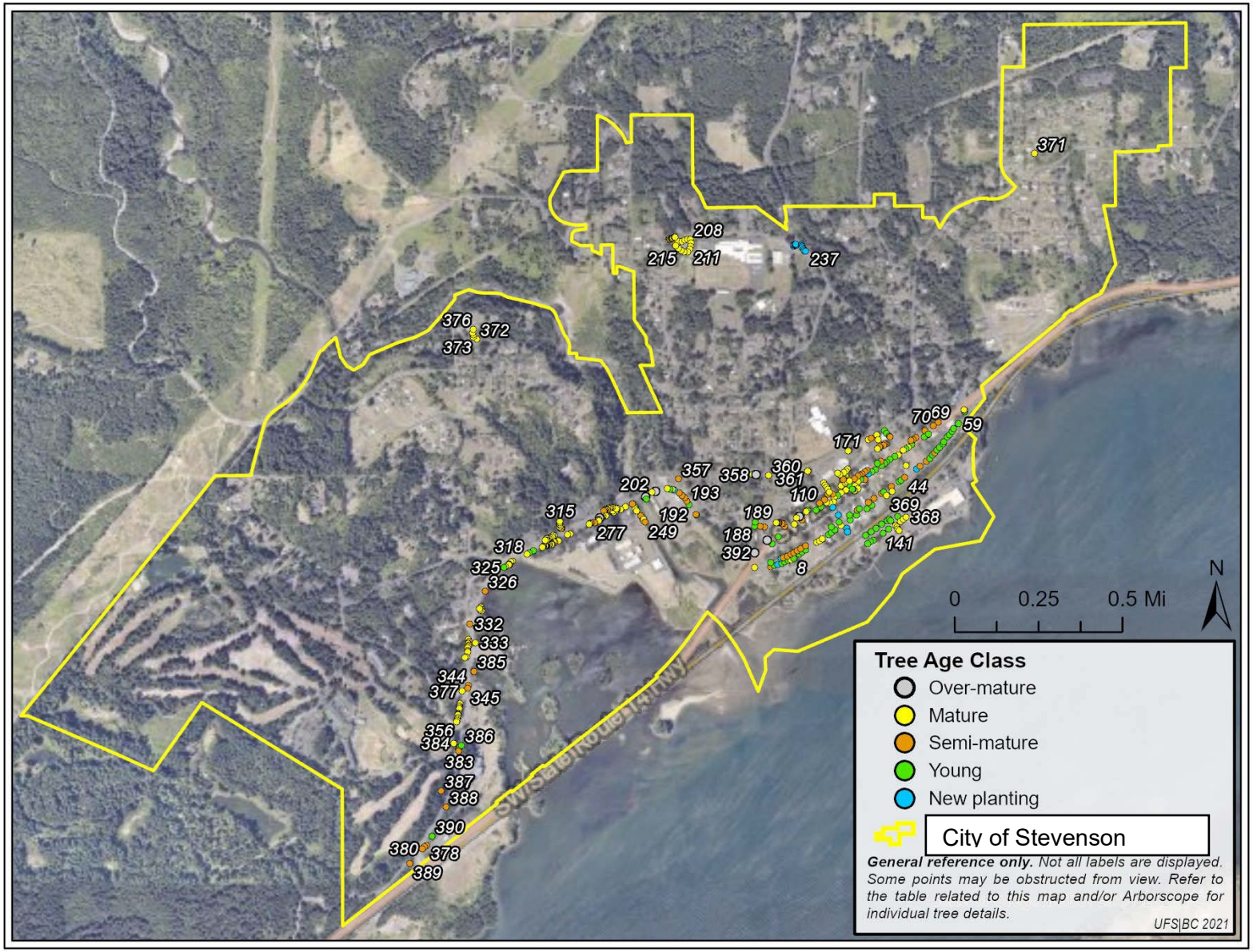
Figure 3. Age Class Distribution

Inventoried Street Trees by Age Class

Photo 4, 5. These cherry trees are examples of mature and over mature small trees

Photo 6. This group of Douglas fir, Black cottonwood and elm are young and semi mature large trees.

Photo 7. This is an example of a mature to over-mature decurrent broadleaf tree.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Tree Age Class
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New planting
City of Stevenson
General reference only. Not all labels are displayed. Some points may be obstructed from view. Refer to the table related to this map and/or Arborscope for individual tree details.
UFS|BC 2021

Tree Condition Class

Condition Class is a function of health and structure. Most of the trees we inventoried were in good or fair condition at the time of assessment. Recommendations to improve or maintain condition are provided within the recommendations section of this report. In some cases, condition can be improved through pruning or site condition changes such as irrigation or drainage improvements, soil decompaction or root protection (through lawn removal). Poor and fair condition trees will likely decrease in condition if prevention measures are not implemented.

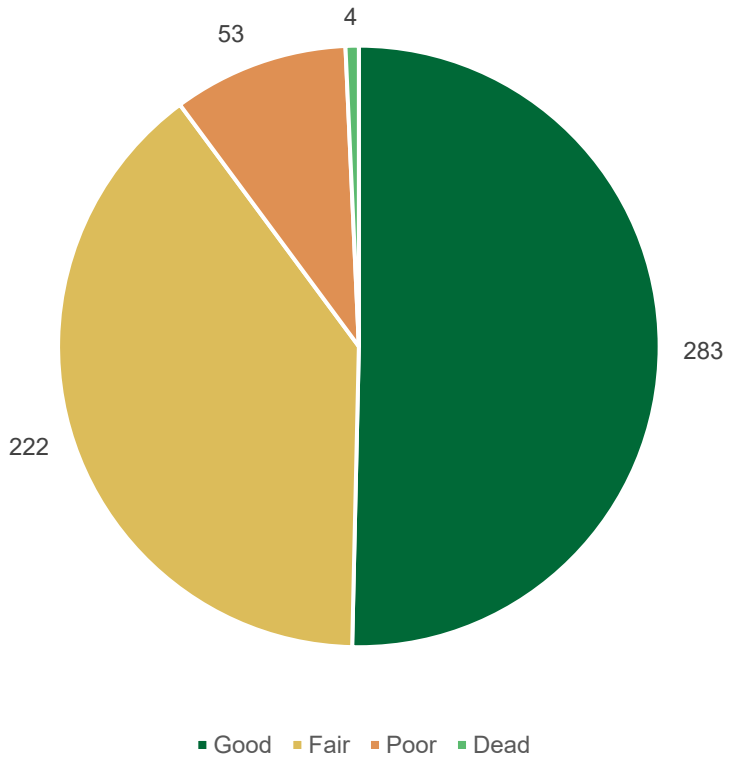
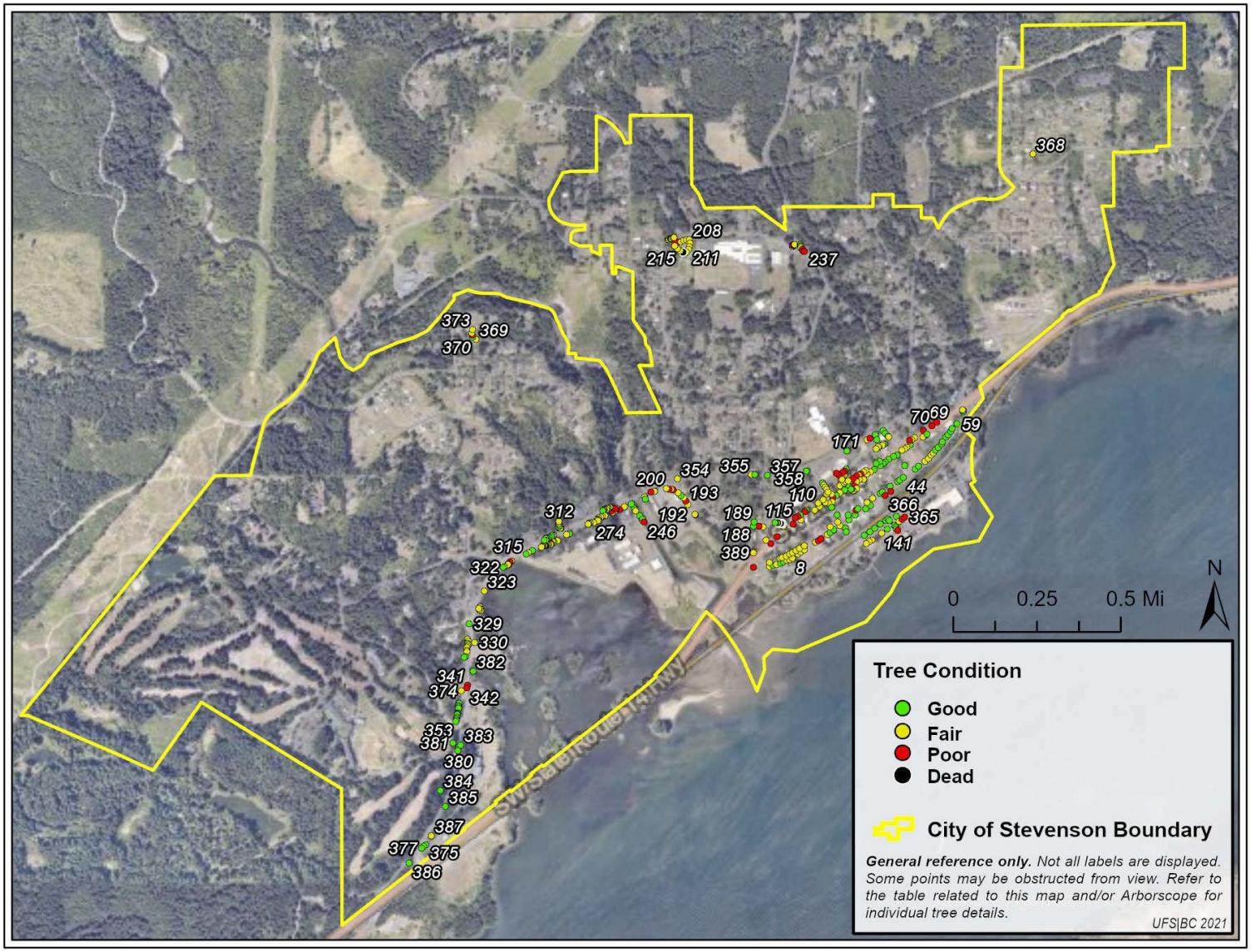


Figure 4. Condition Class Distribution

Inventoried Street Trees by Condition

Photo 8, 9. These two mature, large Garry oak trees have different condition classes. The tree on the left is in poor condition with very few small branches, and a thin poorly distributed canopy. The tree on the right is likely the same age, however it has many new small branches and is in better overall condition.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110
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315
389
141
322
8
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341
374
342
353
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383
380
384
385
387
377
375
386
SW State Route 14 Hwy
N
0
0.25
0.5 Mi
Tree Condition
Good
Fair
Poor
Dead
City of Stevenson Boundary
General reference only. Not all labels are displayed. Some points may be obstructed from view. Refer to the table related to this map and/or Arborscope for individual tree details.
UFS|BC 2021

Condition and age class comparison

Tree condition was compared to age class and tree size after our inventory was completed. We found many young and smaller trees <4-inches in diameter are in good condition and trees in poor condition tend to be mature small trees between 4 and 12 feet in height. The smaller species of trees in Stevenson are older specimens with not many new small trees planted. Many of the mature trees continue to recover from recent ice storm damage. Some will continue to be impacted by sunscald and will likely not recover. Poor condition trees less than 4 inches diameter should be replaced, and larger poor condition trees should be managed for public safety.

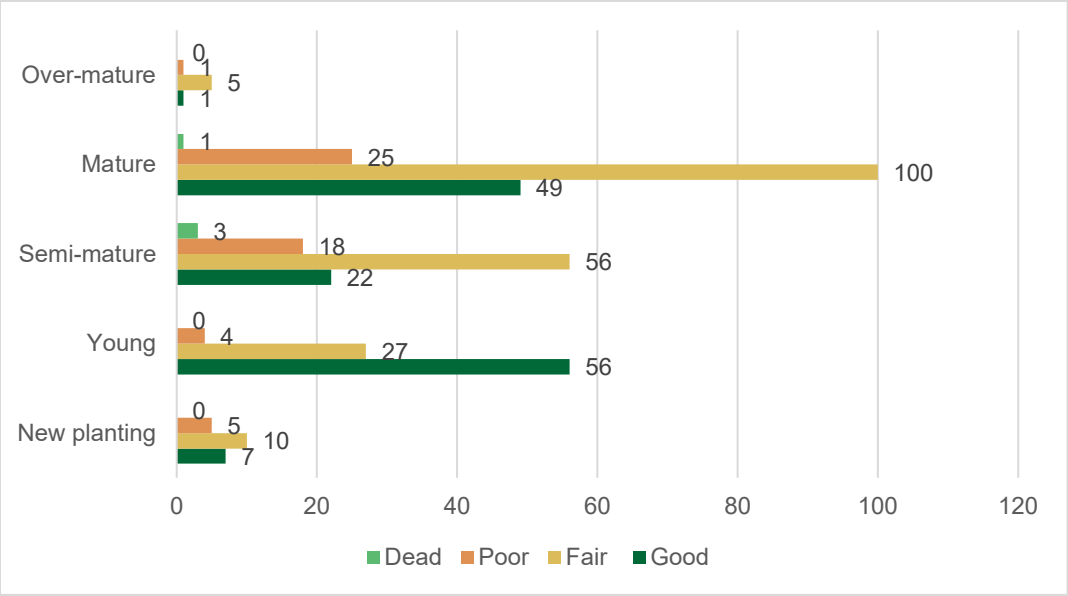


Figure 5. Condition Class by Age Class

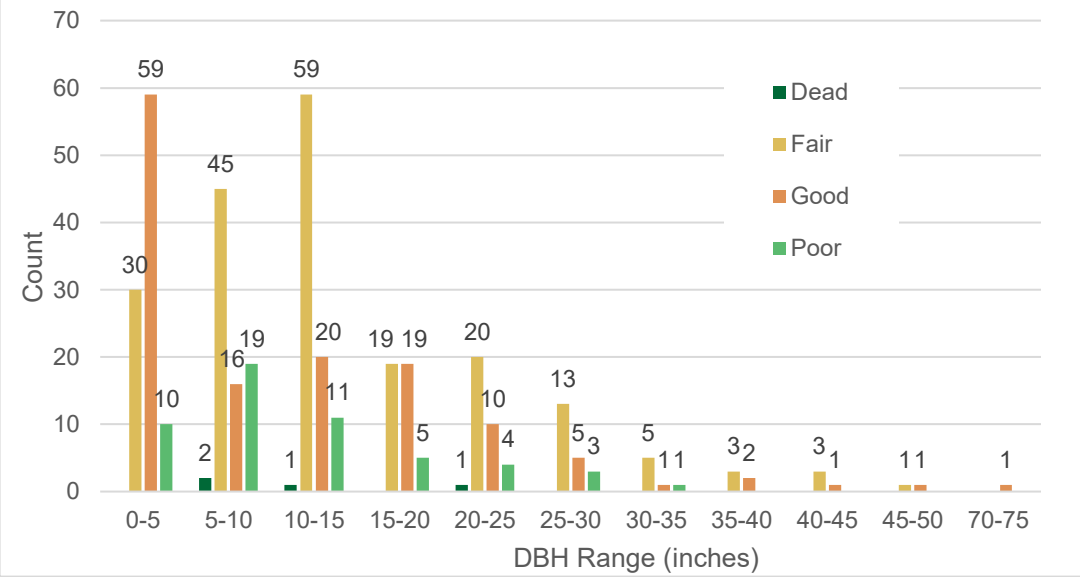


Figure 6. Condition Class by Size Class

Estimated Tree Asset Value

As part of the Bartlett inventory process, we have included an Estimated Tree Asset Value for each tree and a cumulative total for all trees inventoried. We use an average per-square-inch nursery price, size (DBH), species factor, condition factor, and location factor to estimate the tree asset value. This is not intended to replace a landscape tree appraisal. These general cost estimates can be used as a starting point for damage assessments and lost value discussions.

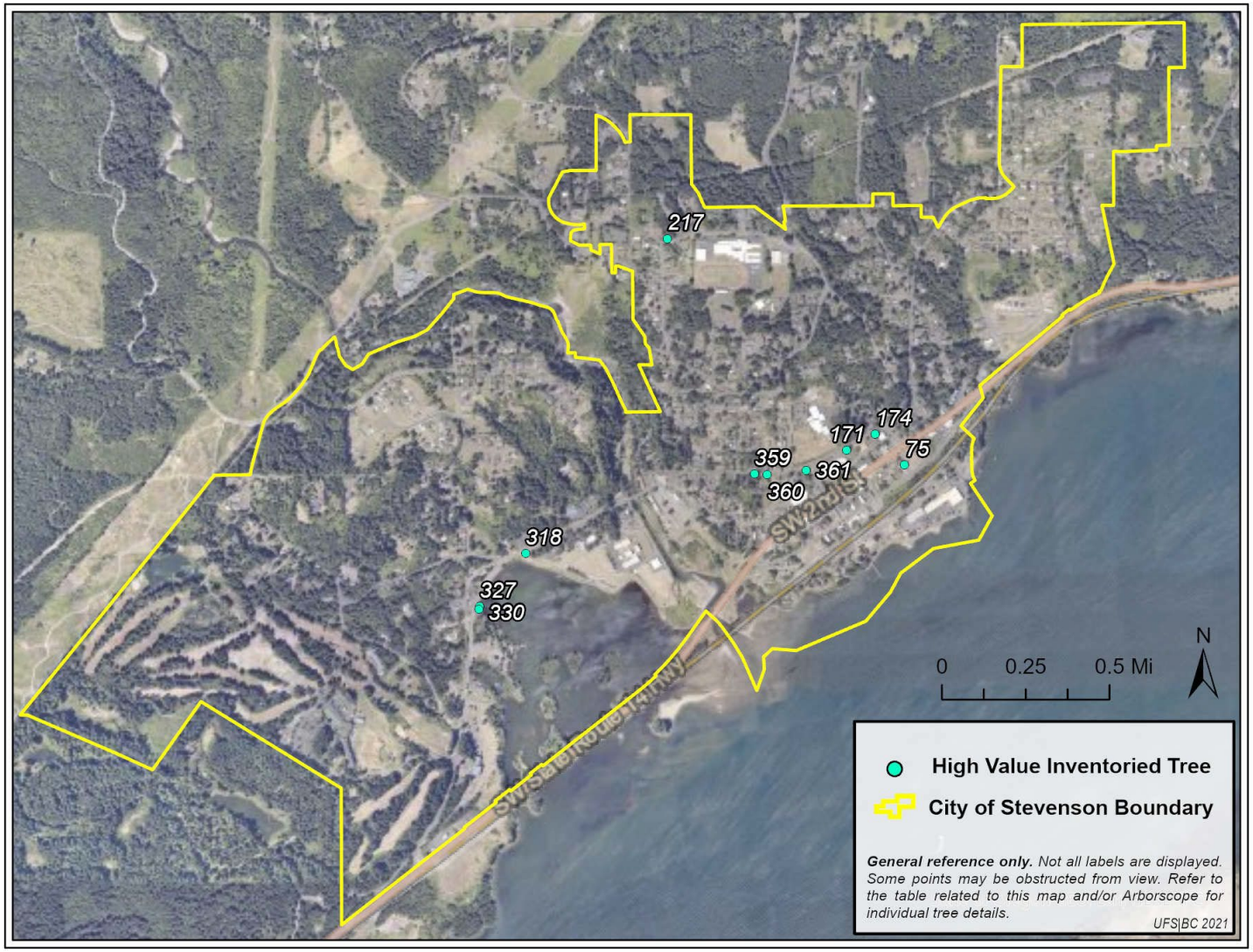
Factor	Description
Average Per Square Inch Nursery Price	Based on the average nursery prices for two common tree species and one exotic tree species within a region, then taking the average of those three as the average per square inch price for the region
Size	Based on tree DBH (4.5 feet above grade)
Species	Relative species desirability based on 100% for the tree in that geographical location. In most cases, species desirability ratings, published by the International Society of Arboriculture, are used for adjustment.
Condition	Rating of the tree's structure and health based on 100%
Location	Average rating for the site and the tree's contribution and placement, based on 100%

The estimated cumulative total value for the 390 ROW trees inventoried is **$2,722,550** with the average tree price of $6,980 and the median tree value at $1,346. This means most trees have a value lower than the average and a few larger trees have an exceptionally high value. Tree values are expected to increase over time as young trees continue to grow. The following table lists the ten trees with the highest Tree Asset Values:

Ten Highest Estimated Tree Asset Values

Tree ID	Common Name	Genus	Species	DBH	Tree Asset Value
171	Tuliptree	Liriodendron	tulipifera	48	$51,117.41
359	Elm-American	Ulmus	americana	71	$37,636.99
327	Oak-Oregon White	Quercus	garryana	45	$33,412.04
174	Oak-Oregon White	Quercus	garryana	45	$33,315.29
75	Douglas Fir	Pseudotsuga	menziesii	37	$30,384.95
217	Douglas Fir	Pseudotsuga	menziesii	19,30	$21,254.81
360	Linden-Littleleaf	Tilia	cordata	29	$20,137.29
361	Elm-American	Ulmus	americana	38	$19,528.45
330	Oak-Oregon White	Quercus	garryana	25,17	$18,173.49
318	Maple-Bigleaf	Acer	macrophyllum	19,25	$18,148.18

Ten Highest Estimated Asset Value Street Trees



Recommendations

In reviewing the results and recommendations, the reader will find the specifications and definitions detailed in the preceding methodology useful to reference. We used the following categories to organize the results and recommendations, which are displayed in tables:

- Advanced Tree Risk Assessment
- Tree Removal
- Soil Care
- Root Collar Excavation
- Plant Health Care
- Tree Pruning
- Structural Support Systems
- Vine Removal

Photo 10, 11. Tree #166, shown in both photos, is a historic walnut that shades a community area. This tree is in poor condition with a lean and a buried root flair. Further assessment is recommended of the roots and trunk if this tree is to be retained.

Tree Risk Assessments and Mitigation

The Trees identified for further tree risk assessment are Summarized According to:

- Tree and Shrub Work Phase Recommendations
- Level 2 and Level 3 Advanced Assessment Recommendations

As part of the inventory process, we conducted an *ISA* Level 1 Limited Visual Assessment for all trees. While every tree poses some degree of risk, trees that were found to have conditions that may present a higher degree of risk to surrounding targets prompted the arborists to either conduct a higher level *ISA Level 2 Basic Assessment* for the tree or include a recommendation for a higher level of assessment, be it an *ISA Level 2 Basic Assessment* or an *ISA Level 3 Advanced Assessment*. Overall Tree Risk Ratings are only assigned to trees that received a Level 2 Basic Risk Assessment or higher.

Ten (10) trees were provided an immediate Level 2 Basic Tree risk assessment during the ROW inventory. No trees were rated a high risk and four were rated a medium risk (#100, #166 #213, #259). Two trees (#100 and #213) are recommended for removal in the next section, and tree #259 has recommendations for risk mitigation treatments. Five SD trees are rated a high risk (543, 724, 748, 749) all are recommended for removal in the next section.

Photo12. Tree #114, a Norway Maple, is recommended for an ISA Level 2 Basic Assessment due to defects observed and potential targets surrounding the tree.

In some cases, when visual evidence indicates there are hidden issues within the tree, we will recommend a Level 3 Advanced assessment of the roots, stem, or crown of a tree. These assessments may include climbing inspections, soil removal, resistance-recording drilling, or sonic tomography to provide greater detail of these hidden conditions. Once *ISA Level 2 Basic Assessment* or an *ISA Level 3 Advanced Assessments* are completed, more specific recommendations can be made to mitigate any potential risk. Tree #166 is recommended for a Level 3 Advanced risk assessment and two trees in the SD properties are recommended for Advanced assessments (#687, 724)

The Tree Risk Table below summarizes the 44 inventoried ROW trees that were recommended for future Level 2 Basic risk assessments to provide greater data for management decisions. The table is organized first by Tree & Shrub Work Phase (ascending order), and then by Tree ID (ascending order). 72 trees were recommended for additional assessment on the SD property 10 of which are high priority.

Limitations of Tree Risk Assessments

It is important for the tree owner or manager to know and understand that all trees pose some degree of risk. The information and recommendations within this report have been derive using the information and practices outlined in the International Society of Arboriculture's Best Management Practices for Tree Risk Assessment, as well as the information available at the time of the inspection. However, the overall tree risk rating, the mitigation recommendations, or any other conclusions do not preclude the possibility of failure from undetected conditions, weather events, or other natural occurrences or human impacts. Trees can unpredictably fail even if no defects or other conditions are identified. It is the responsibility of the tree owner or manager to schedule repeat or Advanced assessments, determine actions, and implement follow up recommendations, monitoring and/or mitigation.

UFS|BC can make no warranty or guarantee regarding the safety of any tree, trees, or parts of trees, regardless of the level of tree risk assessment provided, the risk rating, or the residual risk rating after mitigation. The information in this report should not be considered as making safety, legal, architectural, engineering, land surveying or other professional advice. This information is solely for the use of the tree owner and manager to assist in the decision-making process regarding the management of their trees. Tree risk assessments are tools to be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

Photo 13. Trees 299-307 were impacted by private property construction. These trees are large and target power lines, the road and future private structures. The level 1 visual risk assessment did not indicate these trees are a high risk, however these trees should have a Level 2 Basic Assessment conducted.

Inventoried Trees Recommended for ISA Level 2 Basic Assessment or ISA Level 3 Advanced Assessment

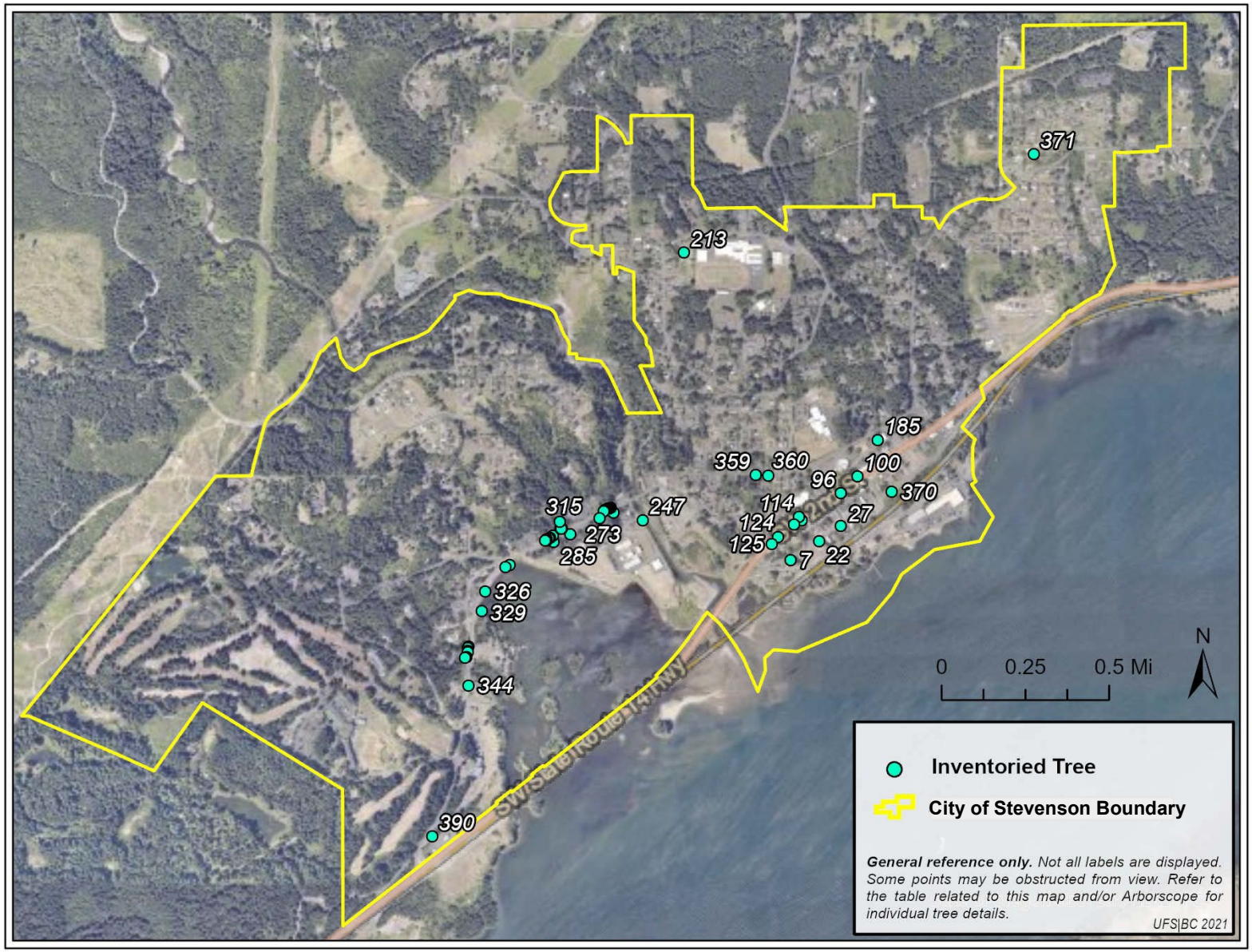
Tree ID	Common Name	DBH	Condition	Age-class	Recommendation(s)	Defect(s) or Observation(s)	Tree & Shrub Work Phase
108	Linden-Littleleaf	13	Fair	Semi-mature	ISA Level 2 Basic Assessment Pruning: Maintenance Root collar excavation	Girdling material Pavement/curbing damage Decay-stem Wound-root flare Corrected lean	1
114	Maple-Norway	23.5	Poor	Over-mature	ISA Level 2 Basic Assessment Pruning: Maintenance Cable and Brace Root collar excavation	Sidewalk lifting-major Decay-branch Sunscald (severe) Crack-stem Girdling material Uneven crown	1
117	Linden-Littleleaf	9.6	Poor	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance Cable and Brace	Storm damage Wound-stem Sunscald (severe) Girdling material Included bark	1
308	Douglas Fir	7.5	Poor	Semi-mature	ISA Level 2 Basic Assessment	Broken branch(s) Topping/heading cuts	1
344	Maple-Norway	12.8	Poor	Semi-mature	ISA Level 2 Basic Assessment	Wound-branch Sunscald (severe) Wound-stem Uneven crown	1
359	Elm-American	70.5	Good	Over-mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Wound-stem Overextended branch Co-dominant stems	1
96	Maple-Red	11	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance Root collar excavation	Wound-stem Decay-root flare Flush cuts Girdling material Co-dominant stems	2
124	Maple-Freeman's	5.4	Poor	Young	ISA Level 2 Basic Assessment	Storm damage Sunscald (severe) Wound-stem Uneven crown Dead branches >2	2
125	Maple-Tatarian	3.2	Poor	Young	ISA Level 2 Basic Assessment	Storm damage Poor branch structure Dead branches >2	2
185	Pine-Lodgepole	22.6	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Wound-root Broken branch(s) Wound-stem Dead branches >2	2

Tree ID	Common Name	DBH	Condition	Age-class	Recommendation(s)	Defect(s) or Observation(s)	Tree & Shrub Work Phase
261	Douglas Fir	13	Fair	Semi-mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s)	2
281	Oak-Oregon White	23.1	Good	Mature	ISA Level 2 Basic Assessment Pruning: Developmental Root collar excavation Root Invigoration	Overextended branch Dead branches >2 Co-dominant stems	2
285	Douglas Fir	40.4	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Developmental	Sidewalk lifting-major Dieback (moderate) Overextended branch Buried root collar	2
306	Oak-Oregon White	24	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Storm damage Broken branch(s) Wound-branch Hanger Dead branches >2	2
307	Oak-Oregon White	24	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Construction damage Overextended branch	2
324	Douglas Fir	29.7	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s) Dead branches >2	2
326	Douglas Fir	5.5	Fair	Semi-mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s)	2
329	Oak-Oregon White	17.8	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Developmental Root collar excavation	Crack-stem Uneven crown	2
338	Oak-Oregon White	9	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Developmental	Broken branch(s) Overextended branch	2
341	Oak-Oregon White	11	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Developmental	Broken branch(s) Topping/heading cuts	2
390	Alder-Red	10	Fair	Young	ISA Level 2 Basic Assessment Pruning: Maintenance		2
7	Maple-Norway	11	Fair	Mature	ISA Level 2 Basic Assessment	Wound-root flare Girdling material	3

Tree ID	Common Name	DBH	Condition	Age-class	Recommendation(s)	Defect(s) or Observation(s)	Tree & Shrub Work Phase
					Pruning: Maintenance Root collar excavation	Uneven crown Co-dominant stems	
247	Poplar-Balsam	12	Fair	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Corrected lean Uneven crown Co-dominant stems	3
262	Douglas Fir	26	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s)	3
266	Douglas Fir	16	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Wound-stem Broken branch(s)	3
267	Douglas Fir	22	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Wound-stem Broken branch(s) Co-dominant stems	3
268	Oak-Oregon White	7	Good	Semi-mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Wound-stem Broken branch(s)	3
309	Oak-Oregon White	9.7	Fair	Semi-mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s) Overextended branch Hanger	3
342	Oak-Oregon White	14	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s) Topping/heading cuts	3
343	Oak-Oregon White	14	Good	Mature	ISA Level 2 Basic Assessment Pruning: Maintenance	Broken branch(s) Topping/heading cuts	3
263	Douglas Fir	20	Fair	Mature	ISA Level 2 Basic Assessment	Suppressed Uneven crown	4
264	Douglas Fir	22	Good	Mature	ISA Level 2 Basic Assessment	Co-dominant stems	4
273	Douglas Fir	32.5	Fair	Over-mature	ISA Level 2 Basic Assessment Root collar excavation	Dead branches <=2 Butt swell Wound-stem Buried root collar	4
300	Douglas Fir	25.7	Good	Mature	ISA Level 2 Basic Assessment	Construction damage Sunscald (moderate) Corrected lean Broken branch(s)	4
302	Oak-Oregon White	14	Good	Mature	ISA Level 2 Basic Assessment	Construction damage Wound-root	4

Tree ID	Common Name	DBH	Condition	Age-class	Recommendation(s)	Defect(s) or Observation(s)	Tree & Shrub Work Phase
303	Oak-Oregon White	14	Good	Mature	ISA Level 2 Basic Assessment	Construction damage Wound-root Dead branches >2	4
305	Douglas Fir	6	Fair	Mature	ISA Level 2 Basic Assessment	Storm damage	4
310	Oak-Oregon White	7.1	Fair	Semi-mature	ISA Level 2 Basic Assessment	Co-dominant stems	4
315	Oak-Oregon White	6.5	Fair	Mature	ISA Level 2 Basic Assessment	Construction damage Cut roots Broken branch(s)	4
321	Maple-Bigleaf	6	Fair	Young	ISA Level 2 Basic Assessment	Suppressed Corrected lean Co-dominant stems	4
339	Oak-Oregon White	9	Fair	Mature	ISA Level 2 Basic Assessment	Broken branch(s) Topping/heading cuts	4
340	Oak-Oregon White	8	Fair	Semi-mature	ISA Level 2 Basic Assessment	Broken branch(s) Topping/heading cuts	4
360	Linden-Littleleaf	29	Good	Mature	ISA Level 2 Basic Assessment Root collar excavation	Wound-root Wound-stem Decay-stem Wound-branch	4
370	Maple-Norway	7.3	Poor	Mature	ISA Level 2 Basic Assessment	Wound-root flare Lean Decay-root flare	4

Inventoried Trees Recommended for ISA Level 2 Basic Assessment or ISA Level 3 Advanced Assessment



Tree Removal

Though we try to find alternatives to tree removal, in some cases the need for tree removal is the only reasonable management option. In some cases, risk is not the primary driver of a removal recommendation. The following list includes some of the scenarios that we encounter that may lead us to recommending removal and replacement.

- The tree is dead
- The tree is in poor condition and thought to be beyond rehabilitation
- The tree is over-mature and will continue to quickly and significantly decline in condition
- The tree has significant structural weaknesses that cannot be mitigated
- The tree is already or will interfere with infrastructure (i.e., overhead lines or pavement)
- The location value for the tree is poor or unacceptable (i.e., next to a building, directly under overhead lines)
- The tree species has been declared an invasive for the given area or region

Where possible and practical we will recommend that dead standing trees be retained or modified into a wildlife habitat snag rather than be completely removed. Links to snag creation are available at the end of this report. Wherever possible trees should be replaced with an appropriate species within one year of removal. The 32 trees we recommend for removal in the ROW are in the table below. 10 trees are recommended for removal on the SD property four have a high prioritization (#543, 724, 748, 749).

Photo 14. Tree #118-120 are recommended for removal

Photo 15. Tree # 100, a Freemans maple is recommended for removal due to extensive trunk and branch injuries, poor structure, the significant presence of wood decay fungi and the higher risk the tree poses to surrounding targets.

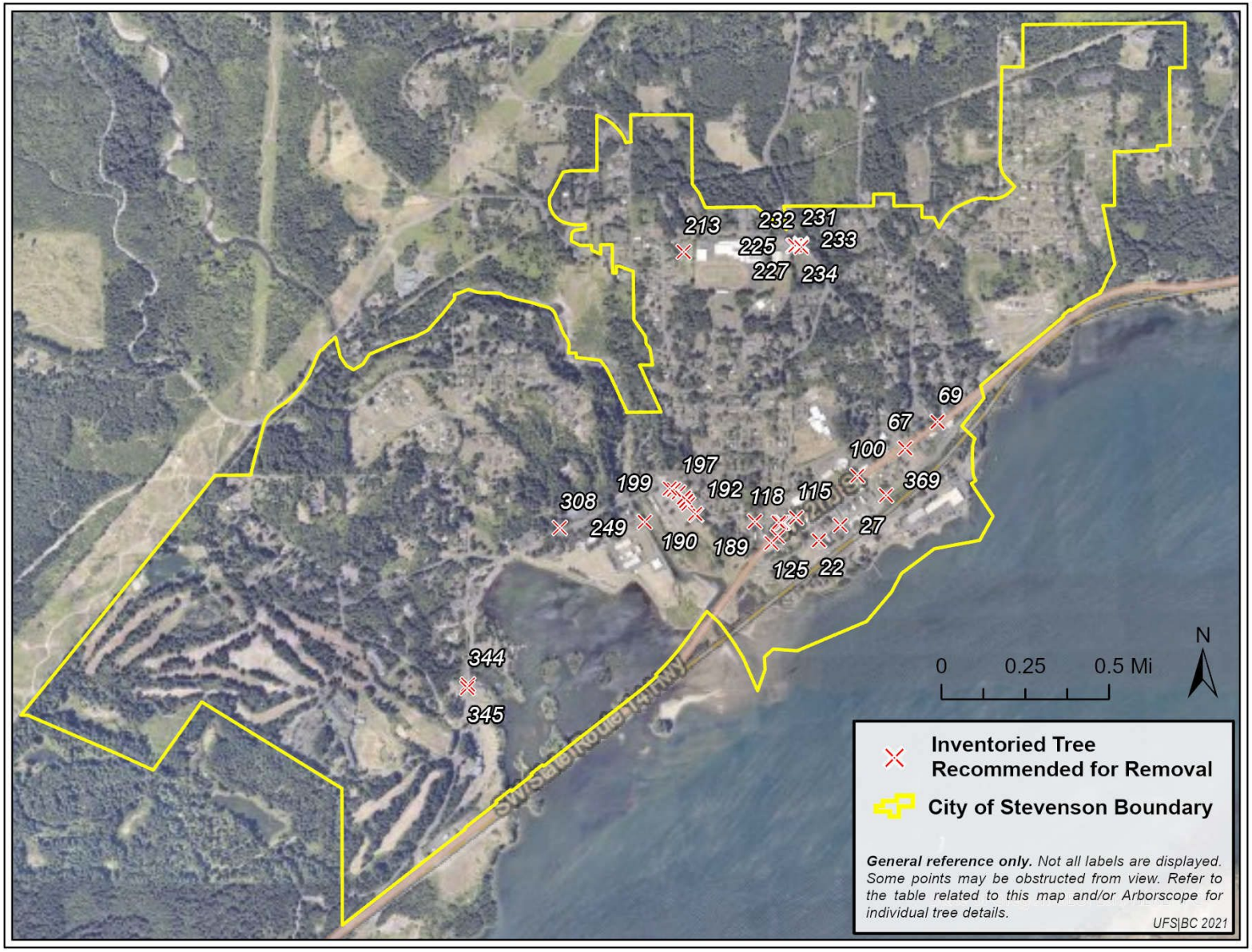
Inventoried Trees Recommended for Removal

Tree ID	Common Name	DBH	Condition	Overall Tree Risk Rating	Defect(s) or Observation(s)	Tree & Shrub Work Phase
100	Maple-Freeman's	14	Poor	Moderate	Crack-stem Fungi/conks Girdling material	ASAP
213	Elm-American	20	Dead	Moderate	...	1
22	Hornbeam-American	8	Poor	Low	Crack-stem Decay-stem Girdling material Sunscald (severe) Uneven crown	1
115	Maple-Norway	20	Poor	Low	Dieback (severe) Girdling material Storm damage Sunscald (severe) Wound-branch	1
27	Maple-Norway	10	Fair	Low	Cavity-stem Co-dominant stems Girdling roots present (moderate) Uneven crown	2
118	Poplar-Aspen	9	Dead	...	...	1
119	Poplar-Aspen	9	Dead	...	...	1
308*	Douglas Fir	8	Poor	...	Broken branch(s) Topping/heading cuts	1
344	Maple-Norway	13	Poor	...	Sunscald (severe) Uneven crown Wound-branch Wound-stem	1
345	Maple-Norway	13	Poor	...	Broken branch(s) Co-dominant stems Included bark Sidewalk lifting-major Sunscald (severe)	1
67	Maple-Freeman's	2	Fair	...	Wound-branch	2
69	Ash-Green	6	Poor	...	Corrected lean Storm damage Wound-branch	2
120	Poplar-Aspen	11	Dead	...	...	2
124*	Maple-Freeman's	5	Poor	...	Dead branches >2 Storm damage Sunscald (severe) Uneven crown Wound-stem	2
125	Maple-Tatarian	3	Poor	...	Dead branches >2 Poor branch structure Storm damage	2
189*	Maple-Freeman's	5	Good	...	Uneven crown Wound-branch	2
190	Maple-Norway	5	Poor	...	Dead branches >2 Sunscald (severe)	2
191	Maple-Norway	5	Fair	...	Co-dominant stems	2
192	Maple-Norway	5	Fair	...	Co-dominant stems Crack-stem Decay-stem Sunscald (moderate)	2
193	Maple-Norway	7	Poor	...	Crack-stem Lean	2

Tree ID	Common Name	DBH	Condition	Overall Tree Risk Rating	Defect(s) or Observation(s)	Tree & Shrub Work Phase
					Sunscald (severe)	
194	Maple-Norway	7	Fair	...	Crack-stem Sunscald (severe)	2
196	Maple-Norway	7	Fair	...	Crack-stem Sunscald (moderate)	2
197	Maple-Freeman's	1	Poor	...	Decay-root flare Wound-root flare	2
199	Maple-Norway	4	Poor	...	Crack-stem Dieback (severe) Sunscald (severe) Wound-root flare	2
225	Maple-Freeman's	2	Fair	...	...	2
227	Maple-Freeman's	2	Fair	...	Co-dominant stems	2
231*	Maple-Freeman's	2	Good	...	...	2
232*	Maple-Freeman's	2	Good	...	...	2
233*	Maple-Freeman's	2	Fair	...	Dead branches <=2	2
234*	Maple-Freeman's	2	Fair	...	...	2
249	Alder-Red	10	Poor	...	Dead branches >2 Storm damage	4
369*	Maple-Norway	7	Poor	...	Sunscald (severe) Wound-root flare	4

***** Trees that were assigned a poor or unacceptable location value may require site adaptations before replacement

Street Trees Recommended for Removal



Tree Replacement

In general, we recommend Stevenson increases both the genus and species diversity of the trees within the Right of Way throughout the City. Increasing diversity will increase the resilience of Stevenson's urban forest to both biotic and abiotic stresses such as local and regional climate extremes, or destructive biotic pest outbreaks such as species-specific invasive insects and diseases

Soil Care

Healthy soil is critical to the health and longevity of trees. Soil provides trees with the essential nutrients required for their growth. Many secondary problems such as reduced vigor, inadequate growth, branch dieback, and pest or disease concerns are related to the primary stress of poor soil conditions. Undisturbed, native forest soils generally contain adequate levels of organic matter, soil microbes, and nutrients. Urban, suburban, and landscape soils (as opposed to forest soils) usually lack these qualities and are often compacted. In many cases, trees in a landscaped environment suffer from inadequate soil fertility, soil compaction, root zone competition with turf grasses, and inadequate total soil volume. Soil Care treatments should be applied as soon as possible, therefore they do not have a Tree & Shrub Work phase.

Bartlett Tree Experts recommends several procedures and treatments that address soil quality. Taking soil samples is perhaps the most important. Proper tree care cannot be initiated unless it is known what type of soil environment the trees are growing in. Soil testing results can help to create a path forward for improved tree health. We address some of these below.

Soil Sampling

Collecting soil samples and having them tested helps determine nutrients that may be lacking, unfavorable soil pH values, and adequacy of soil organic matter. Laboratory tests and analyses can determine the need for soil amendments.

Bulk Density

Compacted soils are regrettably common in the urban setting. A bulk density test, which requires an undisturbed core sample, measures the level of soil compaction. Arborists can use the results to diagnose problems or to determine what size holes to dig for planting. If soil density exceeds a measured threshold for a given soil type and tree species, we recommend Bartlett's Root Invigoration™ program.

Soil Rx®

Bartlett's Soil Rx® program, which is a prescription soil amendment program, aims to correct nutrient deficiencies and optimize soil conditions for designated trees.

Root Invigoration™

The aim of Bartlett's patented Root Invigoration™ Program is to improve soil conditions by addressing soil compaction and nutrient deficiencies. This program is intended for high-value trees in disturbed or impacted areas. The process includes taking soil samples to determine what nutrients are deficient, performing a root collar excavation, "air-tilling" a portion of the root zone, incorporating organic matter, applying soil amendments (based on soil sample), and mulch. The area of the root system treated can vary by tree. For the Root Invigoration™ Program to be successful, proper watering techniques must be employed after the process is complete. All compressed air excavation work around tree roots should be conducted by a knowledgeable ISA certified arborist and conducted during the appropriate season to decrease damages to tree roots and negative impacts to the surrounding environment.

Mulch Application

Proper mulching provides many benefits to trees and shrubs. It moderates soil temperatures, reduces soil moisture loss, reduces soil compaction, provides nutrients, and improves soil structure. This practice results in more root growth and healthier plants. The image on the top right illustrates root growth density under grass versus mulch. Mulch is frequently applied incorrectly, so we recommend that readers inspect the technical report on mulch application guidelines that appears in the Appendix. See the illustrations below for proper and improper mulching methods.

Illustration 2. An example of how mulch should be applied – 2 to 4-inches thick and 4 to 6-inches away from the root collar.

Photo 16. Root Density under grass vs. mulch.

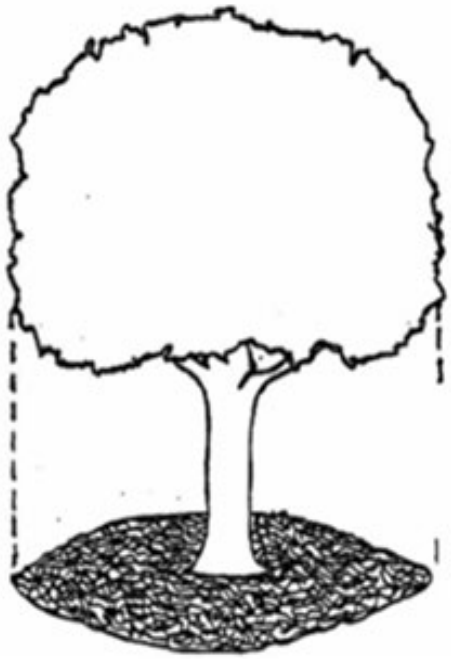


Illustration 3. An example of how mulch can be applied within a tree's dripline. Applying mulch beyond the drip line is also encouraged where feasible, as roots typically extend far beyond the dripline of a tree.

Photo 17. An example of improper much application, commonly referred to as "volcano mulching." (not from Stevenson)

Trees in this inventory requiring soil care are growing in areas that can be categorized into two environment types that are not optimal for tree health, thee include concentrated turf/lawn areas and street planters/pits. Many trees are growing in lawns with shallow roots being damaged by mowers. Some trees in planter strips have exposed compacted soil, and many street tree planter pits either have soil that has dropped in height, or the bricks need to be removed and the trees can be mulched for protection. Choices of mulch may vary; however, landscape trees will benefit the most from a thick wood chip mulch application (not bark). Though not ideal for root health, pea gravel, or 1 inch drain rock may be a good fit for the open tree planter pits. This mulch, though poor in providing nutrients, is not a fire risk like fine wood chips, and it provides greater air circulation if piled around the trunk to meet the height of the pit. Other mulch and tree planter pit options are provided in the reference section.

The following 90 inventoried ROW trees are recommended for soil care because of possible nutrient deficiencies, soil compaction, or inadequate soil conditions. Only trees with a work phase of ASAP, 1 and 2 are reflected in this table.

Photo 18. The sweetgum trees #161-165 at the Courthouse lawn are recommended for root invigoration and other soil treatments to promote and maintain good health and vigor for these important and valuable trees.

Inventoried Trees Recommended for Soil Care

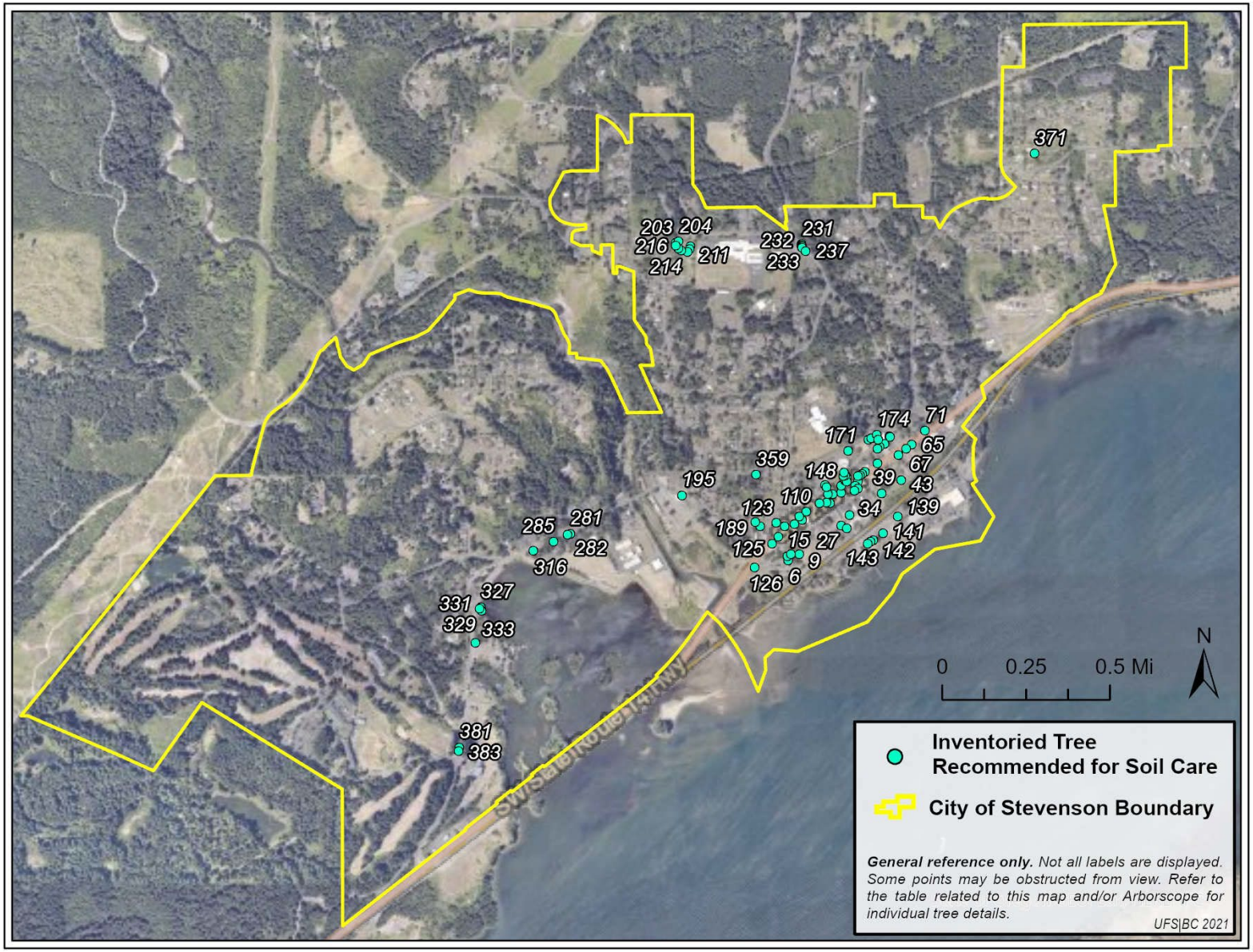
Tree ID	Common Name	DBH/QMD	Soil Care	Mulch Recommended	Work Phase
71	Ash-Green	5.1	...	Yes	ASAP
100	Maple-Freeman's	14.0	...	Yes	ASAP
112	Maple-Norway	20.5	...	Yes	ASAP
158	Holly-English	24.1	...	Yes	ASAP
166	Walnut-Persian	26.4	Root Invigoration	Yes	ASAP
173	Maple-Vine	7.9	...	Yes	ASAP
203	Elm-American	10.6	Root Invigoration	Yes	ASAP
204	Elm-American	11.3	Root Invigoration	Yes	ASAP
6	Maple-Freeman's	3.5	...	Yes	1
65	Maple-Freeman's	2.8	...	Yes	1
88	Maple-Freeman's	14.1	...	Yes	1
89	Maple-Freeman's	13.0	...	Yes	1
90	Maple-Freeman's	12.0	...	Yes	1
102	Linden-Littleleaf	13.5	...	Yes	1
103	Linden-Littleleaf	12.8	...	Yes	1
108	Linden-Littleleaf	13.0	...	Yes	1
114	Maple-Norway	23.5	...	Yes	1
117	Linden-Littleleaf	9.6	...	Yes	1
162	Sweetgum-Common	22.2	Root Invigoration	Yes	1
168	Plum-Purple Leaf	36.0	...	Yes	1
171	Tuliptree	47.5	...	Yes	1
172	Falsecypress-Nootka	36.6	...	Yes	1
174	Oak-Oregon White	44.9	...	Yes	1
177	Mountain Ash-American	4.0	...	Yes	1
178	Maple-Norway	11.1	...	Yes	1
180	Douglas Fir	16.5	...	Yes	1
183	Maple-Bigleaf	12.5	...	Yes	1
184	Cherry-Sweet	20.3	...	Yes	1
282	Oak-Oregon White	34.8	...	Yes	1
327	Oak-Oregon White	45.0	...	Yes	1
331	Oak-Oregon White	21.7	...	Yes	1
333	Maple-Norway	16.0	...	Yes	1
359	Elm-American	70.5	...	Yes	1
9	Maple-Norway	3.1	...	Yes	2
15	Maple-Freeman's	8.9	...	Yes	2
16	Maple-Norway	11.1	...	Yes	2
27	Maple-Norway	9.9	...	Yes	2
34	Maple-Freeman's	2.3	...	Yes	2

Tree ID	Common Name	DBH/QMD	Soil Care	Mulch Recommended	Work Phase
39	Maple-Hedge	9.3	...	Yes	2
43	Maple-Freeman's	2.1	...	Yes	2
67	Maple-Freeman's	2.0	...	Yes	2
76	Maple-Norway	18.2	...	Yes	2
86	Maple-Freeman's	2.2	...	Yes	2
93	Maple-Freeman's	8.4	...	Yes	2
96	Maple-Red	11.0	...	Yes	2
104	Linden-Littleleaf	14.4	...	Yes	2
105	Linden-Littleleaf	14.0	...	Yes	2
110	Linden-Littleleaf	11.5	...	Yes	2
116	Linden-Littleleaf	8.2	...	Yes	2
123	Poplar-Aspen	11.5	Root Invigoration	Yes	2
124	Maple-Freeman's	5.4	...	Yes	2
125	Maple-Tatarian	3.2	...	Yes	2
126	Maple-Vine	6.5	Root Invigoration	Yes	2
130	Maple-Freeman's	1.8	Root Invigoration	Yes	2
139	Maple-Freeman's	4.2	...	Yes	2
141	Maple-Freeman's	5.7	...	Yes	2
142	Maple-Freeman's	3.1	...	Yes	2
143	Maple-Freeman's	3.1	...	Yes	2
144	Maple-Freeman's	2.9	...	Yes	2
145	Linden-Littleleaf	14.2	...	Yes	2
147	Linden-Littleleaf	9.8	...	Yes	2
148	Linden-Littleleaf	11.9	...	Yes	2
149	Linden-Littleleaf	12.2	...	Yes	2
152	Plum-Purple Leaf	9.5	...	Yes	2
154	Plum-Purple Leaf	12.8	...	Yes	2
155	Plum-Purple Leaf	1.7	...	Yes	2
163	Sweetgum-Common	26.4	Root Invigoration	Yes	2
167	Pine-Lodgepole	11.6	...	Yes	2
185	Pine-Lodgepole	22.6	...	Yes	2
187	Maple-Freeman's	6.6	...	Yes	2
189	Maple-Freeman's	4.5	...	Yes	2
195	Maple-Norway	11.0	...	Yes	2
210	Elm-American	14.0	Root Invigoration	Yes	2
211	Elm-American	17.2	Root Invigoration	Yes	2
212	Elm-American	25.5	Root Invigoration	Yes	2
214	Elm-American	21.8	Root Invigoration	Yes	2

Tree ID	Common Name	DBH/QMD	Soil Care	Mulch Recommended	Work Phase
215	Elm-American	24.2	Root Invigoration	Yes	2
216	Elm-American	27.4	Root Invigoration	Yes	2
231	Maple-Freeman's	1.5	...	Yes	2
232	Maple-Freeman's	1.5	...	Yes	2
233	Maple-Freeman's	1.5	...	Yes	2
234	Maple-Freeman's	1.5	...	Yes	2
237	Maple-Freeman's	1.5	...	Yes	2
281	Oak-Oregon White	23.1	Root Invigoration	Yes	2
285	Douglas Fir	40.4	...	Yes	2
316	Oak-Oregon White	6.4	...	Yes	2
329	Oak-Oregon White	17.8	...	Yes	2
371	Arborvitae-Western Redcedar	42.0	Root Invigoration	Yes	2
381	Maple-Vine	5.6	...	Yes	2
383	Maple-Vine	4.5	...	Yes	2

Photo 19. This white oak #201 has a recommendation to reduce risk of branch failure through end weight reduction. The tree is in a large growing space with compacted soil and would benefit from root invigoration and mulch.

Street Trees Recommended for Soil Care (Phase ASAP, 1 & 2)



Root Collar Excavation

Excavating a tree's root collar is sometimes necessary for trees whose buttress roots are covered by excess soil or mulch. Buried root collars can contribute to tree health problems, including girdling roots, basal cankers, and can hide defects like root and lower stem decay. Trees in the root collar excavation table do not have a Tree & Shrub Work phase and should be completed as soon as possible. The top image shows a buried root collar, and the bottom image shows an exposed root collar.

Photo 20. An example of a buried root collar. (Not from Stevenson)

Photo 21. An example of an exposed root collar. (Not from Stevenson)

Girdling Roots

Girdling roots (top left and right) restrict water and nutrient movement throughout the tree. If left untreated they can cause the tree to decline, fail (bottom), and eventually die in severe cases. Girdling roots should be removed as soon as possible, unless removal of roots will significantly impact the condition or stability of the tree. In some cases, the presence of significant or severe girdling roots may cause the tree to be recommended for removal.

Photo 22. An example of girdling/circling surface roots. (Not from Stevenson)

Photo 23. An example of subsurface girdling/circling roots that have been revealed through root collar excavation. (Not from

Photo 24. An extreme example of a tree failure brought on by circling/girdling roots. *(Not from Stevenson)*

Many smaller trees recommended for root collar excavation were planted too deep. Planting guidance has been provided to improve future tree placement. Trees with wounds or decay around the root flair should be inspected during excavation. Of the 43 trees are recommended for a root collar excavation. Only trees with a work phase of ASAP, 1 and 2 are reflected in this table.

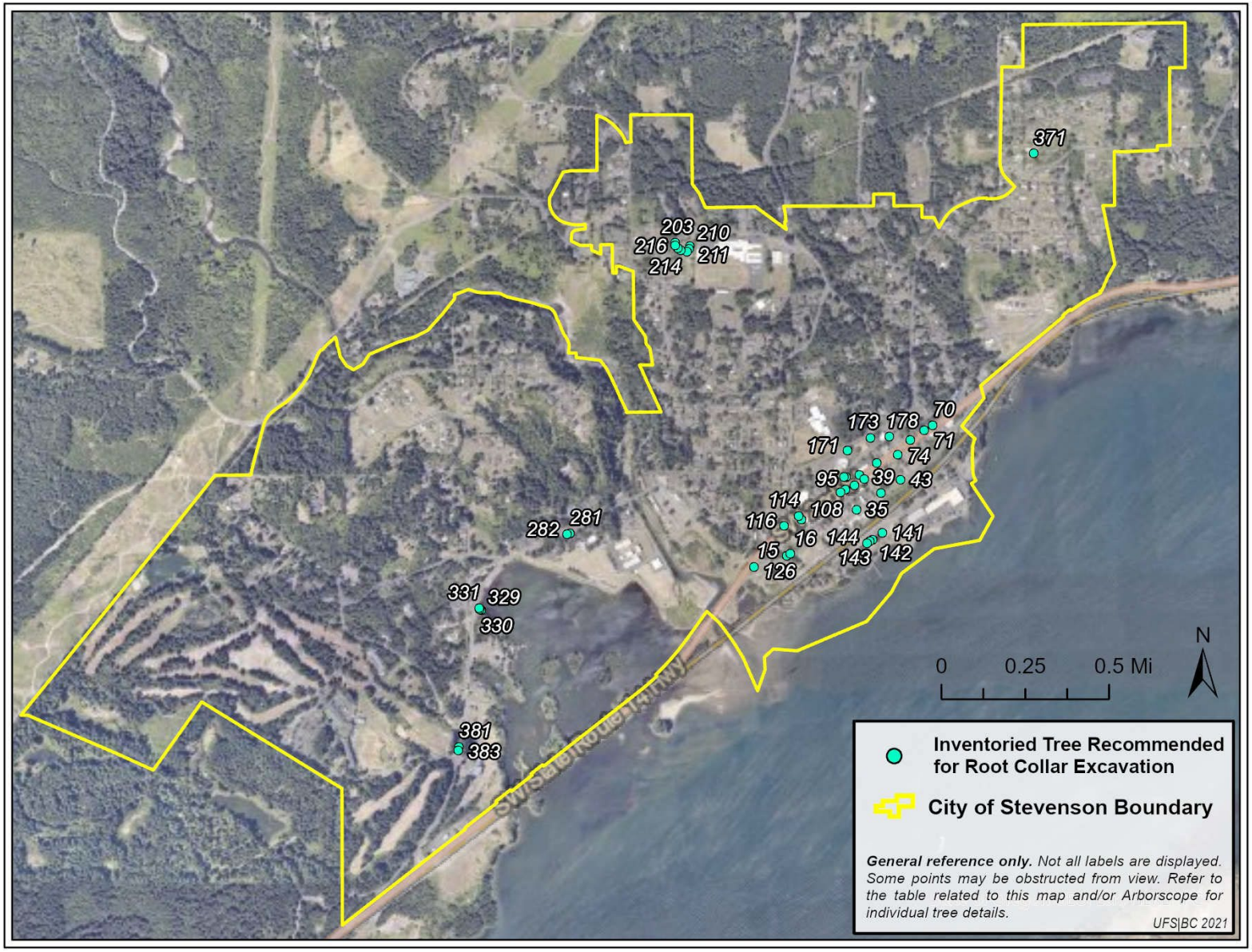
Inventoried Trees Recommended for Root Collar Excavation

Tree ID	Common Name	DBH/QMD	Root Collar Observations	Work Phase
35	Maple-Norway	11.8		ASAP
70	Ash-Green	6.1		ASAP
71	Ash-Green	5.1		ASAP
74	Ash-Green	10.7	Girdling material	ASAP
166	Walnut-Persian	26.4		ASAP
173	Maple-Vine	7.9	Wound-root flare	ASAP
203	Elm-American	10.6	Buried root collar	ASAP
90	Maple-Freeman's	12.0		1
108	Linden-Littleleaf	13.0	Girdling material Wound-root flare	1
114	Maple-Norway	23.5	Girdling material	1
171	Tuliptree	47.5		1
178	Maple-Norway	11.1	Wound-root	1
282	Oak-Oregon White	34.8		1
331	Oak-Oregon White	21.7	Decay-root flare	1
15	Maple-Freeman's	8.9	Wound-root flare Girdling material	2
16	Maple-Norway	11.1	Girdling material	2
39	Maple-Hedge	9.3		2
43	Maple-Freeman's	2.1		2
76	Maple-Norway	18.2	Buried root collar	2
86	Maple-Freeman's	2.2		2
91	Maple-Red	6.7	Buried root collar	2
95	Maple-Norway	12.0	Girdling material	2
96	Maple-Red	11.0	Decay-root flare Girdling material	2
116	Linden-Littleleaf	8.2		2
126	Maple-Vine	6.5		2
141	Maple-Freeman's	5.7		2
142	Maple-Freeman's	3.1		2
143	Maple-Freeman's	3.1	Wound-root flare	2
144	Maple-Freeman's	2.9	Wound-root flare	2
147	Linden-Littleleaf	9.8	Girdling material	2
148	Linden-Littleleaf	11.9		2
210	Elm-American	14.0	Wound-root flare	2
211	Elm-American	17.2	Wound-root flare	2
212	Elm-American	25.5	Buried root collar	2
214	Elm-American	21.8		2
215	Elm-American	24.2	Wound-root flare Girdling material	2
216	Elm-American	27.4		2

Tree ID	Common Name	DBH/QMD	Root Collar Observations	Work Phase
281	Oak-Oregon White	23.1		2
329	Oak-Oregon White	17.8		2
330	Oak-Oregon White	30.6	Buried root collar	2
371	Arborvitae-Western Redcedar	42.0	Girdling roots present (moderate)	2
381	Maple-Vine	5.6		2
383	Maple-Vine	4.5		2

Photo 25. The Walnut tree #166 has a buried root collar. Excavation and assessment are recommended before propping the tree.

Street Trees Recommended for Root Collar Excavation (Phase ASAP, 1 & 2)



Plant Health Care

The Inventory Team recommends developing a Plant Health Care (PHC) program for trees in the formal landscape. This includes monitoring, prioritizing and scheduling work for the appropriate times of year. Pruning, soil work, irrigation management and fertilization are all parts of a PHC program. An Integrated Pest Management (IPM) program can be added to plant health care through monitoring for potentially damaging insects, diseases and cultural problems that are often seasonal and may not have been evident during our inventory visit. IPM programs identify the pests, set tolerance thresholds for those pests and manage them when those thresholds are exceeded. Managing and monitoring these pests and diseases according to the current Integrated Pest Management (IPM) BMPs and Washington State's standards and laws will help ensure pests are managed appropriately for tree and urban forest health. A professional horticulturist or Bartlett's PHC program specialists can assist you with providing treatment options and defining action thresholds for problematic pests and diseases.

Photo 26. An oak apple gall on a Garry oak. While odd and sometimes startling, these galls are typically harmless and do not typically require management intervention

Many trees had signs of secondary biotic impacts associated with stress. For example, the library oak, #174, had evidence of oak lace bug, however it was not recorded in the inventory due to its low significance at the time. Many of the tree health issues we observed can be monitored, assessed and managed after growing conditions and abiotic stresses are improved.

We identified significant pests or diseases impacts on the following 24 inventoried trees at the time of the inventory:

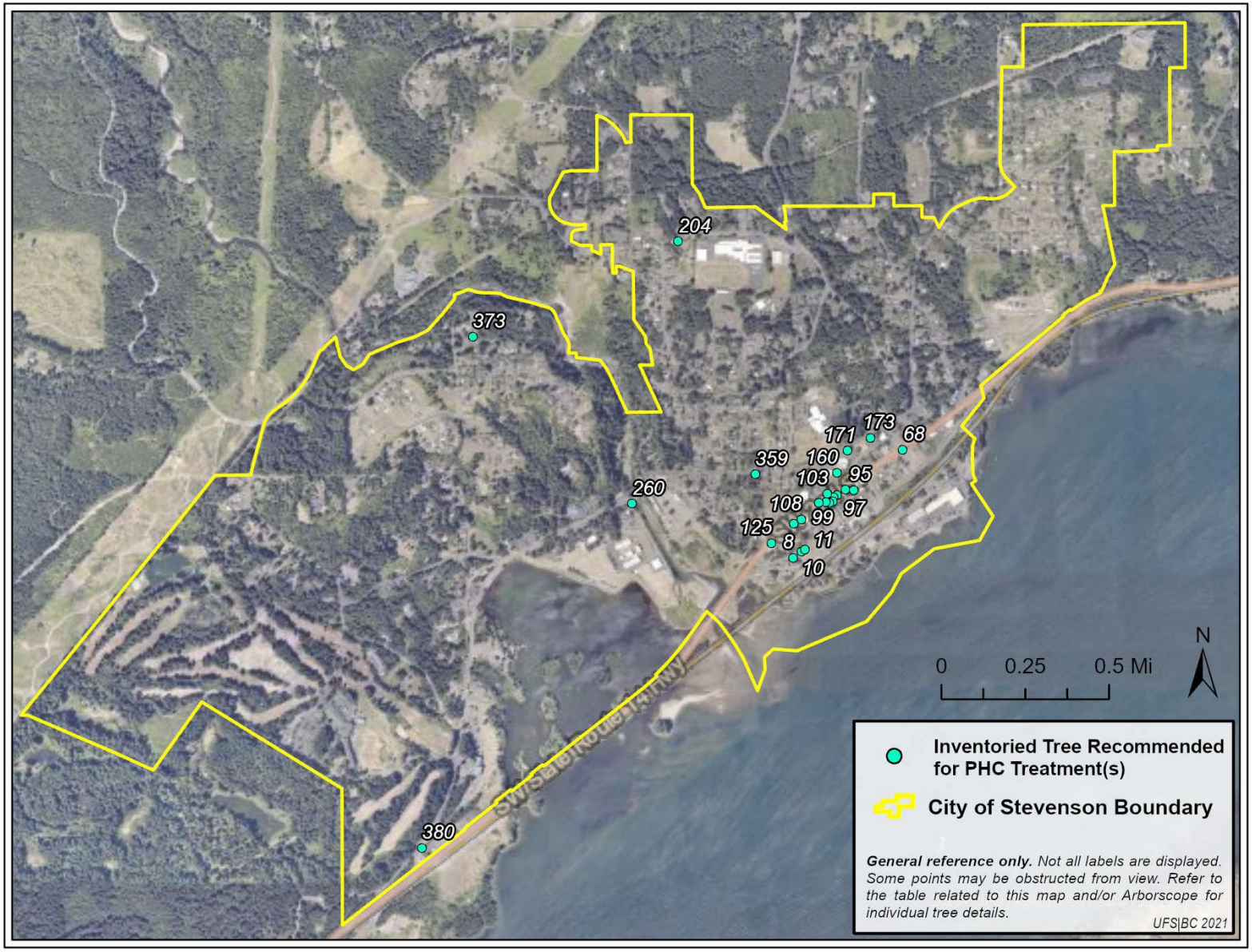
Inventoried Trees Identified for Plant Health Care

Tree ID	Common Name	DBH	Pest(s) or Disease(s)
8	Maple-Freeman's	2	Leaf scorch
10	Maple-Norway	2	Leaf spot
11	Maple-Freeman's	2	Leaf spot
68	Linden-Littleleaf	11	Aphids
95	Maple-Norway	12	Aphids
97	Maple-Freeman's	3	Aphids
98	Linden-Littleleaf	12	Aphids
99	Linden-Littleleaf	12	Aphids
103	Linden-Littleleaf	13	Aphids
104	Linden-Littleleaf	14	Aphids
105	Linden-Littleleaf	14	Aphids
108	Linden-Littleleaf	13	Aphids
110	Linden-Littleleaf	12	Aphids
117	Linden-Littleleaf	10	Aphids
125*	Maple-Tatarian	3	Leaf spot Scale
160	Plum-Purple Leaf	10	Cankers
168	Plum-Purple Leaf	36	Cankers
171	Tuliptree	48	Aphids
173	Maple-Vine	3,3,4,3,3,4	Wilt verticillium
204	Elm-American	11	Blight
260	Alder-Red	7,6,6	Leafminer
359	Elm-American	71	Aphids
373	Cherry-Sweet	18	Fungal disease Ganoderma
380	Elm-American	8,6,6,6,6,4	Leafminer

* Tree recommended for removal in the tree removal recommendation section

None of the above insect biotic issues are regulated or required for control by law. The largest nuisance identified on the trees were aphids in the downtown Linden trees. This pest will likely not improve without treatment and can be treated if the honeydew is above the tolerance threshold for the area. Pests can be treated with cultural, chemical or biological control options. There are multiple options available to treat aphids. Your local plant health care technician can provide you with guidance for management and access to predatory insects such as lacewings or midges. All other trees should be monitored.

Street Trees Recommended for PHC Treatment(s)



Tree Pruning

Tree pruning is a commonly offered service among tree companies, and yet is also one of the most poorly executed practices by tree workers who lack training in the basics of tree biology. 'lion's tailing', 'topping', and 'flush cuts' are a few examples of improper pruning that can lead to hazardous conditions and poor tree health over time.

Because pruning is so commonly misunderstood, and because specific standards exist to perform pruning correctly, the Inventory Team decided to include some explanation in the main body of this management plan. Additional information can be found in the links provided in the reference material at the end of this document. All pruning shall comply with the current ANSI A300 – Part 1 standard for pruning and should be conducted or supervised by an ISA Certified Arborist®. The best management practices developed to meet the ANSI standards were provided in electronic form to the city for reference. These BMP's provide guidance for contractor specifications.

Tree owners and tree-care practitioners should always keep in mind that all pruning, good or bad, injures the tree and creates a wound. Informed tree-care professionals have learned to manage that wounding to preserve the health, safety, and integrity of the tree. In the City of Stevenson storm damage causes many wounds to trees. Implementing proper pruning practices during the clean-up phases of storm response will improve tree structure over time and decrease future damages during storm events.

Special focus should be made to restoration pruning for storm response, reduction pruning for risk abatement and structural pruning for young trees. We highly recommend using a contractor to address the immediate pruning needs for the city.

Improper Pruning Practices

A few of the most common improper pruning methods are:

- Lion's-Tailing - pruning that removes interior branches along the stem and scaffold branches. This encourages poor branch taper, poor wind load distribution, and risk of branch failure. It also deprives the tree of foliage it needs to produce photosynthates. See next page, top left.
- Topping - pruning cuts that reduce a tree's size by using heading cuts that shorten branches to a predetermined size. Topping substantially reduces the functional benefits a tree is capable of providing and predisposes trees to structural defects that can contribute to failures in the future. It also reduces the value of the trees substantially and deprives the tree of adequate foliage. See next page, top right.
- Flush Cuts - pruning cut through the branch collar, flush against the trunk or parent stem, causing unnecessary injury. See next page, bottom.
- Using Climbing Spikes Inappropriately - Using climbing spikes on a tree can wound healthy stem tissues below the bark and can lead to infection by fungal pathogens. Even thicker barked trees such as Douglas fir and Ponderosa pine can be damaged.

Photo 27. An example of "lion's tailing". *(Not from Stevenson)*

Photo 28. An example of "topping". *(Not from Stevenson)*

Photo 29. An example of flush cuts. *(Not from Stevenson)*

Pruning with a Goal

Below are illustrations of common pruning goals:

Reduction

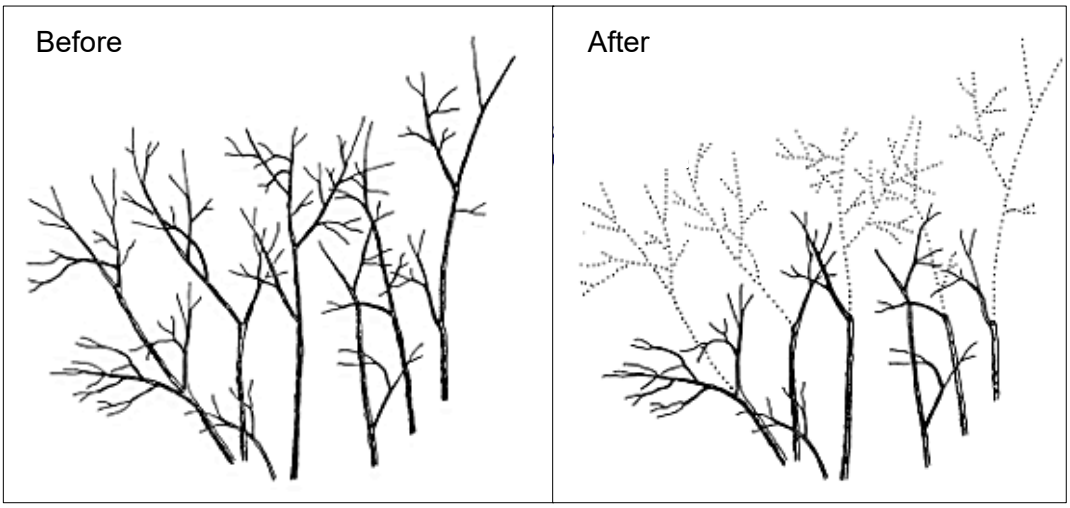


Illustration 4. An example of before and after proper reduction pruning. Reduction pruning removes branch parts back to viable lateral branches. This technique can be used to reduce the length of an overextended branch that may be prone to failure. (Gillman, UFL)

Elevation/Clearance

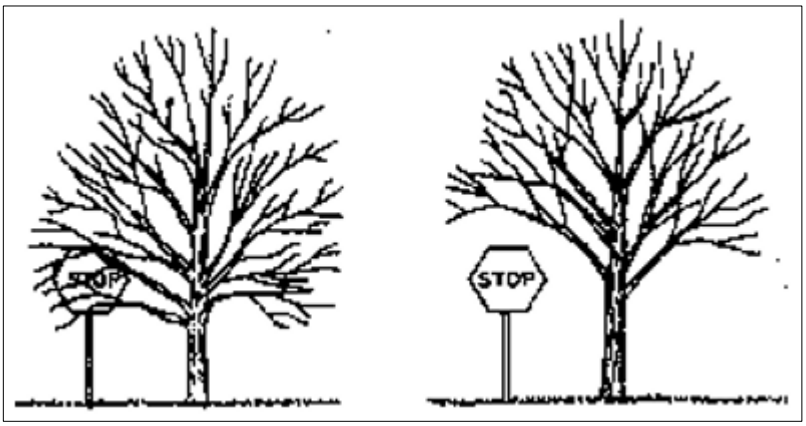


Illustration 5. An example of providing clearance for signage while maintaining the natural form and structure of a tree.

Promoting Structure

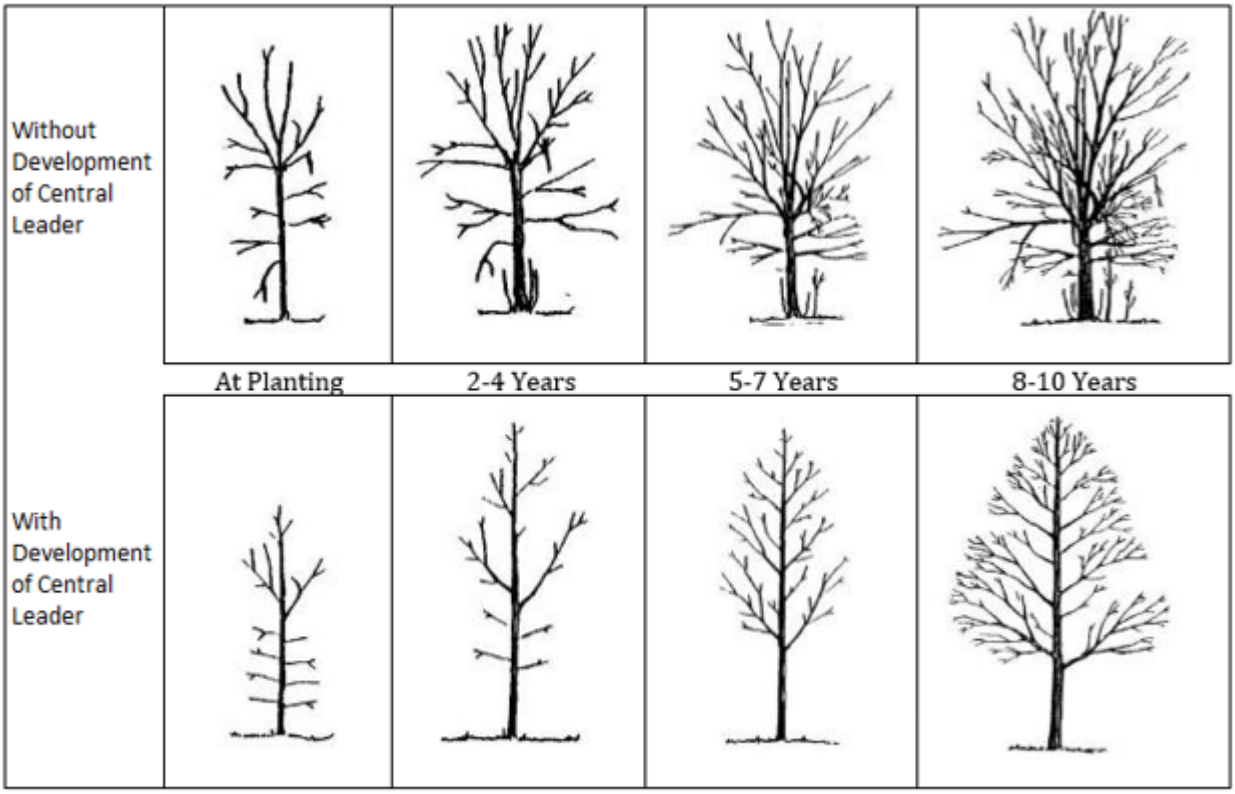


Illustration 6. An example of promoting a strong central leader through pruning.

Restoration pruning

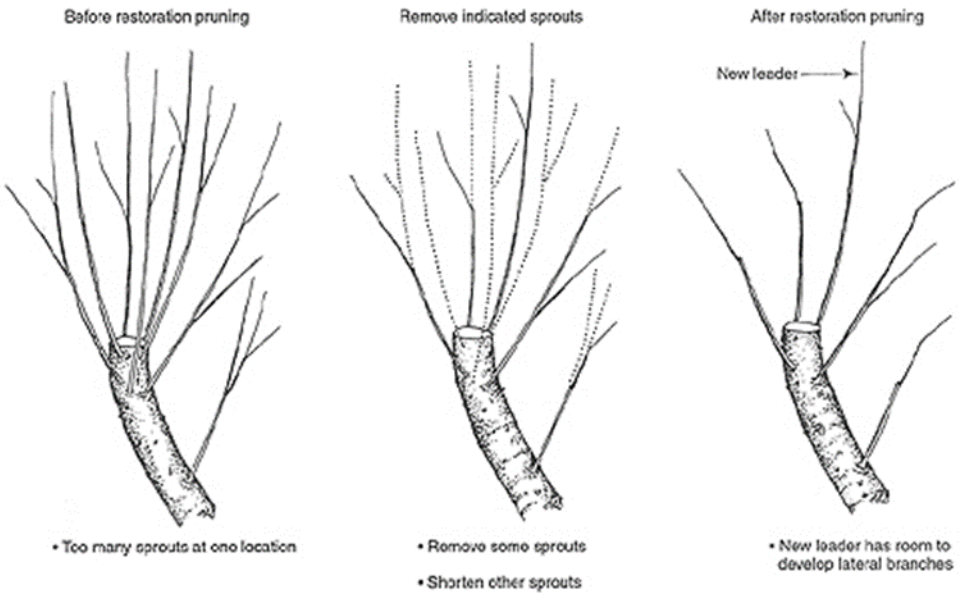
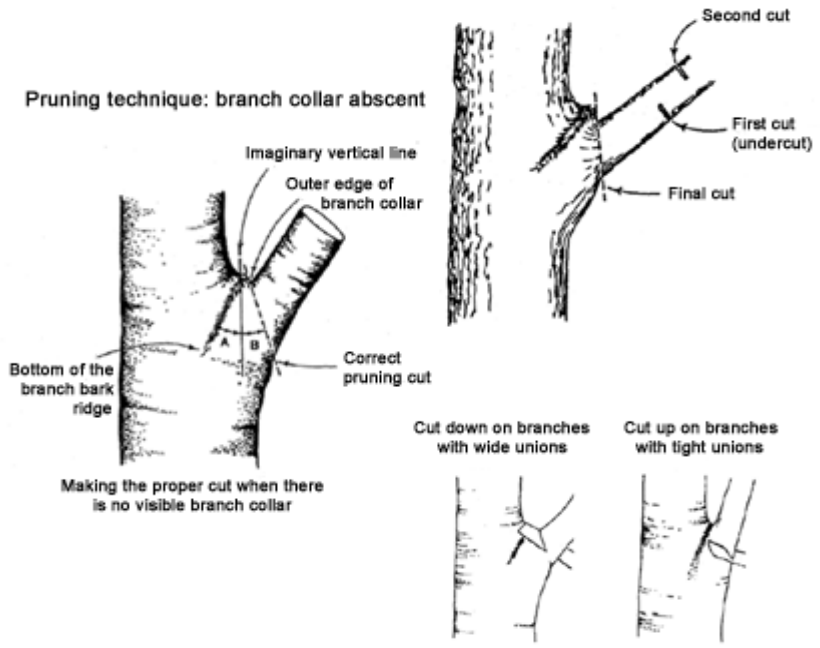


Illustration 7. Restoring storm damage, heading or topping cuts. "Illustrations, PowerPoints or photos by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida." http://hort.ufl.edu/woody

Types of Pruning Cuts



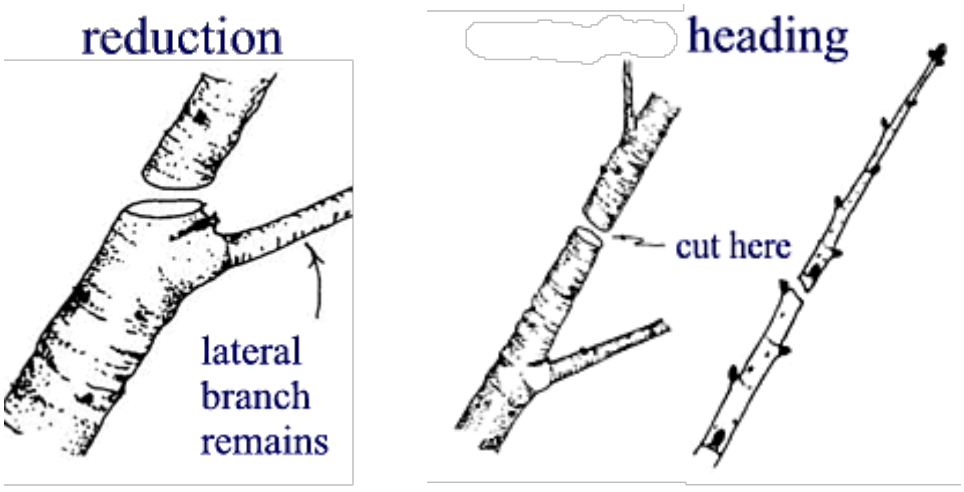


Illustration 8. Appropriate reduction pruning cut placement (left) vs. typically inappropriate cut placemen (right). Types of pruning cuts including the inappropriate example of a heading cut. "Illustrations, PowerPoints or photos by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida." http://hort.ufl.edu/woody

Pruning Category

All trees identified in this management plan that have pruning recommendations are listed with a specific pruning category. Trees within each category are prioritized by the goals for pruning. We recommend discussing specific goals with a qualified tree manager. Pruning categories are separated into individual tables below. Each table lists the defects observed that corelate to pruning and the arboricultural pruning goals for each tree. This can be used for general planning purposes. Specific recommendations for individual trees can be referenced in the ArborScope™ online inventory.

Ornamental and Specialized Pruning

This goal typically requires pruning of small and unique tree species. Includes reduction and/or shearing to its desired shape, size, and/or structure. In some cases, trees identified for specialized pruning may require a unique treatment that may include, but not limited to, targeted pruning cuts, removal of nuisance fruit/parasitic plants, and/or rejuvenation/internodal pruning. 13 trees were recommended for ornamental pruning. These include the orchard trees, and holly shrubs in front of the courthouse and near the cemetery. Further information for these trees can be found in the full inventory.

Risk-reduction Pruning

This typically includes any trees identified with a risk-reduction pruning goal, have a branch or part with a higher probability of failure, or storm damage. These trees have varying likely hoods of impacting and causing damage to targets, however, mitigating risk of failure will reduce damages to the tree and potential risk to targets**.** Only two trees; #98 and #259 were identified only for risk reduction pruning. Some trees identified for risk reduction that cannot be mitigated through pruning will be found in the *Tree Risk Assessments and Mitigation* section earlier in the document. Trees with additional pruning requirements in addition to risk reduction will be found in the Maintenance Pruning Section below with risk reduction identified as a goal.

Maintenance Pruning

This goal typically requires routine pruning of large/mature trees. Includes branch removal and/or branch reduction to help reduce **likelihood of failure** and/or conflict with infrastructure. Trees with these goals are typically climbed or require the use of aerial lifts and/or other specialized equipment. Of the 171 trees identified for pruning the following 76 were categorized as ASAP or phase 1 and 2

Inventoried Trees Recommended for Maintenance Pruning
**Only Phases ASAP, 1 and 2 are shown*

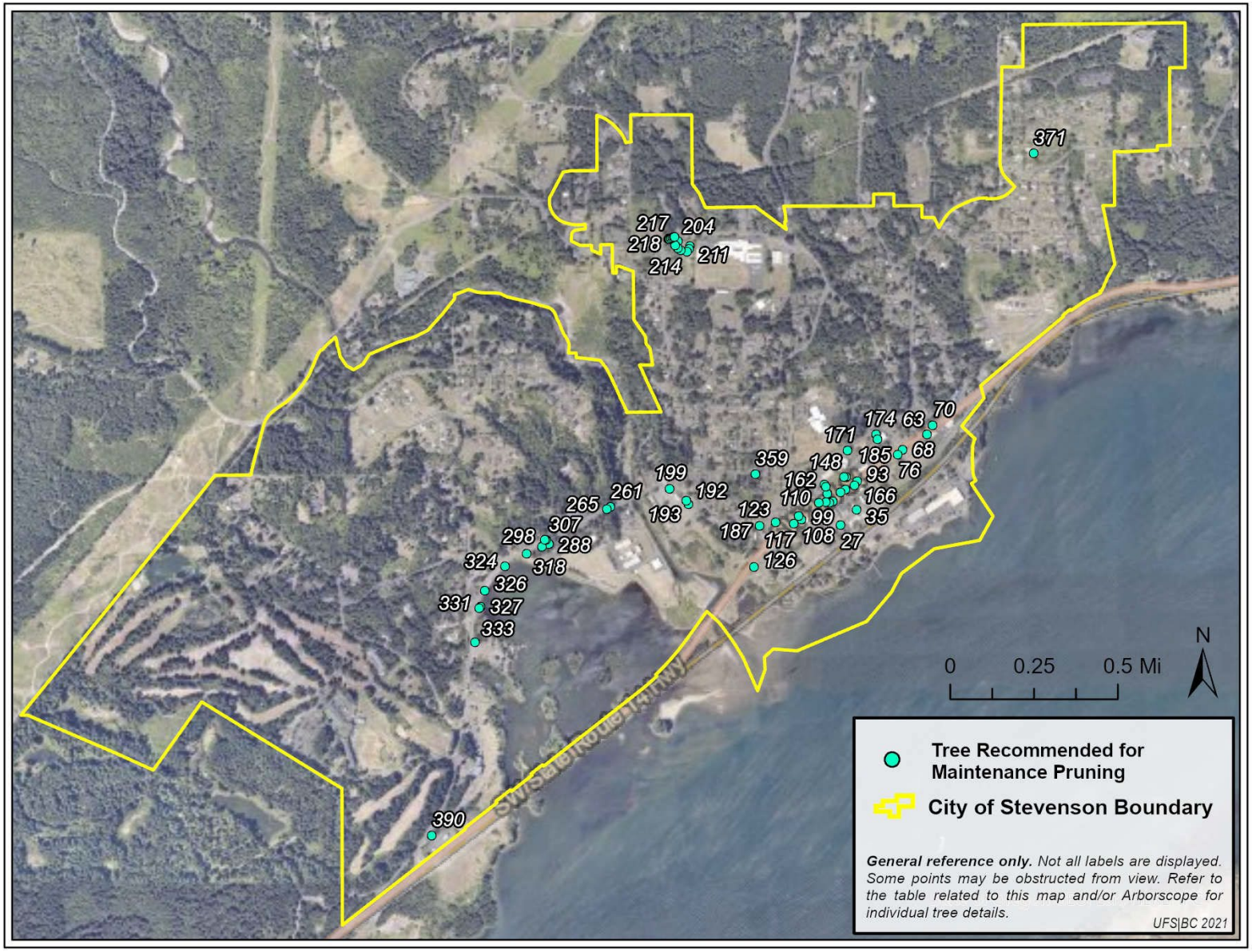
Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
35	Maple-Norway	12	Reduce risk of branch stem and/or root failure	Broken branch(s) Dieback (severe)	ASAP
70	Ash-Green	6	Reduce risk of branch stem and/or root failure Reduce weight of branch ends Clearance	Broken branch(s) Storm damage Wound-branch	ASAP
166	Walnut-Persian	26	Clearance Reduce risk of branch stem and/or root failure Reduce weight of branch ends	Cavity-branch Dieback (severe) Overextended branch Topping/heading cuts	ASAP
204	Elm-American	11	Develop branch structure Improve form and shape	Storm damage Uneven crown	ASAP
103	Linden-Littleleaf	13	Reduce weight of branch ends Reduce density Clearance	Corrected lean Included bark	1
108	Linden-Littleleaf	13	Reduce weight of branch ends Reduce density	Corrected lean Decay-stem Flush cuts Girdling material	1
114	Maple-Norway	24	Reduce weight of branch ends Reduce risk of branch stem and/or root failure	Crack-stem Decay-branch Girdling material Uneven crown	1
117	Linden-Littleleaf	10	Clearance Reduce weight of branch ends	Flush cuts Girdling material Included bark Storm damage	1
162	Sweetgum-Common	22	Reduce risk of branch stem and/or root failure Develop branch structure	Girdling roots present Storm damage	1
171	Tuliptree	48	Reduce risk of branch stem and/or root failure Reduce weight of branch ends	Broken branch(s) Overextended branch Topping/heading cuts	1
174	Oak-Oregon White	45	Reduce risk of branch stem and/or root failure	Dead branches >2 Overextended branch Storm damage	1
217	Douglas Fir	19,30	Reduce risk of branch stem and/or root failure Clearance	Co-dominant stems Overextended branch	1
218	Douglas Fir	21,8	Reduce risk of branch stem and/or root failure	Overextended branch	1

Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
			Reduce weight of branch ends		
219	Douglas Fir	13	Reduce risk of branch stem and/or root failure	Overextended branch	1
220	Douglas Fir	24	Reduce risk of branch stem and/or root failure	Overextended branch	1
222	Douglas Fir	21,23	Reduce risk of branch stem and/or root failure	Co-dominant stems Overextended branch	1
223	Douglas Fir	27	Reduce risk of branch stem and/or root failure Reduce likelihood of storm damage Reduce weight of branch ends	Overextended branch	1
224	Douglas Fir	17	Reduce risk of branch stem and/or root failure	...	1
288	Oak-Oregon White	13	Reduce risk of branch stem and/or root failure Develop branch structure Reduce weight of branch ends	Overextended branch Uneven crown	1
298	Oak-Oregon White	10	Clearance Develop branch structure	Broken branch(s) Wound-branch	1
318	Maple-Bigleaf	19,25	Reduce risk of branch stem and/or root failure Develop branch structure	Co-dominant stems Dieback (moderate) Overextended branch	1
327	Oak-Oregon White	45	Reduce risk of branch stem and/or root failure Improve appearance	Broken branch(s) Dead branches >2	1
331	Oak-Oregon White	22	Reduce risk of branch stem and/or root failure Reduce weight of branch ends	Overextended branch Uneven crown	1
333	Maple-Norway	16	Repair storm damage Clearance Develop branch structure	Broken branch(s) Storm damage Topping/heading cuts	1
359	Elm-American	71	Reduce size of crown Reduce risk of branch stem and/or root failure	Co-dominant stems Dead branches <=2 Overextended branch	1
27	Maple-Norway	10,2	Reduce size of crown	Cavity-stem Co-dominant stems Uneven crown	2
63	Ash-Green	7	Repair storm damage Improve appearance Improve form and shape	Broken branch(s) Poor branch structure Storm damage	2
68	Linden-Littleleaf	11	Develop branch structure Reduce size of crown Reduce weight of branch ends	Co-dominant stems Corrected lean	2
76	Maple-Norway	18	Reduce risk of branch stem and/or root failure Reduce weight of branch ends Clearance	Co-dominant stems Wound-branch	2
93	Maple-Freeman's	8	Clearance Repair storm damage	Co-dominant stems Crack-stem Included bark Storm damage Wound-branch	2
95	Maple-Norway	12	Clearance	Dead branches <=2	2

Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
			Reduce size of crown Reduce weight of branch ends	Girdling material Topping/heading cuts	
96	Maple-Red	11	Reduce size of crown Clearance Reduce risk of branch stem and/or root failure	Co-dominant stems Decay-root flare Flush cuts Girdling material	2
99	Linden-Littleleaf	12	Clearance Reduce weight of branch ends Develop branch structure	Co-dominant stems Flush cuts Girdling material Included bark	2
104	Linden-Littleleaf	14	Reduce weight of branch ends Reduce density Clearance	Flush cuts Girdling material Overextended branch Poor branch structure	2
105	Linden-Littleleaf	14	Clearance Reduce weight of branch ends Reduce size of crown	Girdling material	2
110	Linden-Littleleaf	12	Reduce weight of branch ends Reduce density Clearance	Dieback (moderate) Flush cuts Girdling material Included bark	2
123	Poplar-Aspen	12	Clearance Reduce weight of branch ends	Co-dominant stems Included bark	2
126	Maple-Vine	3,4,4,1	Reduce density Clearance	Dead branches <=2	2
147	Linden-Littleleaf	10	Reduce density Develop branch structure Reduce weight of branch ends	Corrected lean Girdling material Included bark Storm damage	2
148	Linden-Littleleaf	12	Develop branch structure Reduce density Reduce weight of branch ends	Co-dominant stems Storm damage	2
163	Sweetgum-Common	26	Develop branch structure Repair storm damage Improve light and air penetration through crown	Overextended branch Storm damage Topping/heading cuts	2
185	Pine-Lodgepole	23	Clearance Reduce risk of branch stem and/or root failure	Broken branch(s) Dead branches >2	2
187	Maple-Freeman's	7	Clearance Reduce risk of branch stem and/or root failure Repair storm damage	Decay-branch Decay-stem Topping/heading cuts	2
192	Maple-Norway	5	Clearance Promote development of strong central stem	Co-dominant stems Crack-stem Decay-stem	2
193	Maple-Norway	7	Clearance Reduce size of crown	Crack-stem Lean Sunscald (severe)	2
199	Maple-Norway	4	Improve appearance	Crack-stem Dead branches >2 Dieback (severe)	2
210	Elm-American	14	Develop branch structure Improve form and shape	Broken branch(s) Topping/heading cuts	2

Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
				Wound-root flare	
211	Elm-American	17	Develop branch structure Improve form and shape	Co-dominant stems Included bark Topping/heading cuts	2
212	Elm-American	26	Develop branch structure Improve form and shape	Broken branch(s) Dieback (severe) Topping/heading cuts	2
214	Elm-American	22	Develop branch structure Improve form and shape	Co-dominant stems Topping/heading cuts	2
215	Elm-American	24	Develop branch structure Improve form and shape	Co-dominant stems Included bark Topping/heading cuts	2
216	Elm-American	27	Develop branch structure Improve form and shape	Broken branch(s) Co-dominant stems Included bark Topping/heading cuts	2
261	Douglas Fir	13	Clearance	Broken branch(s)	2
265	Douglas Fir (8)	7,6,10,6,7,12	Clearance	Broken branch(s)	2
306	Oak-Oregon White	24	Reduce risk of branch stem and/or root failure Reduce weight of branch ends	Broken branch(s) Hanger Storm damage Wound-branch	2
307	Oak-Oregon White	24	Clearance Reduce weight of branch ends	Overextended branch	2
324	Douglas Fir	30	Clearance Improve appearance	Broken branch(s) Sidewalk lifting-minor	2
326	Douglas Fir	6	Clearance Improve appearance	Broken branch(s)	2
371	Western Redcedar	42	Clearance	Girdling roots present (moderate)	2
390	Alder-Red (10)	10	Reduce risk of branch stem and/or root failure	...	2

Street Trees Recommended for Maintenance Pruning (Phase ASAP, 1 & 2)



Developmental Pruning

This goal typically requires routine pruning of small/young trees. Includes structural pruning to develop a strong central stem, establish proper branch spacing, and/or develop branch structure. Of the 135 trees recommended for developmental pruning, 61 trees are categorized in work Phase ASAP, 1, or 2. Some of these trees are also identified in the Maintenance Pruning list.

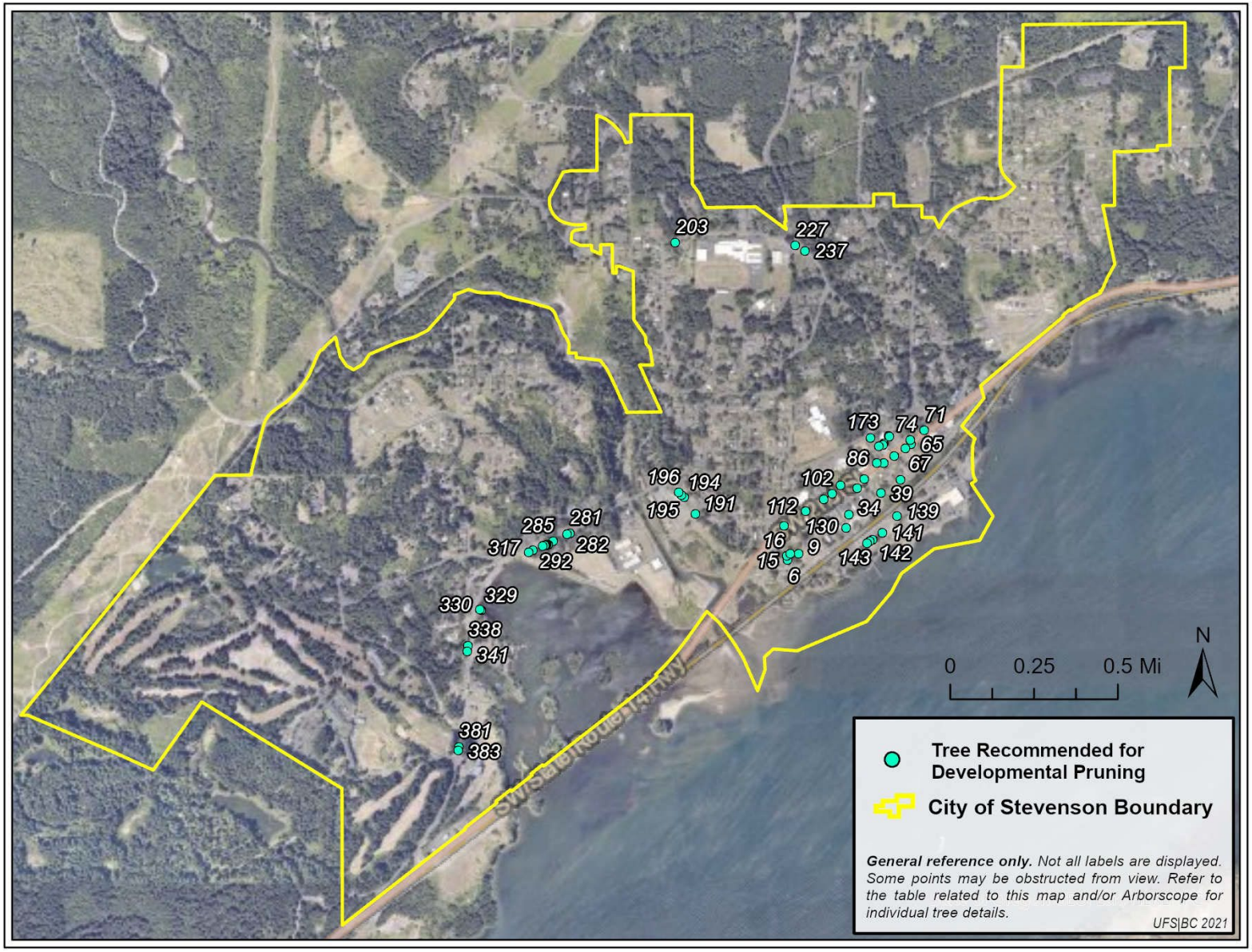
Inventoried Trees Recommended for Developmental Pruning
****Only Phases ASAP, 1 and 2 are shown***

Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
71	Ash-Green	5	Clearance	Broken branch(s) Construction damage Flush cuts Storm damage	ASAP
74	Ash-Green	11	Reduce weight of branch ends Promote development of strong central stem	Co-dominant stems Included bark Overextended branch	ASAP
112	Maple-Norway	21	Reduce weight of branch ends	Co-dominant stems Included bark Overextended branch Storm damage	ASAP
173	Maple-Vine	3,3,4,3,3,4	Clearance	Broken branch(s) Dead branches >2	ASAP
203	Elm-American	11	Develop branch structure	Broken branch(s) Storm damage Topping/heading cuts	ASAP
6	Maple-Freeman's	4	Promote development of strong central stem Clearance	Co-dominant stems Sunscald (moderate)	1
65	Maple-Freeman's	3	Promote development of strong central stem	Co-dominant stems Girdling material	1
102	Linden-Littleleaf	14	Reduce density Reduce weight of branch ends Clearance	Flush cuts Girdling material Included bark	1
109	Maple-Freeman's	7	Promote development of strong central stem Clearance	Co-dominant stems Included bark	1
177	Mountain Ash-American	4	Promote development of strong central stem	Broken branch(s) Storm damage	1
178	Maple-Norway	11	Repair storm damage Develop branch structure Promote development of strong central stem	Broken branch(s) Storm damage Wound-branch	1
180	Douglas Fir	17	Clearance	Broken branch(s) Corrected lean Uneven crown	1
183	Maple-Bigleaf	11,7	Promote development of strong central stem Clearance	Broken branch(s) Buried root collar Co-dominant stems	1
282	Oak-Oregon White (4)	12,8,19,26	Develop branch structure	Co-dominant stems Included bark	1

Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
289	Oak-Oregon White	13,11	Develop branch structure Reduce weight of branch ends	Broken branch(s) Co-dominant stems Overextended branch	1
290	Oak-Oregon White	15	Develop branch structure Reduce weight of branch ends	Co-dominant stems Included bark Overextended branch	1
291	Oak-Oregon White	12	Develop branch structure	Broken branch(s)	1
292	Oak-Oregon White	11	Develop branch structure	Broken branch(s)	1
293	Oak-Oregon White	16	Develop branch structure Reduce weight of branch ends Improve form and shape	Broken branch(s) Overextended branch Topping/heading cuts	1
294	Oak-Oregon White	16,12	Develop branch structure Reduce weight of branch ends Improve form and shape	Co-dominant stems Dead branches >2 Overextended branch Topping/heading cuts	1
296	Oak-Oregon White	18	Reduce weight of branch ends Develop branch structure	Broken branch(s) Buried root collar Overextended branch	1
317	Ash-Oregon	4,3	Promote development of strong central stem	Broken branch(s) Co-dominant stems	1
9	Maple-Norway	3	Promote development of strong central stem Clearance	Co-dominant stems	2
15	Maple-Freeman's	9	Clearance Promote development of strong central stem Develop branch structure		2
16	Maple-Norway	11	Develop branch structure Clearance	Included bark	2
34	Maple-Freeman's	2	Promote development of strong central stem		2
39	Maple-Hedge	9	Clearance Develop branch structure		2
43	Maple-Freeman's	2	Promote development of strong central stem		2
67	Maple-Freeman's	2	Develop branch structure		2
77	Maple-Norway	3	Clearance		2
80	Maple-Freeman's	2	Clearance	Broken branch(s)	2
86	Maple-Freeman's	2	Clearance Promote development of strong central stem	Sidewalk lifting-minor	2
91	Maple-Red	7	Clearance Develop branch structure	Flush cuts	2
116	Linden-Littleleaf	8	Promote development of strong central stem Develop branch structure Reduce density	Co-dominant stems Storm damage	2
130	Maple-Freeman's	2	Clearance	Good structure	2

Tree ID	Common Name	DBH	Pruning Goal	Defect(s) or Observation(s)	Work Phase
139	Maple-Freeman's	4	Promote development of strong central stem	Co-dominant stems	2
141	Maple-Freeman's	6	Promote development of strong central stem	Co-dominant stems	2
142	Maple-Freeman's	3	Promote development of strong central stem		2
143	Maple-Freeman's	3	Promote development of strong central stem		2
144	Maple-Freeman's	3	Promote development of strong central stem	Storm damage	2
145	Linden-Littleleaf	14	Reduce density Develop branch structure	Co-dominant stems Storm damage	2
167	Pine-Lodgepole	8,9	Improve form and shape	Storm damage Topping/heading cuts	2
181	Douglas Fir	15	Clearance	Broken branch(s)	2
191	Maple-Norway	5,4,2,2	Clearance	Co-dominant stems	2
194	Maple-Norway	7	Reduce weight of branch ends Clearance	Crack-stem	2
195	Maple-Norway	11	Promote development of strong central stem Reduce risk of branch stem and/or root failure Reduce size of crown	Co-dominant stems	2
196	Maple-Norway	7	Clearance	Crack-stem	2
227	Maple-Freeman's	2	Promote development of strong central stem	Co-dominant stems	2
237	Maple-Freeman's	2	Promote development of strong central stem	Co-dominant stems	2
281	Oak-Oregon White	23	Develop branch structure	Co-dominant stems Overextended branch	2
285	Douglas Fir	40	Reduce weight of branch ends Clearance	Overextended branch	2
316	Oak-Oregon White	6	Promote development of strong central stem	Co-dominant stems	2
329	Oak-Oregon White	18	Reduce weight of branch ends	Crack-stem Uneven crown	2
330	Oak-Oregon White	25,17	Reduce weight of branch ends Reduce risk of branch stem and/or root failure	Broken branch(s) Co-dominant stems Included bark	2
338	Oak-Oregon White	9	Reduce weight of branch ends	Broken branch(s) Overextended branch	2
341	Oak-Oregon White	11	Develop branch structure Improve form and shape	Broken branch(s) Topping/heading cuts	2
381	Maple-Vine	3,3,3,2	Improve form and shape Clearance	Co-dominant stems	2
383	Maple-Vine	3,2,2,2	Clearance Improve form and shape	Co-dominant stems	2

Street Trees Recommended for Developmental Pruning (Phase ASAP, 1 & 2)



Pruning Cycle Recommendations

To develop a general pruning cycle the ROW trees were divided between Phase recommendations and species size to estimate the number of trees within each category.

Tree Size	ASAP	Phase 1	Phase 2	Phase 3	Phase 4/5	No phase	Total
Small (new, young)	1	2	18	38	5	33	97
Small (mature)	0	0	2	6	3	2	13
Medium (young)	0	2	5	10	1	3	21
Medium (semi mature)	5	3	14	21	4	17	64
Medium (mature)	2	4	13	8	5	20	52
Large (semi mature)	0	5	3	2	1	15	26
Large (mature)	2	26	19	22	11	37	117

In most cases, small trees are easy to access from the ground and require only structural and clearance pruning. This requires only 10-15 minutes to prune and manage per tree. Medium and large trees in Stevenson may require a bucket truck for access and many require greater time investment for storm repair pruning. These trees may average 30-40 minutes per tree to prune, or longer. These time estimates are very general and will require adjustments for crew skill, efficiency and equipment availability. Very few trees in the ROW inventory require climbing to complete the recommended pruning.

Using these general time estimates, it would require a three (3) person crew, 10 weeks (~1,200 hours) to complete the recommended pruning in this inventory within the 5-year time frame.

Tree Size	Year 1	Year 2	Year 3	Year 4	Year 5
Small (new, young)	21		23	20	
Small (mature)				11	
Medium (young)	7			11	
Medium (semi mature)	8	14	11		20
Medium (mature)	6	13	8		5
Large (semi mature)					11
Large (mature overmature)	15	13	19	22	11
Estimated Labor hour	**1150**	**1200**	**1370**	**1135**	**1245**

Many of the trees, especially the young trees should be pruned more often than every 5 years. The downtown street trees should be lightly pruned for clearance and structure often until they are established. These 100 trees on 1st and 2nd avenue require 7 days (1 week) for a 3-person crew to maintain on 2 year pruning cycle with one street pruned, and the second street monitored annually. This estimate is only for pruning and does not account for planting, watering, fertilizing or other maintenance required to maintain the business district trees.

Incorporating pruning into existing public works storm response is highly recommended. Proper pruning during the final clean up phases will decrease the negative storm damage impacts to trees and will decrease the investment required for future pruning repair, thinning, and reduction cuts similar to what we found in our inventory. After initial emergency response is complete, proper pruning cuts should be made during the cleanup phases. A quick training and review of proper pruning should be provided to all sawyers prior to storm season annually to assist staff with skill development.

Structural Support Systems

Structural support systems can reduce risk of tree or tree part(s) failure by limiting movement of stems or branches in certain situations. The most common structural defect with a high risk of failure is a codominant stem. Another common condition with a high risk of failure are long heavy or "overextended branches that cannot be reduced through pruning. All structural support systems should comply with the current the ANSI A300 – Part 3 standard for supplemental support systems. The system(s) used should be designed and installed by an ISA Certified Arborist® with experience in support system design, installation and management.

Cabling

Cables restrict the distance that branches can move in relation to each other. Installed across a weak union, they will greatly reduce the risk of failure. Installed on over-extended branches, they can be used to support the branch. In some instances, a lateral branch may be secured to the central leader using a cabling system to support the weight of the branch.

Photo 30, 31 Cabling systems in trees decrease the wind load and movement of large branches.

Bracing

Bracing is the process of securing the union of two co-dominant stems or a branch that has split using high strength steel rods. When bracing trees, at least one cable is usually installed for added support. In cases where it is impractical to install cables, rods can be used alone, but the strength gain will be less than with a cable system. Bracing may also be used to reinforce trees that have a partial failure and are likely to benefit from bracing.

Photo 32, 33. Bracing the trunk of this tree will decrease the risk of failure. These braces should be supplemented with cables higher in the canopy to reduce movement. Illustrations, PowerPoints or photos by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida." http://hort.ufl.edu/woody

Guying

Guying is the process of anchoring a tree's stem to the ground or another immovable object to reduce the likelihood of root failure. Guying can be temporary or permanent and is most often used for establishing a tree in the landscape.

Propping

Propping is the process of using rigid structures that are built on or into the ground to help support the trunk or branch(s) that are oriented near the ground in a horizontal position to reduce the likelihood of failure from the weight or defect of the tree part being supported.

Photo 34,35. Angle Prop system on a leaning tree and an "I" prop showing anchoring and height adjustment

Inventoried Trees with Structural Support System Recommendations

Tree ID	Common Name	DBH	Structural Support	Tree & Shrub Work Phase
74	Ash-Green	11	Cable and Brace	ASAP
166	Walnut-Persian	26	Prop	ASAP
88	Maple-Freeman's	14	Brace	1
89	Maple-Freeman's	13	Cable and Brace	1
90	Maple-Freeman's	12	Cable and Brace	1
98	Linden-Littleleaf	12	Cable	1
114	Maple-Norway	24	Cable and Brace	1
117	Linden-Littleleaf	10	Cable and Brace	1
168	Plum-Purple Leaf	36	Prop	1
172	Falsecypress-Nootka	19,12,15,16,19	Cable	1
198	Maple-Norway	11	Cable	3

Photo36, 37. Tree #98 and 114 are mature and cannot be easily pruned for correction. Both canopies can be cabled to prevent future snow, ice and storm damage.

Inventoried Trees with Structural Support System Recommendations

Historic Inventories

2009 Inventory

The 2009 downtown street tree inventory consisted of 116 trees. These trees were located, measured and assessed in this 2021 tree inventory. Only 44 of the original trees remain in 2021. Most trees were replanted with a new tree, and some planting locations were either empty or no longer existed.

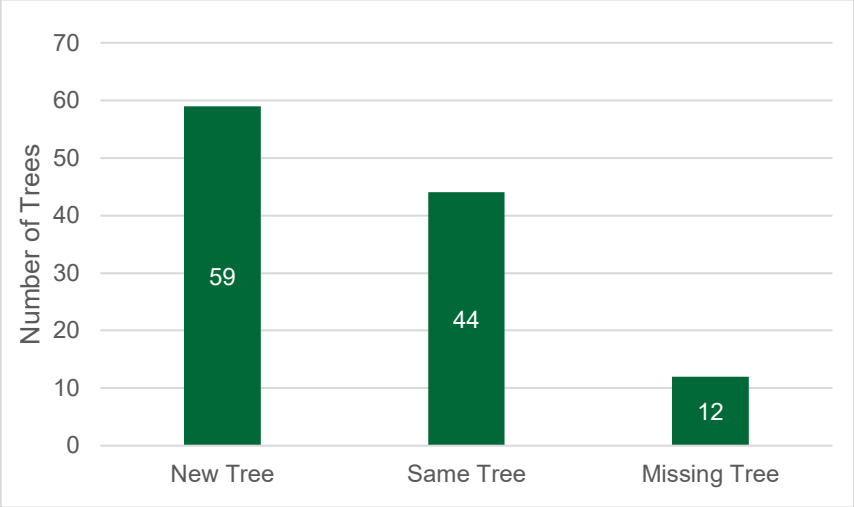


Figure 7. Tree presence or absence between the 2009 to the 2021 inventory.

Trees sizes were not measured with decimal precision in 2009 so the assessment of growth is very general. Despite this lack of precision, we can still conclude that the losses and replacements of over half the trees have decreased the average tree size in the downtown area. These size decreases will directly corelate with a decrease in canopy coverage and the value of trees within the business district.

Of the 44 trees that remain in the business district, trees in planter pits have grown only about 4 inches over the last decade while those located in planter strips or landscape beds with larger soil volume and root grow space increased at a greater rate of almost 7 inches on average.

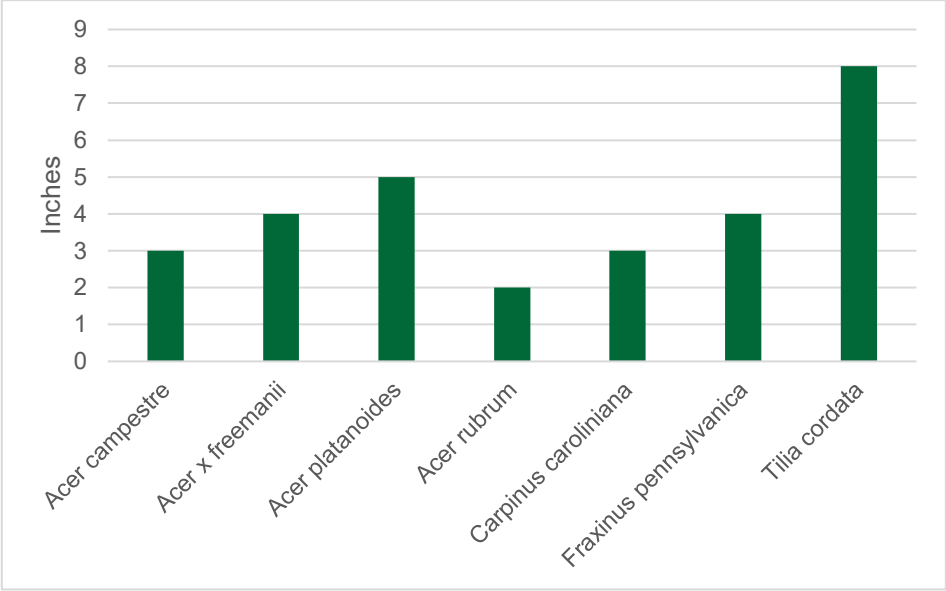


Figure 8. Average growth of downtown street tree species between 2009 to 2021

Based on this analysis the following recommendations are provided to improve the business district street tree landscape:

- Increase soil volume and quality in tree planters to improve tree growth.
- Prioritize planting of empty planter pits and high priority tree removals.
- Use the included street tree list to increase diversity in the downtown district. This may require a design and plan.
- Use similar metrics and precision as those provided in the 2021 inventory to provide greater detail for the next inventory.

1984 inventory

The 1984 inventory contains 796 large trees all across the City of Stevenson. The inventory was digitized from the paper files by city personal and focus areas overlapping the 2021 inventory were highlighted for review. Only 59 trees from the 1984 inventory were managed by the city of Stevenson and 152 by the school district. The remaining trees in the inventory are located on Port of Skamania property, the county fairgrounds, and other county properties.

About half of the city trees were relocated and measured (26 of the 59) in the Stevenson ROW. There are some anomalies in the 1984 data that need to be resolved to improve the data analysis. If the 1984 tree diameters were measured in inches, then the trees did not grow much in 30 years (average of 10 inches) some tree even decreased in size. This could be attributed to loss of stems, or measurement error. A low growth rate is not uncommon in challenging site conditions and with larger diameter older trees. Alternatively, if the 1984 tree diameters were measured in centimeters, then the trees grew fast (17 inches average) over the 30-year time span. In this case most of the trees would then have been small (4 inch diameter) at the time of the 1984 inventory. This would mean most of the trees are likely less than 40 years old. Referencing institutional knowledge on historic tree planting, or an annual ring core analysis can provide an answer.

Photo 38. The red oak on the elementary school is one of the largest trees in this inventory.

Tree numbers 327 (Gary oak near rock creek park), 174 (library oak), 166 (downtown walnut) and #884 (Elementary school red oak) were larger than the other inventoried trees both back in 1984 and today. Tree #884 is the largest diameter tree measuring 56.8 inches diameter. This is very large If the trees were mostly new and small in the 1984 inventory, then these larger trees would likely not be much older than 70 years if we extrapolated the rate of growth back in time. A tree core analysis, historic photographs, or documentation on when Groper Park and rock creek drive were planted can help answer these questions and improve the data interpretation.

The 75 holly trees were noted as having multiple stems but were not measured in 1984. 35 of these hollies are still standing multi-stem trees averaging 10 inches cumulative diameter. The remaining holly have been cut and are re-growing again as multi stem trees.

Final Recommendations and Next Steps

This document, and the associated online inventory will only remain up to date if an advocate is dedicated to managing it. Without updates, this inventory will likely lose its usefulness after 3-5 years. It is not unusual for a small city to have very limited resources to conduct the recommended work in the report. The following minimum recommendations are provided to maximize this inventory investment. These recommendations are the same for the School District trees as well. The ArborScope database can be used to pull the lists of trees to match what was provided in this report. We highly recommended a contractor conduct most of the work required this year outside of storm response and tree removals.

- Develop a process to communicate field work to the database manager. A maintenance data entry form will not be used appropriately until a tree program is established. The minimum information to include for database updates are; Date, Tree tag number (or tree location description) and Action taken such as removal, prune, mulch.
- Documentation is especially important during storm response. Use tree value lost for disaster response relief. Tree values should have estimated staff costs for clean up and replanting added to final loss.
- Continue to train staff. Conduct a quick training for staff prior to storm season to improve tree cuts during the cleanup phases of storm response. Training should focus on minimizing work, and to reduce topping and heading cuts. This will improve tree structure and reduce future storm impacts over time.
- Manage high-risk trees and the Phase 1 and ASAP tree removals before fall/ winter storm season.
- Manage the Phase 1 and ASAP 1 Pruning Priorities before the next storm season. These are safety recommendations and will reduce storm impacts and response.
- Contract Root collar excavations and any risk assessments for trees of high value.
- Invest in high value trees such as the walnut downtown and the oak at the library. After risk management decisions are made, and crowns are excavated, wood chip mulch application over the root zone is the cheapest and most effective action to improve long term tree health.
- Plant just five trees per year in currently empty spots to continue street tree growth. Planting just a little at a time will increase the cumulative tree canopy effect. Planting and replacing more is recommended if possible.

This inventory includes just a piece of the urban forest resource within the City of Stevenson. Many old large trees will take multiple generations to replace if removed. Stevenson has many environmental challenges that make tree establishment and retention difficult. With training, management, partnership investment, and community education, this urban forest resource will grow and provide great value to the citizens in the decades to come.

Appendix

City of Stevenson Recommended Street Tree List

The intent of the Street Tree List is to provide a diverse, aesthetically pleasing environment for the residents and business owners in the City of Stevenson. One of the ways the City can ensure this is met is to specify the types of street trees that may be installed and provide guidance for quality plant stock and installation. This is not an exclusive list, some trees identified in the inventory were not retained on the street tree list to improve diversity. These trees and others not on the list may continue to work well with the understanding of their limitations. If anyone wishes to plant tree(s) different than those found on these lists, it is recommended to have an assessment from a local arborist verifying that the alternative tree is appropriate for the location. This list should be periodically updated as new tree varieties become available.

Tree Size and Quality

Street trees should be a minimum 2" caliper. The lowest branches of the crown shall be at least 5 feet above grade. All trees shall meet or exceed the most recent American Standards for Nursery Stock (ANSI Z60.1). Trees shall have a central leader or maintain the proper spreading form for that species. They shall exhibit vigorous leaf, twig or bud growth, and be healthy color. The trunks and limbs shall be free of damage, deadwood, and disease. The root systems shall meet or exceed the standards for their size and shall be free of circling or dead roots.

Planting Space Width

- Small Trees for planter strips no less than 4-foot wide
- Medium Trees for no less than 6-foot-wide planting strip.
- Large Trees for no less than 8-foot-wide planting strip.

Soil and Drainage

Street trees utilize the entire planting strip (and more) to grow to a reasonable size. Recent studies indicate that for a tree to grow a functional large canopy, it needs a minimum soil area that measures 20 feet x 20 feet x 3 feet deep. Provide access to as much soil volume as possible for trees for longer living, healthier trees Low soil volume will result in root development that fills the soil area in 5 or 10 years like a root bound house plant, this leads to decline in tree health and conflicts with infrastructure.

The entire street tree planting strip should consist of un-compacted native or amended topsoil. The planter strips should be naturally well draining or have sub-surface drainage installed ~36-inches below grade to promote deep root growth. Soil access may include providing root paths or growing space under sidewalks.

Due to the low soil volume, downtown street tree planter pits should be altered to improve soil access or managed on a 15 to 20-year rotation. Medium size narrow forms may be used in this manner.

Root Barriers

Root barriers are highly recommended. Root barriers do not guarantee protection from surface damage, but when properly installed they have been shown to delay lifting of sidewalks and curbs from roots for many years. Root barrier installation is most effective and beneficial when installed tightly along the edge of a sidewalk and/or curb to protect infrastructure and maximize root growing space. Do not place the root barrier around the root ball at planting. This severely restricts the growth of the tree and the tree will not stabilize. Root barrier panels or similar linear sheet material should be 24-inch depth for trees planted less than 3 feet from pavement edges. Heavy gauge non-woven landscape fabric or bio barriers can be used in planter pits to maximize protection and root growing area. All root barrier products should be installed to manufacture specifications.

Tree Installation

All wrapping materials shall be removed from the root ball before planting. The root crown of the tree shall be placed at 1-inch above grade to ensure the flare is not buried. In lawn areas, a minimum 3 foot rectangular or circular distance from the trunk should be free of grass and covered with 3-inches of arborist woodchips or equivalent woody mulch.
To reduce sunscald damage, ensure the original north facing direction of the tree is marked in the nursery and place trees in the same orientation when planting. Sensitive trees such as cherries and maples, should be planted in shadier areas . Ensure all trees are mulched and watered well before winter frosts and before summer drought. Wrap the bark of young and sensitive trees in November prior to the first hard frost and remove in April. Refrain from pruning branches in the summer when the newly exposed bark cannot adapt to sun and heat.

Watering

Immediate and regular watering of newly planted trees is critical to healthy establishment. Newly planted trees should be thoroughly watered right after planting and then once per week through the first summer until October and water once per month the second growing season. Tree watering bags such as Treegator ® are excellent to maintain regular and focused water application to the root zone. Low profile watering "doughnuts" or "diapers" are recommended where sunscald is an issue.

City of Stevenson Recommended Street Tree List

This street tree list represents a wide diversity of tree species, growth habits, form, color, and other characteristics. A wide variety of trees species should be planted to expand the benefits that trees provide, as well as reduce disease and insect challenges associated with street tree monocultures. Most tree species have a wide range of varieties and cultivars that are very different from each other. Specific varieties and cultivars were selected for this list to meet both heat and drought tolerance with the ability to withstand snow, ice, and wind. Sunscald, disease resistance and salt tolerance were also considered.

To increase tree canopy in the City, select the largest tree varieties that fit the available growing space above and below ground. Some trees on this list may not be the best fit for some locations due to microsite conditions. New tree varieties are becoming available every year, as such, this list should be reviewed and updated periodically.

The following lists of street trees are organized into these categories:

- **Small** street trees to 30' height with a spreading habit or narrow habit.
  These small trees can be suitable under some overhead utility lines
- **Medium 'decurrent'** street trees to 50' tall with a spreading habit.
- **Medium 'excurrent'** street trees to 50' tall with a narrow habit.
  These trees may be suitable in business district tree planter pits.
- **Large decurrent** street trees over 50' with a spreading habit.
- **Conifer** trees. Heights are noted. Larger trees should be planted with exceptional root and canopy clearance.
  (*) Trees with form that may be a good living holiday tree.
  (NH) Narrow habit is a relative term, some of the listed varieties widen as they age,
  (LS) Trees better suited for Park Landscapes or open area
  (SS) Trees with higher-than-average susceptibility to Sunscald.

SMALL STREET TREES TO 30' SPREADING HABIT**

Trees suitable for under power lines

- Crabapple varieties (Malus spp):
  Golden Raindrops® (SS), Tschonoskii *(NH)*
- Oriental Cherry (*Prunus serrulate)*
  'Kwanzan', 'Royal Burgandy' (SS)
- Snow Goose Cherry, (*Prunus '*Snow Goose')
  (NH)(SS)
- American Hornbeam (*Carpinus caroliniana*)
- Japanese Hornbeam (*Carpinus japonica)*
- Paperbark Maple (*Acer griseum*)
- Sugar Maple, (*Acer saccharum):*
  'Sugar Cone'(NH), Apollo® ('Barrett Cole') (NH)
- Trident Maple (*Acer buergerianun*)
- Persian Spire Parrotia, (*Parrotia persica* cv.
  Persian Spire' (NH)
- Western Redbud (*Cercis occidentalis*) (SS)
- Chinese Kousa Dogwood (*Cornus kousa chinensis*): (SS)
  Venus®, Starlight®
- Cornielien Cherry (Cornus Mas) (SS)

MEDIUM STREET TREES TO 50' SPREADING HABIT**

- Forest Green® Hungarian Oak, (*Quercus frianetto* 'Schmidt')
- Canada Red Chokecherry (*Prunus virginiana* 'Canada Red')
- Japanese Zelkova (*Zelkova serrata)*
  Green Vase®, Village Green™
- Korean mountain ash (*Sorbus alnifolia*) (SS)
- Sour Gum or Black Tupelo (*Nyssa sylvatica*)
  many cultivars available, Only use cultivars
- Golden rain tree (*Koelreuteria paniculate*)
- American Hophornbeam (Ostrya virginiana)
- Sugar maple (Acer saccharum) cultivars: (SS)
  'Legacy', 'Bonfire', 'Green mountain'
- Norway maple crosses (*Acer truncatum* x *A. platanoides):* Urban Sunset®, Norwegian Sunset® ('Keithsform'), Pacific Sunset ('Warrenred')
- Elms (*Ulmus* spp.), medium maturing height
  Dutch Elm disease resistant varieties include:
  Emerald Sunshine® 'Frontier' (purple fall color)
  'New Horizon', Triumph™
- Rocky Mountain Maple (*Acer glabrum*) Native

City of Stevenson Recommended Street Tree List

MEDIUM STREET TREES TO 50'
NARROW HABIT (NH)

- Red maple cultivars (*Acer rubrum) (SS)*
  'Karpick', 'Armstrong', 'Red Rocket'
- Norway Maple (*Acer platanoides*) cultivars:
  'Columnar', Emerald Queen™, Easy Street™
- Persian Ironwood cultivars (*Parrotia persica*)
  Ruby Vase®, Venessa®, Golden Bell Tower™
- Emerald Sentinal® Sweetgum (*Liquidambar styaciflua* 'Clydesform')
- Ginkgo (Ginkgo biloba) male cultivars:
  'Fastigiata', Golden Colonnade®, 'Maygar', Princeton Sentry®
- Musashino Zelkova (*Zelkova serrata* 'Musashino')
- European hornbeam (*Carpinus betulus*)
  'Frans fontaine', 'Fastigiata'
- Dawyck Beech (*Fagus syvlatica* 'Dawyck')
- Green Pillar Pin Oak, (*Quercus palustris* 'Pringreen')
- English Oak (*Quercus robur*) crosses
  Crimson Spire™ Oak (*Quercus robur* x *Qalba* 'Crimschmidt') (retains brown leaves in winter)
  Streetspire® Oak, (*Quercus robur* x *alba* 'JFS-QW1QX') (loses leaves in winter)
  Skinny Genes® Oak (Quercus robur x alba JFS-KW2QX)
  Kindrid Spirit® Oak, (*Quercus robur* x *bicolor* 'Nadler')
  Regal Prince® Oak (*Quercus robur* x *bicolor*'Long')

LARGE STREET TREES > 50'
SPREADING HABIT**

- English Oak (*Quercus robur*)
- White Oak (Quercus alba)
- Red Oak (*Quercus rubra*)
- Scarlet Oak (Quercus coccinea)
- Freemanii maples, (*Acer* x *freemanii*) cultivars:
  Autumn Blaze®, Autumn Fantasy®
  Celebration®, 'Marmo'
- London Plane Tree (*Platanus* x *acerifolia)* cultivars:
  Exclamation!™, Ovation®
- European Beech (*Fagus sylvatica*)
- Elm (*Ulmus* spp.) any Dutch Elm Disease Resistant variety including:
  Accolade® (*Ulmus japonica x wilsoniana),* 'Morton, 'Pioneer', 'Princeton'
- Silver Linden (*Tilia tomentosa*) and cultivars: (SS)
  Green Mountain®, 'Silver Lining', 'Sterling', 'Szeleste'
- Espresso™ Kentucky Coffee Tree (*Gymnocladus dioicus* 'Espresso-JFS')
- Hackberry (Celtis occidentalis – Hackberry
- Dawn Redwood (*Metasequoia glyptostroboides*)
- Ginkgo (Ginkgo biloba) male cultivars

EVERGREEN CONIFER TREES
Typical Landscape size noted.

- Rocky mountain juniper (*Juniperus scopulorum 'wichita blue'*) 20'
  (*) slow growing, great form, needles are sharp.
- Chinese Juniper (*Juniperus chinensis 'hollywood'*) 15'
- English yew (*Taxus baccata*) 15'
- Limber pine (*Pinus flexilis*) 30'
- Japanese White Pine (*Pinus parviflora*) 40'
- Mountain Hemlock (*Tsuga mertensiana*) 50'
  (*) Slow growing.
- Red pine (*Pinus resinosa*) 50'
- Norway spruce (*Picea abies*) 60 (*)
- Blue giant sequoia (*Sequoiadendron giganteum*
- *"Glaucum'*) 70'
  (*) slow growing, great form, needles are sharp
- Noble fir (*Abies procera*) 80'
  (*) great form susceptible to browsing
- Western red cedar (*Thuja plicata*) 80'
- Ponderosa pine (*Pinus ponderosa*) 120'
- Douglas fir (*Pseudotsuga menziesii)*120'

Street Tree Inventory Recommended Projects

Project Title	Location	Urban Forestry Goal	Summary
Highway 14 City Gateway landscape Improvements	East and West side of town where Highway 14 intersects with 1st street. And at the entrance to Rock Creek Road.	Improve the welcoming visual aesthetic of the City Gateway planter islands. Integrate sustainable landscape techniques to decrease mowing and scheduled maintenance. Integrate traffic calming design to slow traffic into the city.	The landscape islands that include the Welcome to Stevenson signs will support large landscape trees. Soil improvements, drainage and irrigation will require maintenance. Tree 126 and 127 on the west side should be replaced and between 3 to 5 medium to large trees that provide year round interest, should be planted behind signs to accentuate the sign landscapes and back of curb along road sides to provide traffic calming.
Stevenson Elementary and Vancouver Ave landscape improvement.	Vancouver ave above retaining wall on south side of Stevenson Elementary School	Improve the aesthetic of this highly visual public area, improve safety, decrease maintenance above wall and power line maintenance pruning. Remove invasive species. Provide Powerline tree examples.	Remove and replace tree # 867-879 including the Holly above the wall. Holly and Blackberry may require chemical management. Design linear low maintenance CPTED (Crime Prevention Through Environmental Design) landscape with Powerline friendly trees selected to representing school colors.
Winter and Holiday Tree Care and Lighting Improvements.	Downtown business corridor 2nd Ave and side streets	Provide consistent, easily maintainable lighting for all trees in the downtown corridor that decreases impacts to city trees.	Remove lights and cords strangling the trunks of all trees. Install electrical outlets and landscape lights at the base of all trees and in the canopy of select larger trees that can have bulbs changed for different seasons.
Downtown street tree improvements	Downtown business corridor	Replace lost canopy potential since 2009 and improve future tree canopy through the downtown area.	Repair and replant up to 13 missing trees from the 2009 inventory and replace 13 poor condition trees. Install up to 24 trees behind the sidewalk on the south side of first street East of Leavens Street and Back of sidewalk along Columbia Street from first to Vancouver and back of sidewalk along Leavens between first and second. All back of sidewalk trees should be installed in partnership with adjacent businesses.
Power Line Friendly Tree Planting	Rock Creek Dr. East of the fair ground gravel parking area.	Decrease long-term pruning maintenance, improve street tree condition and provide an educational demonstration for Power line Friendly Trees.	Replace the Norway maple trees #190-200 on Rock Creek Drive with power line appropriate trees.

Project Title	Location	Urban Forestry Goal	Summary
Rock Cove edge enhancements	SW Rock Creek Drive from Rock Creek Park to south Atwell Road intersection.	Increase native species diversity, shade and habitat along water edge. Improve runoff interception, decrease maintenance along road edge, shade Mill Pond Trail.	20 - 30 native trees can be installed along the lake near tree # 318 to 333 to create a native buffer between the cove and the road. Focused viewpoints can be maintained for Mill Pond trail users and neighbors.
Rock Creek Riparian restoration.	Rock Creek adjacent to Rock Creek Park Road from Rock Creek Road to Mill Pond Bridge.	Increase native species diversity, shade and habitat along water edge. Improve runoff interception, improve infrastructure along rock creek park road.	Partner with county to improve riparian buffer for improved Storm water runoff management. Trees 243-249 are included in this area. Project may include invasive species management, infrastructure improvements and supplemental planting of a diverse over and understory. Tree placement should complement existing infrastructure and supplement existing trees.
Stevenson Historic Tree Tour and Improvements	Full city	Promote large and Historic tree retention through education, and public incentives	Stevenson has a number of exceptional and unique trees along the ROW, and on multiple public and private properties. The largest trees inventoried are over 100 years old and were planted many decades before the city was established. These trees require gentle care to maintain safety and health. These trees can have age estimates conducted; they can be protected with incentives for property owners to provide proper maintenance. Seeds and sprouts can be collected and planted to retain the historic legacy within Stevenson and A tree tour can be developed to educate citizens and promote tourists to explore the city. Partnerships with the County and the Port should be incorporated to monitor and value the remaining large trees not included in the 2021 inventory.
Horse shoe Park Renovation	Gropper Park Loop	Improve Park accessibility and use, decrease maintenance impacts to existing trees.	Improve growing conditions for existing elms through soil renovations and mulch. Replant 5 dead or declining elms with new large tree species. Plant power line friendly trees across road. Decrease maintenance mowing. Provide picnic tables, and passive park amenities (horseshoe, bocci ball court etc.)

2021 Street Tree Inventory

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
1	Maple-Freeman's	**Acer**	x **freemanii**	6	Medium	Semi-mature	Fair	4	$344.91
2	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$125.15
3	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	...	$32.95
4	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$99.77
5	Maple-Freeman's	**Acer**	x **freemanii**	4	Medium	Young	Good	3	$195.55
6	Maple-Freeman's	**Acer**	x **freemanii**	4	Medium	Young	Fair	1	$139.68
7	Maple-Norway	**Acer**	**platanoides**	11	Large	Mature	Fair	3	$1,424.78
8	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	...	$45.61
9	Maple-Norway	**Acer**	**platanoides**	3	Small	Young	Fair	2	$117.40
10	Maple-Norway	**Acer**	**platanoides**	2	Small	Young	Fair	3	$59.13
11	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	...	$45.61
12	Maple-Freeman's	**Acer**	x **freemanii**	4	Medium	Young	Fair	3	$173.43
13	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	3	$25.65
14	Maple-Freeman's	**Acer**	x **freemanii**	9	Medium	Semi-mature	Fair	3	$823.80
15	Maple-Freeman's	**Acer**	x **freemanii**	9	Medium	Semi-mature	Fair	2	$903.16
16	Maple-Norway	**Acer**	**platanoides**	11	Medium	Semi-mature	Fair	2	$1,505.20
17	Maple-Norway	**Acer**	**platanoides**	10	Medium	Semi-mature	Fair	3	$1,149.46
18	Maple-Norway	**Acer**	**platanoides**	10	Medium	Semi-mature	Fair	3	$1,102.54
19	Maple-Norway	**Acer**	**platanoides**	10	Medium	Semi-mature	Fair	3	$1,173.28
20	Maple-Norway	**Acer**	**platanoides**	11	Medium	Semi-mature	Fair	3	$1,372.65
21	Maple-Norway	**Acer**	**platanoides**	9	Large	Mature	Fair	3	$1,034.01
22	Hornbeam-American	**Carpinus**	**caroliniana**	8	Large	Mature	Poor	1	$531.66
23	Maple-Freeman's	**Acer**	x **freemanii**	10	Large	Mature	Poor	...	$670.51
24	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	...	$45.61
25	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	...	$77.26
26	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$77.26

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
27	Maple-Norway	**Acer**	**platanoides**	10,2	Medium	Mature	Fair	2	$1,208.58
28	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	3	$45.61
29	Maple-Tatarian	**Acer**	**tataricum**	5	Medium	Young	Fair	3	$230.89
30	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$107.91
31	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	...	$99.77
32	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	...	$91.95
33	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	...	$125.15
34	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	2	$84.44
35	Maple-Norway	**Acer**	**platanoides**	12	Medium	Semi-mature	Poor	ASAP	$1,020.62
36	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$84.44
37	Maple-Red	**Acer**	**rubrum**	7	Medium	Semi-mature	Fair	3	$425.72
38	Maple-Freeman's	**Acer**	x **freemanii**	6	Medium	Semi-mature	Fair	3	$424.27
39	Maple-Hedge	**Acer**	**campestre**	9	Medium	Semi-mature	Good	2	$1,577.87
40	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$91.95
41	Maple-Freeman's	**Acer**	x **freemanii**	6	Medium	Semi-mature	Good	3	$482.88
42	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$91.95
43	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	2	$70.40
44	Maple-Red	**Acer**	**rubrum**	6	Medium	Semi-mature	Good	3	$560.44
45	Maple-Freeman's	**Acer**	x **freemanii**	1	Small	New planting	Good	3	$22.99
46	Maple-Red	**Acer**	**rubrum**	5	Medium	Semi-mature	Good	3	$398.98
47	Maple-Red	**Acer**	**rubrum**	6	Medium	Semi-mature	Fair	3	$295.64
48	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	3	$50.28
49	Maple-Red	**Acer**	**rubrum**	5	Medium	Young	Fair	3	$254.20
50	Maple-Freeman's	**Acer**	x **freemanii**	12	Medium	Semi-mature	Fair	3	$1,641.91
51	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$63.85
52	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$63.85
53	Maple-Norway	**Acer**	**platanoides**	2	Small	Young	Good	3	$82.78
54	Maple-Norway	**Acer**	**platanoides**	3	Small	Young	Good	3	$106.89
55	Maple-Norway	**Acer**	**platanoides**	3	Small	Young	Good	3	$106.89
56	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$99.77

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
57	Maple-Tatarian	**Acer**	**tataricum**	5	Small	Young	Good	3	$323.25
58	Maple-Norway	**Acer**	**platanoides**	2	Small	Young	Good	3	$98.51
59	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	...	$77.26
60	Dogwood-Kousa	**Cornus**	**kousa**	2	Small	Young	Good	...	$64.65
61	Incense Cedar	**Calocedrus**	**decurrens**	13,11,4,12	Large	Mature	Fair	...	$9,216.02
62	Incense Cedar	**Calocedrus**	**decurrens**	25	Large	Mature	Fair	...	$8,799.59
63	Ash-Green	**Fraxinus**	**pennsylvanica**	7	Medium	Mature	Fair	2	$548.87
64	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Fair	3	$89.39
65	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	1	$125.15
66	Ash-Green	**Fraxinus**	**pennsylvanica**	9	Medium	Mature	Fair	3	$876.77
67	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	2	$45.61
68	Linden-Littleleaf	**Tilia**	**cordata**	11	Large	Mature	Fair	2	$1,398.67
69	Ash-Green	**Fraxinus**	**pennsylvanica**	6	Medium	Semi-mature	Poor	2	$192.17
70	Ash-Green	**Fraxinus**	**pennsylvanica**	6	Medium	Semi-mature	Poor	ASAP	$236.38
71	Ash-Green	**Fraxinus**	**pennsylvanica**	5	Medium	Semi-mature	Poor	ASAP	$165.23
72	Ash-Green	**Fraxinus**	**pennsylvanica**	12	Medium	Semi-mature	Fair	3	$1,400.22
73	Ash-Green	**Fraxinus**	**pennsylvanica**	11	Medium	Semi-mature	Fair	3	$1,328.12
74	Ash-Green	**Fraxinus**	**pennsylvanica**	11	Medium	Semi-mature	Poor	ASAP	$727.31
75	Douglas Fir	**Pseudotsuga**	**menziesii**	37	Large	Mature	Good	3	$30,384.95
76	Maple-Norway	**Acer**	**platanoides**	18	Large	Mature	Good	2	$7,931.36
77	Maple-Norway	**Acer**	**platanoides**	3	Medium	Young	Good	2	$115.62
78	Maple-Norway	**Acer**	**platanoides**	2	Small	Young	Good	3	$75.43
79	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$77.26
80	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	2	$63.85
81	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	...	$57.63
82	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	4	$63.85
83	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	3	$55.19
84	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	4	$25.65
85	Maple-Freeman's	**Acer**	x **freemanii**	3	Medium	Semi-mature	Good	3	$99.77
86	Maple-Freeman's	**Acer**	x **freemanii**	2	Medium	Young	Good	2	$77.26
87	Maple-Freeman's	**Acer**	x **freemanii**	9	Medium	Semi-mature	Fair	...	$944.21

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
88	Maple-Freeman's	**Acer**	x **freemanii**	14	Large	Semi-mature	Fair	1	$2,266.86
89	Maple-Freeman's	**Acer**	x **freemanii**	13	Large	Semi-mature	Poor	1	$1,156.18
90	Maple-Freeman's	**Acer**	x **freemanii**	12	Large	Semi-mature	Fair	1	$1,641.91
91	Maple-Red	**Acer**	**rubrum**	7	Medium	Semi-mature	Fair	2	$438.72
92	Maple-Freeman's	**Acer**	x **freemanii**	7	Medium	Young	Fair	3	$511.84
93	Maple-Freeman's	**Acer**	x **freemanii**	8	Large	Mature	Fair	2	$482.72
94	Maple-Norway	**Acer**	**platanoides**	4	Medium	Young	Good	3	$125.71
95	Maple-Norway	**Acer**	**platanoides**	12	Medium	Mature	Good	2	$1,477.72
96	Maple-Red	**Acer**	**rubrum**	11	Large	Mature	Fair	2	$683.89
97	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$104.30
98	Linden-Littleleaf	**Tilia**	**cordata**	12	Large	Mature	Poor	1	$1,577.87
99	Linden-Littleleaf	**Tilia**	**cordata**	12	Medium	Mature	Fair	2	$2,545.64
100	Maple-Freeman's	**Acer**	x **freemanii**	14	Large	Semi-mature	Poor	ASAP	$1,340.89
101	Maple-Freeman's	**Acer**	x **freemanii**	14	Large	Semi-mature	Poor	...	$1,379.47
102	Linden-Littleleaf	**Tilia**	**cordata**	14	Large	Semi-mature	Fair	1	$2,226.47
103	Linden-Littleleaf	**Tilia**	**cordata**	13	Large	Semi-mature	Fair	1	$2,001.56
104	Linden-Littleleaf	**Tilia**	**cordata**	14	Large	Mature	Fair	2	$3,546.52
105	Linden-Littleleaf	**Tilia**	**cordata**	14	Large	Mature	Fair	2	$3,352.22
106	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	3	$50.28
107	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Fair	3	$55.19
108	Linden-Littleleaf	**Tilia**	**cordata**	13	Large	Semi-mature	Fair	1	$1,193.98
109	Maple-Freeman's	**Acer**	x **freemanii**	7	Medium	Semi-mature	Fair	1	$527.23
110	Linden-Littleleaf	**Tilia**	**cordata**	12	Medium	Semi-mature	Fair	2	$1,615.64
111	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	3	$91.95
112	Maple-Norway	**Acer**	**platanoides**	21	Large	Mature	Poor	ASAP	$3,080.41
113	Maple-Norway	**Acer**	**platanoides**	2	Small	Young	Good	3	$98.51
114	Maple-Norway	**Acer**	**platanoides**	24	Large	Over-mature	Poor	1	$3,901.65
115	Maple-Norway	**Acer**	**platanoides**	20	Large	Mature	Poor	1	$3,050.43

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
116	Linden-Littleleaf	**Tilia**	**cordata**	8	Medium	Semi-mature	Fair	2	$821.44
117	Linden-Littleleaf	**Tilia**	**cordata**	10	Medium	Mature	Poor	1	$390.67
118	Poplar-Aspen	**Populus**	**tremuloides**	9	Medium	Semi-mature	Dead	1	...
119	Poplar-Aspen	**Populus**	**tremuloides**	9	Medium	Semi-mature	Dead	1	...
120	Poplar-Aspen	**Populus**	**tremuloides**	11	Medium	Semi-mature	Dead	2	...
121	Poplar-Aspen	**Populus**	**tremuloides**	11	Medium	Semi-mature	Fair	3	$745.96
122	Poplar-Aspen	**Populus**	**tremuloides**	10	Large	Semi-mature	Fair	3	$664.65
123	Poplar-Aspen	**Populus**	**tremuloides**	12	Medium	Mature	Good	2	$1,688.88
124	Maple-Freeman's	**Acer**	x **freemanii**	5	Medium	Young	Poor	2	$119.69
125	Maple-Tatarian	**Acer**	**tataricum**	3	Small	Young	Poor	2	$70.05
126	Maple-Vine	**Acer**	**circinatum**	3,4,4,1	Small	Semi-mature	Fair	2	$511.63
127	Maple-Vine	**Acer**	**circinatum**	5,3,2,4,4,1	Small	Mature	Poor	3	$538.16
128	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Good	4	$51.72
129	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Good	...	$46.13
130	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Good	2	$51.72
131	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Good	...	$46.13
132	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$184.53
133	Maple-Freeman's	**Acer**	x **freemanii**	4	Small	Young	Good	3	$206.88
134	Maple-Freeman's	**Acer**	x **freemanii**	4	Small	Young	Good	3	$255.41
135	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	3	$163.46
136	Maple-Freeman's	**Acer**	x **freemanii**	5	Medium	Young	Good	3	$352.62
137	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	...	$184.53
138	Maple-Freeman's	**Acer**	x **freemanii**	4	Small	Young	Good	3	$206.88
139	Maple-Freeman's	**Acer**	x **freemanii**	4	Small	Young	Good	2	$281.59
140	Maple-Freeman's	**Acer**	x **freemanii**	5	Medium	Young	Good	3	$431.64
141	Maple-Freeman's	**Acer**	x **freemanii**	6	Medium	Young	Fair	2	$370.45
142	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Fair	2	$153.40
143	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Fair	2	$153.40
144	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Fair	2	$134.25

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
145	Linden-Littleleaf	**Tilia**	**cordata**	14	Medium	Mature	Fair	2	$3,448.69
146	Linden-Littleleaf	**Tilia**	**cordata**	13	Medium	Mature	Good	3	$3,741.32
147	Linden-Littleleaf	**Tilia**	**cordata**	10	Medium	Semi-mature	Fair	2	$1,173.28
148	Linden-Littleleaf	**Tilia**	**cordata**	12	Medium	Semi-mature	Fair	2	$1,729.99
149	Linden-Littleleaf	**Tilia**	**cordata**	12	Medium	Mature	Fair	2	$2,545.64
150	Holly-English	**Ilex**	**aquifolium**	7,8,7,10,13,8	Medium	Mature	Fair	...	$5,182.98
151	Plum-Purple Leaf	**Prunus**	**cerasifera**	11	Small	Semi-mature	Fair	...	$1,685.83
152	Plum-Purple Leaf	**Prunus**	**cerasifera**	10	Small	Mature	Fair	2	$1,234.85
153	Holly-English	**Ilex**	**aquifolium**	17	Small	Mature	Fair	...	$3,035.88
154	Plum-Purple Leaf	**Prunus**	**cerasifera**	13	Small	Mature	Fair	2	$2,241.75
155	Plum-Purple Leaf	**Prunus**	**cerasifera**	2	Small	Young	Fair	2	$39.54
156	Oak-Oregon White	**Quercus**	**garryana**	10	Medium	Semi-mature	Fair	3	$1,861.60
157	Holly-English	**Ilex**	**aquifolium**	22,25	Medium	Mature	Poor	...	$6,621.95
158	Holly-English	**Ilex**	**aquifolium**	14,12,13,9	Medium	Mature	Poor	ASAP	$3,574.04
159	Holly-English	**Ilex**	**aquifolium**	14,14	Medium	Mature	Poor	4	$2,362.19
160	Plum-Purple Leaf	**Prunus**	**cerasifera**	10	Small	Mature	Poor	3	$788.44
161	Sweetgum-Common	**Liquidambar**	**styraciflua**	22	Large	Mature	Good	3	$9,592.55
162	Sweetgum-Common	**Liquidambar**	**styraciflua**	22	Large	Mature	Fair	1	$7,305.25
163	Sweetgum-Common	**Liquidambar**	**styraciflua**	26	Large	Mature	Fair	2	$10,330.87
164	Sweetgum-Common	**Liquidambar**	**styraciflua**	27	Large	Mature	Fair	3	$10,409.29
165	Sweetgum-Common	**Liquidambar**	**styraciflua**	27	Large	Mature	Fair	3	$10,567.00
166	Walnut-Persian	**Juglans**	**regia**	26	Large	Mature	Poor	ASAP	$7,628.95
167	Pine-Lodgepole	**Pinus**	**contorta** var. ssp. contorta	8,9	Medium	Mature	Fair	2	$2,134.09
168	Plum-Purple Leaf	**Prunus**	**cerasifera**	36	Large	Mature	Fair	1	$16,970.54
169	Pine-Lodgepole	**Pinus**	**contorta** var. ssp. contorta	3,6,4	Small	Semi-mature	Good	3	$1,301.78
170	Pine-Limber	**Pinus**	**flexilis**	3,5,3	Small	Young	Good	3	$731.90
171	Tuliptree	**Liriodendron**	**tulipifera**	48	Large	Mature	Good	1	$51,117.41

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
172	Falsecypress-Nootka	**Chamaecyparis**	**nootkatensis**	19,12,15,16,19	Large	Mature	Fair	1	$16,390.72
173	Maple-Vine	**Acer**	**circinatum**	3,3,4,3,3,4	Small	Semi-mature	Poor	ASAP	$458.12
174	Oak-Oregon White	**Quercus**	**garryana**	45	Large	Mature	Good	1	$33,315.29
175	Oak-Oregon White	**Quercus**	**garryana**	3,3	Medium	Young	Good	3	$339.21
176	Oak-Oregon White	**Quercus**	**garryana**	2	Small	Young	Good	3	$143.56
177	Mountain Ash-American	**Sorbus**	**americana**	4	Small	Young	Fair	1	$130.31
178	Maple-Norway	**Acer**	**platanoides**	11	Medium	Semi-mature	Fair	1	$1,505.20
179	Chestnut-Sweet	**Castanea**	**sativa**	7,8,5,8,8,7	Medium	Semi-mature	Good	...	$4,949.80
180	Douglas Fir	**Pseudotsuga**	**menziesii**	17	Large	Semi-mature	Fair	1	$1,995.58
181	Douglas Fir	**Pseudotsuga**	**menziesii**	15	Large	Semi-mature	Fair	2	$1,605.55
182	Douglas Fir	**Pseudotsuga**	**menziesii**	15	Large	Semi-mature	Fair	...	$2,822.51
183	Maple-Bigleaf	**Acer**	**macrophyllum**	11,7	Medium	Semi-mature	Fair	1	$1,523.85
184	Cherry-Sweet	**Prunus**	**avium**	11,7,15,4	Medium	Mature	Fair	1	$2,677.87
185	Pine-Lodgepole	**Pinus**	**contorta** var. ssp. contorta	23	Large	Mature	Good	2	$8,153.25
186	Maple-Freeman's	**Acer**	x **freemanii**	6	Medium	Semi-mature	Fair	3	$653.84
187	Maple-Freeman's	**Acer**	x **freemanii**	7	Medium	Semi-mature	Poor	2	$417.21
188	Maple-Freeman's	**Acer**	x **freemanii**	3	Small	Young	Good	...	$139.68
189	Maple-Freeman's	**Acer**	x **freemanii**	5	Medium	Young	Good	2	$186.94
190	Maple-Norway	**Acer**	**platanoides**	5	Small	Young	Poor	2	$175.99
191	Maple-Norway	**Acer**	**platanoides**	5,4,2,2	Small	Semi-mature	Fair	2	$528.98
192	Maple-Norway	**Acer**	**platanoides**	5	Medium	Young	Fair	2	$305.41
193	Maple-Norway	**Acer**	**platanoides**	7	Medium	Semi-mature	Poor	2	$359.17
194	Maple-Norway	**Acer**	**platanoides**	7	Medium	Semi-mature	Fair	2	$651.02

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
195	Maple-Norway	**Acer**	**platanoides**	11	Large	Semi-mature	Good	2	$2,069.49
196	Maple-Norway	**Acer**	**platanoides**	7	Large	Semi-mature	Fair	2	$548.40
197	Maple-Freeman's	**Acer**	x **freemanii**	1	Small	New planting	Poor	2	$4.38
198	Maple-Norway	**Acer**	**platanoides**	11	Medium	Mature	Fair	3	$1,346.88
199	Maple-Norway	**Acer**	**platanoides**	4	Small	Young	Poor	2	$89.79
200	Maple-Norway	**Acer**	**platanoides**	13	Large	Mature	Fair	...	$2,128.61
201	Oak-Oregon White	**Quercus**	**garryana**	28	Large	Over-mature	Fair	3	$10,623.47
202	Oak-Oregon White	**Quercus**	**garryana**	18	Large	Mature	Poor	3	$2,691.55
203	Elm-American	**Ulmus**	**americana**	11	Medium	Semi-mature	Poor	ASAP	$691.82
204	Elm-American	**Ulmus**	**americana**	11	Medium	Mature	Poor	ASAP	$786.21
205	Elm-American	**Ulmus**	**americana**	22	Large	Mature	Fair	3	$4,743.57
206	Elm-American	**Ulmus**	**americana**	20	Large	Mature	Fair	3	$4,023.08
207	Elm-American	**Ulmus**	**americana**	18	Large	Mature	Fair	3	$3,251.38
208	Elm-American	**Ulmus**	**americana**	29	Large	Mature	Fair	3	$8,335.24
209	Elm-American	**Ulmus**	**americana**	13	Medium	Mature	Fair	3	$1,707.68
210	Elm-American	**Ulmus**	**americana**	14	Medium	Mature	Fair	2	$2,011.33
211	Elm-American	**Ulmus**	**americana**	17	Medium	Mature	Fair	2	$3,035.88
212	Elm-American	**Ulmus**	**americana**	26	Medium	Mature	Fair	2	$6,672.81
213	Elm-American	**Ulmus**	**americana**	20	Medium	Mature	Dead	1	...
214	Elm-American	**Ulmus**	**americana**	22	Large	Mature	Fair	2	$4,876.87
215	Elm-American	**Ulmus**	**americana**	24	Large	Mature	Fair	2	$6,009.79
216	Elm-American	**Ulmus**	**americana**	27	Large	Mature	Fair	2	$7,704.23
217	Douglas Fir	**Pseudotsuga**	**menziesii**	19,30	Large	Mature	Fair	1	$21,254.81
218	Douglas Fir	**Pseudotsuga**	**menziesii**	21,8	Large	Mature	Fair	1	$8,927.18
219	Douglas Fir	**Pseudotsuga**	**menziesii**	13	Large	Semi-mature	Fair	1	$3,025.38
220	Douglas Fir	**Pseudotsuga**	**menziesii**	24	Large	Mature	Fair	1	$9,525.79
221	Douglas Fir	**Pseudotsuga**	**menziesii**	15	Large	Semi-mature	Fair	...	$3,645.72
222	Douglas Fir	**Pseudotsuga**	**menziesii**	21,23	Large	Mature	Fair	1	$16,384.34
223	Douglas Fir	**Pseudotsuga**	**menziesii**	27	Large	Mature	Fair	1	$12,840.39
224	Douglas Fir	**Pseudotsuga**	**menziesii**	17	Large	Mature	Fair	1	$4,827.20
225	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	2	$25.65

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
226	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Poor	...	$15.39
227	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	2	$25.65
228	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	...	$25.65
229	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	...	$35.92
230	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	...	$35.92
231	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Good	2	$21.55
232	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Good	2	$21.55
233	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	2	$15.39
234	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Fair	2	$15.39
235	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Poor	...	$15.39
236	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Poor	...	$21.55
237	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	New planting	Poor	2	$21.55
241	Poplar-Balsam	**Populus**	**balsamifera**	28,10	Large	Over-mature	Fair	4	$14,111.27
242	Walnut-Persian	**Juglans**	**regia**	12	Medium	Young	Good	4	$3,677.87
243	Douglas Fir	**Pseudotsuga**	**menziesii**	21	Large	Mature	Good	4	$10,259.96
244	Douglas Fir	**Pseudotsuga**	**menziesii**	21	Medium	Mature	Good	...	$10,062.66
245	Douglas Fir	**Pseudotsuga**	**menziesii**	21	Large	Mature	Fair	3	$5,490.61
246	Poplar-Balsam	**Populus**	**balsamifera**	12,12	Large	Semi-mature	Good	4	$6,436.27
247	Poplar-Balsam	**Populus**	**balsamifera**	12,18	Large	Mature	Fair	3	$7,470.67
248	Douglas Fir	**Pseudotsuga**	**menziesii**	16	Medium	Mature	Good	...	$6,129.78
249	Alder-Red	**Alnus**	**rubra**	10	Medium	Semi-mature	Poor	4	$615.71
250	Douglas Fir	**Pseudotsuga**	**menziesii**	22	Large	Mature	Fair	3	$5,966.69
251	Maple-Vine	**Acer**	**circinatum**	4,5,3	Small	Mature	Poor	3	$412.02
252	Douglas Fir	**Pseudotsuga**	**menziesii**	18	Large	Mature	Fair	4	$3,741.32
253	Douglas Fir	**Pseudotsuga**	**menziesii**	17	Large	Mature	Fair	4	$3,448.00

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
254	Douglas Fir	**Pseudotsuga**	**menziesii**	12	Medium	Mature	Good	...	$2,462.86
255	Douglas Fir	**Pseudotsuga**	**menziesii**	10	Medium	Mature	Fair	...	$1,221.66
256	Oak-Oregon White	**Quercus**	**garryana**	28,10	Large	Mature	Poor	3	$7,343.62
257	Maple-Vine	**Acer**	**circinatum**	5	Small	Mature	Fair	4	$305.41
258	Maple-Vine	**Acer**	**circinatum**	4	Small	Mature	Poor	4	$129.30
259	Oak-Oregon White	**Quercus**	**garryana**	28	Medium	Mature	Poor	1	$6,512.89
260	Alder-Red	**Alnus**	**rubra**	7,6	Medium	Semi-mature	Good	...	$1,221.17
261	Douglas Fir	**Pseudotsuga**	**menziesii**	13	Medium	Semi-mature	Fair	2	$2,064.60
262	Douglas Fir	**Pseudotsuga**	**menziesii**	26	Large	Mature	Good	3	$11,561.75
263	Douglas Fir	**Pseudotsuga**	**menziesii**	20	Large	Mature	Fair	...	$4,886.62
264	Douglas Fir	**Pseudotsuga**	**menziesii**	22	Large	Mature	Good	...	$8,277.94
265	Douglas Fir (8)	**Pseudotsuga**	**menziesii**	7,6,10,6,7,12	Medium	Semi-mature	Fair	2	$40,461.25
266	Douglas Fir	**Pseudotsuga**	**menziesii**	16	Large	Mature	Good	3	$4,378.42
267	Douglas Fir	**Pseudotsuga**	**menziesii**	22	Large	Mature	Good	3	$8,277.94
268	Oak-Oregon White	**Quercus**	**garryana**	7	Medium	Semi-mature	Good	3	$949.80
269	Douglas Fir	**Pseudotsuga**	**menziesii**	27	Medium	Mature	Fair	...	$9,038.30
270	Douglas Fir	**Pseudotsuga**	**menziesii**	22	Large	Mature	Fair	...	$6,020.81
271	Douglas Fir	**Pseudotsuga**	**menziesii**	30	Large	Mature	Fair	...	$10,631.46
272	Serviceberry	**Amelanchier**	sp.	6,4,5,5	Small	Mature	Fair	...	$1,074.42
273	Douglas Fir	**Pseudotsuga**	**menziesii**	33	Large	Over-mature	Fair	...	$12,627.51
274	Douglas Fir	**Pseudotsuga**	**menziesii**	23	Large	Mature	Fair	...	$6,350.66
275	Oak-Oregon White	**Quercus**	**garryana**	10	Medium	Semi-mature	Fair	3	$1,302.72
276	Oak-Oregon White	**Quercus**	**garryana**	8	Medium	Mature	Fair	...	$953.81
277	Maple-Bigleaf	**Acer**	**macrophyllum**	13,9	Medium	Semi-mature	Fair	5	$3,242.49
278	Oak-Oregon White	**Quercus**	**garryana**	10	Medium	Semi-mature	Fair	...	$1,823.80
279	Douglas Fir	**Pseudotsuga**	**menziesii**	27	Large	Mature	Good	5	$12,468.22
280	Oak-Oregon White	**Quercus**	**garryana**	15	Large	Mature	Fair	5	$1,819.62
281	Oak-Oregon White	**Quercus**	**garryana**	23	Large	Mature	Good	2	$14,480.61
282	Oak-Oregon White (4)	**Quercus**	**garryana**	12,8,19,26	Large	Mature	Fair	1	$94,141.55
283	Douglas Fir	**Pseudotsuga**	**menziesii**	18	Large	Mature	Fair	...	$5,541.43

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
284	Maple-Norway	**Acer**	**platanoides**	9	Medium	Semi-mature	Good	3	$1,729.99
285	Douglas Fir	**Pseudotsuga**	**menziesii**	40	Large	Mature	Fair	2	$18,145.04
286	Oak-Oregon White	**Quercus**	**garryana**	8	Medium	Semi-mature	Poor	...	$820.62
287	Oak-Oregon White	**Quercus**	**garryana**	14	Large	Mature	Fair	3	$3,799.19
288	Oak-Oregon White	**Quercus**	**garryana**	13	Large	Mature	Fair	1	$2,449.12
289	Oak-Oregon White	**Quercus**	**garryana**	13,11	Large	Mature	Fair	1	$4,040.79
290	Oak-Oregon White	**Quercus**	**garryana**	15	Large	Mature	Fair	1	$2,911.00
291	Oak-Oregon White	**Quercus**	**garryana**	12	Large	Mature	Fair	1	$2,060.75
292	Oak-Oregon White	**Quercus**	**garryana**	11	Large	Mature	Fair	1	$1,675.30
293	Oak-Oregon White	**Quercus**	**garryana**	16	Large	Mature	Fair	1	$3,544.43
294	Oak-Oregon White	**Quercus**	**garryana**	16,12	Large	Mature	Fair	1	$5,684.52
295	Oak-Oregon White	**Quercus**	**garryana**	6	Medium	Semi-mature	Poor	...	$299.06
296	Oak-Oregon White	**Quercus**	**garryana**	18	Large	Mature	Fair	1	$2,544.10
297	Oak-Oregon White	**Quercus**	**garryana**	11	Large	Semi-mature	Fair	...	$1,585.16
298	Oak-Oregon White	**Quercus**	**garryana**	10	Large	Mature	Fair	1	$1,468.86
299	Oak-Oregon White	**Quercus**	**garryana**	12	Large	Mature	Fair	5	$1,993.74
300	Douglas Fir	**Pseudotsuga**	**menziesii**	26	Large	Mature	Good	...	$15,815.08
301	Oak-Oregon White	**Quercus**	**garryana**	14,12	Large	Mature	Good	4	$9,226.60
302	Oak-Oregon White	**Quercus**	**garryana**	14,14	Large	Mature	Good	...	$10,637.73
303	Oak-Oregon White	**Quercus**	**garryana**	14	Large	Mature	Good	...	$5,318.86
304	Douglas Fir	**Pseudotsuga**	**menziesii**	17	Large	Mature	Good	...	$6,919.95
305	Douglas Fir	**Pseudotsuga**	**menziesii**	6	Medium	Mature	Fair	...	$615.71
306	Oak-Oregon White	**Quercus**	**garryana**	24	Large	Mature	Fair	2	$11,164.96
307	Oak-Oregon White	**Quercus**	**garryana**	24	Large	Mature	Good	2	$11,164.96
308	Douglas Fir	**Pseudotsuga**	**menziesii**	8	Medium	Semi-mature	Poor	1	$247.39
309	Oak-Oregon White	**Quercus**	**garryana**	10	Medium	Semi-mature	Fair	3	$1,302.72
310	Oak-Oregon White	**Quercus**	**garryana**	7,7	Medium	Semi-mature	Fair	...	$1,456.12
311	Oak-Oregon White	**Quercus**	**garryana**	11	Large	Mature	Good	...	$2,345.42
312	Oak-Oregon White	**Quercus**	**garryana**	12,10,5	Large	Mature	Good	3	$5,165.93
313	Oak-Oregon White	**Quercus**	**garryana**	10	Large	Mature	Fair	...	$1,384.54
314	Oak-Oregon White	**Quercus**	**garryana**	10,8	Large	Mature	Fair	...	$2,270.65
315	Oak-Oregon White	**Quercus**	**garryana**	7	Medium	Mature	Fair	...	$350.98
316	Oak-Oregon White	**Quercus**	**garryana**	6	Medium	Young	Good	2	$1,111.53

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
317	Ash-Oregon	**Fraxinus**	**latifolia**	4,3	Medium	Young	Fair	1	$364.50
318	Maple-Bigleaf	**Acer**	**macrophyllum**	19,25	Large	Mature	Good	1	$18,148.18
319	Ash-Oregon	**Fraxinus**	**latifolia**	7,7,5	Medium	Mature	Fair	...	$1,629.45
320	Ash-Oregon	**Fraxinus**	**latifolia**	15,11,6	Medium	Mature	Poor	...	$3,136.04
321	Maple-Bigleaf	**Acer**	**macrophyllum**	6,4	Small	Young	Fair	...	$733.93
322	Ash-Oregon	**Fraxinus**	**latifolia**	6,6	Medium	Semi-mature	Fair	...	$1,002.25
323	Douglas Fir	**Pseudotsuga**	**menziesii**	14	Medium	Mature	Fair	...	$3,210.10
324	Douglas Fir	**Pseudotsuga**	**menziesii**	30	Large	Mature	Fair	2	$15,086.55
325	Oak-Oregon White	**Quercus**	**garryana**	6	Medium	Young	Good	3	$820.90
326	Douglas Fir	**Pseudotsuga**	**menziesii**	6	Medium	Semi-mature	Fair	2	$517.37
327	Oak-Oregon White	**Quercus**	**garryana**	45	Large	Mature	Fair	1	$33,412.04
328	Oak-Oregon White	**Quercus**	**garryana**	17	Large	Mature	Fair	5	$5,601.86
329	Oak-Oregon White	**Quercus**	**garryana**	18	Large	Mature	Fair	2	$5,919.52
330	Oak-Oregon White	**Quercus**	**garryana**	25,17	Large	Mature	Fair	2	$18,173.49
331	Oak-Oregon White	**Quercus**	**garryana**	22	Large	Mature	Fair	1	$9,127.55
332	Oak-Oregon White	**Quercus**	**garryana**	9	Large	Semi-mature	Good	3	$2,007.06
333	Maple-Norway	**Acer**	**platanoides**	16	Medium	Mature	Fair	1	$4,378.42
334	Douglas Fir	**Pseudotsuga**	**menziesii**	13	Large	Mature	Fair	...	$2,064.60
335	Douglas Fir	**Pseudotsuga**	**menziesii**	10	Large	Semi-mature	Fair	...	$1,221.66
336	Douglas Fir	**Pseudotsuga**	**menziesii**	16	Large	Mature	Good	...	$4,378.42
337	Douglas Fir	**Pseudotsuga**	**menziesii**	11	Large	Semi-mature	Fair	...	$1,478.20
338	Oak-Oregon White	**Quercus**	**garryana**	9	Medium	Mature	Fair	2	$1,121.48
339	Oak-Oregon White	**Quercus**	**garryana**	9	Medium	Mature	Fair	...	$1,121.48
340	Oak-Oregon White	**Quercus**	**garryana**	8	Medium	Semi-mature	Fair	...	$886.11
341	Oak-Oregon White	**Quercus**	**garryana**	11	Medium	Mature	Fair	2	$1,675.30
342	Oak-Oregon White	**Quercus**	**garryana**	14	Medium	Mature	Good	3	$3,799.19
343	Oak-Oregon White	**Quercus**	**garryana**	14,10	Medium	Mature	Good	3	$5,737.55
344	Maple-Norway	**Acer**	**platanoides**	13	Medium	Semi-mature	Poor	1	$1,681.31
345	Maple-Norway	**Acer**	**platanoides**	13	Medium	Semi-mature	Poor	1	$1,761.05
346	Douglas Fir	**Pseudotsuga**	**menziesii**	15	Large	Mature	Good	...	$3,848.22
347	Douglas Fir	**Pseudotsuga**	**menziesii**	13	Large	Mature	Good	...	$2,890.44
348	Douglas Fir	**Pseudotsuga**	**menziesii**	16	Large	Mature	Good	...	$4,378.42

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
349	Douglas Fir	**Pseudotsuga**	**menziesii**	14	Large	Mature	Good	...	$3,352.22
350	Douglas Fir	**Pseudotsuga**	**menziesii**	13	Large	Mature	Good	...	$2,890.44
351	Douglas Fir	**Pseudotsuga**	**menziesii**	12	Large	Mature	Good	...	$2,462.86
352	Douglas Fir	**Pseudotsuga**	**menziesii**	18	Large	Mature	Good	...	$5,541.43
353	Douglas Fir	**Pseudotsuga**	**menziesii**	13	Large	Mature	Good	...	$2,890.44
354	Douglas Fir	**Pseudotsuga**	**menziesii**	15	Large	Mature	Good	...	$3,848.22
355	Douglas Fir	**Pseudotsuga**	**menziesii**	17	Large	Mature	Good	...	$4,942.82
356	Douglas Fir	**Pseudotsuga**	**menziesii**	17	Large	Mature	Good	...	$4,942.82
357	Maple-Norway	**Acer**	**platanoides**	8,8,3,2,3	Medium	Semi-mature	Fair	5	$2,545.98
358	Horsechestnut-Common	**Aesculus**	**hippocastanum**	31	Large	Mature	Fair	4	$16,108.92
359	Elm-American	**Ulmus**	**americana**	71	Large	Over-mature	Good	1	$37,636.99
360	Linden-Littleleaf	**Tilia**	**cordata**	29	Large	Mature	Good	...	$20,137.29
361	Elm-American	**Ulmus**	**americana**	38	Large	Mature	Good	3	$19,528.45
362	Maple-Red	**Acer**	**rubrum**	13	Medium	Mature	Good	3	$1,408.84
363	Maple-Red	**Acer**	**rubrum**	10	Medium	Mature	Good	...	$870.95
364	Maple-Red	**Acer**	**rubrum**	8	Medium	Mature	Good	...	$461.79
365	Maple-Red	**Acer**	**rubrum**	7	Medium	Mature	Poor	...	$167.51
366	Linden-Littleleaf	**Tilia**	**cordata**	20	Medium	Mature	Fair	...	$2,844.68
367	Linden-Littleleaf	**Tilia**	**cordata**	18	Medium	Mature	Poor	5	$1,346.88
368	Linden-Littleleaf	**Tilia**	**cordata**	16	Medium	Mature	Poor	5	$1,125.88
369	Maple-Norway	**Acer**	**platanoides**	7	Medium	Mature	Poor	4	$234.37
370	Maple-Norway	**Acer**	**platanoides**	7	Medium	Mature	Poor	...	$234.37
371	Arborvitae-Western Redcedar	**Thuja**	**plicata**	42	Large	Mature	Fair	2	$13,811.96
372	Cherry-Bitter (6)	**Prunus**	**emarginata**	6,8,8,8,6	Medium	Mature	Fair	4	$19,351.04
373	Cherry-Sweet	**Prunus**	**avium**	18	Small	Mature	Good	3	$2,955.43
374	Pear-Common	**Pyrus**	**communis**	5	Small	Mature	Poor	4	$138.54
375	Apple-Common	**Malus**	**domestica**	5,8,7,8	Small	Mature	Fair	3	$2,197.65
376	Apple-Common	**Malus**	**domestica**	13	Small	Mature	Fair	3	$1,781.58
377	Crabapple	**Malus**	sp.	12	Medium	Mature	Fair	3	$1,172.79
378	Pine-Western White	**Pinus**	**monticola**	15	Large	Semi-mature	Good	...	$6,041.19
379	Douglas Fir	**Pseudotsuga**	**menziesii**	15	Large	Semi-mature	Good	...	$6,472.70
380	Elm-American	**Ulmus**	**americana**	8,6,6,6,4,4	Medium	Semi-mature	Good	5	$3,768.17
381	Maple-Vine	**Acer**	**circinatum**	3,3,3,2	Small	Young	Good	2	$742.28

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Work Phase	Tree Asset Value
382	Maple-Vine	**Acer**	**circinatum**	3,3,2,2,1	Small	Semi-mature	Good	3	$511.21
383	Maple-Vine	**Acer**	**circinatum**	3,2,2,2	Small	Semi-mature	Good	2	$479.13
384	Douglas Fir (35)	**Pseudotsuga**	**menziesii**	18,6	Large	Mature	Good	4	$215,500.16
385	Douglas Fir (4)	**Pseudotsuga**	**menziesii**	26	Large	Semi-mature	Good	...	$62,405.62
386	Douglas Fir (15)	**Pseudotsuga**	**menziesii**	10	Medium	Young	Good	...	$35,916.70
387	Douglas Fir (50)	**Pseudotsuga**	**menziesii**	10,20	Large	Semi-mature	Good	...	$598,611.56
388	Douglas Fir (30)	**Pseudotsuga**	**menziesii**	10,20	Large	Semi-mature	Good	...	$359,166.94
389	Douglas Fir (20)	**Pseudotsuga**	**menziesii**	8	Small	Semi-mature	Good	...	$30,648.91
390	Alder-Red (10)	**Alnus**	**rubra**	10	Medium	Young	Fair	2	$9,891.00
391	Poplar-Black	**Populus**	**nigra**	40	Large	Over-mature	Fair	...	$8,344.61
392	Poplar-Black	**Populus**	**nigra**	26	Large	Over-mature	Fair	...	$3,853.92
1000	Maple-Freeman's	**Acer**	x **freemanii**	2	Small	Young	Good	...	$91.95

Additional Resources

Bartlett publishes a variety of tree-resource documents, including technical reports, plant health care recommendations, and service brochures. The following technical reports may be pertinent to your inventory. To access these documents and view the complete Bartlett Resource Library online, please follow this URL: **https://www.bartlett.com/resourcelist.cfm** . Additional tree industry resources relevant to the recommendations provided in this report are included under headlines below.

Bartlett Street Trees and Tree Planting Resources
Tree Planting Concepts (bartlett.com)
Soil for Urban Tree Planting (bartlett.com)
Sidewalk Repair Near Trees (bartlett.com)
Mulch Application Guidelines (bartlett.com)
Root Invigoration Program (bartlett.com)
Prop System Installation (bartlett.com)
Bartlett Tree Experts: Saving Storm-Damaged Trees
Bartlett Tree Experts: Storm-Related Salt Injury
IPM for Landscape Plants (bartlett.com)

Root barriers
Typar bio barrier and other geotextiles
http://typargeosynthetics.com/products/root-barrier/biobarrier-root-barrier.html
Flexible porous paving (for tree grate replacement)
http://typargeosynthetics.com/products/porous-paving/typave-25-flexible-porous-paving.html
Rubber sidewalks. https://www.rubberway.com/rubber-sidewalks
Deep root. https://www.deeproot.com/products/
City Green. https://citygreen.com/products/rootstop-root-management/
Rainbird deep root watering systems. https://store.rainbird.com/rwsb1401-rain-bird-rws-root-watering-system-36-in-tube-0-25-gpm-bubbler-4-in-grate.html

Local Nurseries
Garden Gate Nursery https://www.gardengatetrees.com/
JF frank Schmit and son - https://www.jfschmidt.com/
Oregon nursery guide https://nurseryguide.com/Find_Plants
Stevens county native plant sale - https://www.stevenscountywa.gov/pview.aspx?id=20878&catid=0
Underwood Conservation District. https://www.ucdwa.org/about-ucd
Clark County native plants

Pruning
ISA Pruning Best Management Practices
https://www.nxtbook.com/nxtbooks/isa/bmp_pruning/index.php

Dr. Ed Gilman Online Pruning Guides **Gillman, UFL – Pruning and other resources.**
https://hort.ifas.ufl.edu/woody/index.shtml
https://hort.ifas.ufl.edu/woody/documents/Pruning_Established_Trees%20PROOF.pdf
https://hort.ifas.ufl.edu/woody/documents/Restoration_Pruning%20PROOF.pdf
https://hort.ifas.ufl.edu/woody/documents/cuttypes.pdf
https://hort.ifas.ufl.edu/woody/documents/structural.pdf

City Trees Round Table; Pruning cycles - CTs_July-Aug.indd (memberclicks.net)

Sunscald
https://www.gardenmyths.com/sunscald-trees-prevention/
https://extension.umn.edu/planting-and-growing-guides/protecting-trees-and-shrubs-winter
http://pubs.cahnrs.wsu.edu/publications/wp-content/uploads/sites/2/publications/fs197e.pdf
https://www.gardenmyths.com/sunscald-trees-prevention/

WSU Insect management handbook
https://pubs.extension.wsu.edu/2019-pnw-insect-management-handbook

Urban Forestry Planning and Management
Trees are good - https://www.treesaregood.org/treeowner
WA State DNR Urban Forestry Grants –
https://www.dnr.wa.gov/urbanforestry#grants-and-financial-assistance
Tree Benefits Calculator - http://www.treebenefits.com/calculator/
WSU Extension - https://extension.wsu.edu/skamania/

Vibrant Cities Lab : Resources for Urban Forestry, Trees, and Green Infrastructure

Urban Forestry Best Management Practices for Public Works Managers APWA Press.
Part 1 – Budgeting and funding. UrbanForestry-1.pdf (apwa.net)
Part 2 – Staffing. UrbanForestry-2.pdf (apwa.net)
Part 3 – Ordinances, Regulations, and Public Policies. UrbanForestry-3.pdf (apwa.net)
Part 4- Urban Forest Management Plan. UrbanForestry-4.pdf (apwa.net)

Storm Response Planning
Risk and Storm Management Operations in the United States.pdf (uwsp.edu)
Urban Forestry Emergency Operations Planning Guide | Smart Trees Pacific

Local Arborists Within 20 miles of Stevenson. Find an Arborist (treesaregood.org)
Most Arborists are located in Hood River or Washougal

Glossary of Terms

air pollution removal: removal of pollutants from the air by plants through natural processes

arborist: 1. An individual engaged in the profession of arboriculture who, through experience, education and related training, possesses the competence to provide for, or supervise the management of, trees and other woody ornamentals. [ANSI A300 (Part 1, 2, 4, 5, 6)] 2. An individual engaged in the profession of arboriculture. [ANSI Z133.1-2000 Safety Requirements for Arboricultural Operations]

bracing: The installation of lag-thread screw or threaded-steel rods in limbs, leaders, or trunks to provide supplemental support. [ANSI A300 (Part 3)-2000 Support Systems]

branch: An outgrowing shoot, stem or twig that grows from the main stem or trunk. [ANSI Z60.1-2004 Nursery Stock]

buttress roots: Lateral surface roots that aid in stabilizing the tree.

cable: 1) Zinc coated strand per ASTM A-475 for dead-end grip applications. 2) Wire rope or strand for general applications. 3) Synthetic-fiber rope or synthetic-fiber webbing for general applications. [ANSI A300 (Part 3)-2000 Support Systems]

cabling: The installation of a steel wire rope, steel strand, or synthetic-fiber system within a tree between limbs or leaders to limit movement and provide supplemental support. [ANSI A300 (Part 3)-2000 Support Systems]

canopy: collective branches and foliage of a tree or group of trees' crowns

carbon sequestration: removal of carbon from the air by plants through natural processes

carbon storage: storage of carbon removed from the air in plant tissues

cation exchange capacity (CEC): The ability of soil to absorb nutrients.

cavity: An open wound characterized by the presence of decay and resulting in a hollow.

cleaning: Selective pruning to remove one or more of the following parts: dead, diseased, and/ or broken branches (5.6.1). [ANSI A300 (Part 1)-2001 Pruning]

co-dominant branches: Equal in size and importance, usually associated with either the trunks, stems, or scaffold limbs.

conk: fruiting body or non-fruiting body of a fungus. Often associated with decay.

critical root zone (CRZ): area of soil around a tree trunk where roots are located that provide stability and uptake of water and minerals required for tree survival.

crown: 1. The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree. [ANSI A300 (Part 1)-2001 Pruning] [ANSI A300 (Part 6)-2005 Transplanting] 2. The portion of a tree comprising the branches. [ANSI Z60.1-2004 Nursery Stock]

D.B.H. [diameter at breast height]: Measurement of trunk diameter taken at 4.5 feet (1.4 m) off the ground. [ANSI A300 (Part 6)-2005 Transplanting]

decay: The degradation of woody tissue caused by microorganisms. [ANSI A300 (Part 1)-2001 Pruning]

Geographic Information System (GIS): is any system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to earth.

girdling root: A root that may impede proper development of other roots, trunk flare, and/or trunk. [ANSI A300 (Part 6)-2005 Transplanting]

Global Positioning System (GPS): A constellation of at least 24 Medium Earth Orbit satellites that transmit precise microwave signals, the system enables a GPS receiver to determine its location, speed, direction, and time.

Global Positioning System receiver (GPSr): A receiver that receives its input from GPS satellites to determine location, speed, direction, and time.

heading: cutting a shoot back to a bud or cutting branches back to buds, stubs, or lateral branches not large enough to assume apical dominance. Cutting an older branch or stem back to meet a structural objective

integrated pest management (IPM): A pest control strategy that uses an array of complementary methods: mechanical devices, physical devices, genetic, biological, legal, cultural management, and chemical management. These methods are done in three stages of prevention, Observation, and finally Intervention. It is an ecological approach that has its main goal is to significantly reduce or eliminate the use of pesticides.

lateral branch: A shoot or stem growing from a parent branch or stem. [ANSI A300 (Part 1)-2001 Pruning]

leader: A dominant or co-dominant, upright stem. [ANSI A300 (Part 1)-2001 Pruning]

lean: Departure from vertical of the stem, beginning at or near the base of the trunk.

limb: A large, prominent branch. [ANSI A300 (Part 1)-2001 Pruning]

lion's tailing: The removal of an excessive number of inner, lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (5.5.7). [ANSI A300 (Part 1)- 2001 Pruning]

macronutrient: Nutrient required in relatively large amounts by plants, such as nitrogen (N), phosphorus (P), potassium (K), and sulfur (S). [ANSI A300 (Part 2)-2004 Fertilization]

micronutrient: Nutrient required in relatively small amounts by plants, such as iron (Fe), manganese (Mn), zinc (Zn), copper (Cu), and boron (B). [ANSI A300 (Part 2)-2004 Fertilization]

noise attenuation: reducing sound levels via materials, structures, plants, etc.

nutrient: Element or compound required for growth, reproduction or development of a plant. [ANSI A300 (Part 2)-2004 Fertilization]

organic matter: material derived from the growth (and death) of living organisms. The organic components of soil.

parent branch or stem: A tree trunk, limb, or prominent branch from which shoots or stems grow. [ANSI A300 (Part 1)-2001 Pruning]

pH: unit of measurement that describes the alkalinity or acidity of a solution. Measured on a scale of 0 to 14. Greater than 7 Is alkaline, less than 7 is acid, and 7 is neutral (pure water).

pruning: The selective removal of plant parts to meet specific goals and objectives. [ANSI A300 (Part 1)-2001 Pruning]

qualified arborist: An individual who, by possession of a recognized degree, certification, or professional standing, or through related training and on-the-job experience, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated ability in the performance of the special techniques involved. [ANSI Z133.1-2000 Safety Requirements for Arboricultural Operations]

raising: Selective pruning to provide vertical clearance (5.6.3). [ANSI A300 (Part 1)-2001 Pruning]

reduction: Selective pruning to decrease height and/or spread (5.6.4). [ANSI A300 (Part 1)-2001 Pruning]

risk assessment: process of evaluating what unexpected things could happen, how likely it is, and what the likely outcomes are. In tree management, the systematic process to determine the level of risk posed by a tree, tree part, or group of trees.

root collar: 1. The transition zone between the trunk and the root system. [ANSI A300 (Part 6)-2005 Transplanting] 2. See COLLAR. [ANSI Z60.1-2004 Nursery Stock]

root flare or trunk flare: The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk. [ANSI Z60.1-2004 Nursery Stock] [ANSI A300 (Part 6)-2005 Transplanting]

root zone: The volume of soil containing the roots of a plant. [ANSI A300 (Part 5)-2005 Management]

secondary nutrient: Nutrient required in moderate amounts by plants, such as calcium (Ca) and magnesium (Mg). [ANSI A300 (Part 2)-2004 Fertilization]

seam: Vertical line that appears where two edges of wound wood or callus ridge meet.

soil amendment: Any material added to soil to alter its composition and structure, such as sand, fertilizer, or organic matter. [ANSI A300 (Part6)-2005 Transplanting]

soil pH: A measure of the acidity or alkalinity of the soil.

stormwater runoff: water (generally from rain or snow melt) that flows over the ground after storm events.

structural support system: hardware installed in tree, may be; cables, braces, or guys, to provide

supplemental support.

sweep: Departure from vertical of the stem, beginning above the base of the trunk.

thinning: Selective pruning to reduce density of live branches (5.6.2). [ANSI A300 (Part 1)-2001 Pruning]

tree risk assessment: Closer inspection of visibly damaged, dead, defected, diseased, leaning or dying tree to determine management needs.

topping: The reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not acceptable pruning practice. (5.5.7). [ANSI A300 (Part 1)-2001 Pruning]

tree inventory: A comprehensive list of individual trees providing descriptive information on all or a portion of the project area. [ANSI A300 (Part 5)-2005 Management during site planning, site development, and construction]

tree protection zone: A space above and belowground within which trees are to be retained and protected. [ANSI A300 (Part 5)-2005 Management during site planning, site development, and construction]

trunk: That portion of a stem or stems of a tree before branching occurs. [ANSA Z60.1-2004 Nursery Stock]

vigor: Overall health. Capacity to grow and resist stress. [ISA Municipal Specialist Certification Study Guide 2008]

wound: An opening that is created when the bark of a living branch or stem is penetrated, cut, or removed. [ANSI A300 (Part 1)-2001 Pruning]