

# WASHINGTON FORESTRY CONSULTANTS, INC.

## FORESTRY AND VEGETATION MANAGEMENT SPECIALISTS



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-Revised Level V Tree, Soil, and Native Vegetation Protection and Replacement Plan-

### 2817 BOULEVARD RD. SE PROJECT

2817 Boulevard Rd. SE  
Olympia WA 98502

Prepared for: Kapa Construction LLC  
Prepared by: Washington Forestry Consultants, Inc.

Date of Original Report: September 12, 2018  
Date of Revised Report: September 23, 2019

The project proponent is planning on constructing a, 18-lot residential subdivision on 5 acres at 2817 Boulevard Rd. SE in Olympia. The proponent has retained WFCI to:

- Evaluate all trees and soils on the site pursuant to the requirements of Chapter 16.60 of the Olympia Tree, Soil, and Native Vegetation Protection and Replacement Ordinance.
- Make recommendations for tree removal, retention, and/or replacement.
- Complete the required minimum stocking and tree replacement calculations.

### Observations

#### Methodology

WFCI has evaluated 18 trees 6 inches and larger in diameter at breast height (DBH) in the proposed project area and assessed their potential to be incorporated into the new project. Smaller trees were evaluated as well. The tree evaluation phase used methodology developed by Matheny and Clark (1998)<sup>1</sup>.

In all cases, the overall appearance of the tree was considered relative to its ability to add value to the site and the scale of the tree and its proximity to other developments is considered.

<sup>1</sup> Matheny, Nelda and James R. Clark. *Trees and Development: A Technical Guide to Preservation of Trees during Land Development*. International Society of Arboriculture, Champaign. IL 1998

## Site Description

The site consists of one 5-acre parcel, two-thirds of which is mostly flat. The western third of the property slopes to the west at a grade of approximately 10% down to small wetland that occurs near the western property line. The parcel is bordered on the east by Boulevard Rd. SE, to the north by a church, to the south and west by residential properties. There was a house on the property until it was demolished about 8 years ago. There are no other improvements on the site.

## Soil Depth and Productivity

According to the Natural Resource Conservation Service web soil survey, there are 2 soil types on the parcel, the Yelm fine sandy loam and the Giles silt loam.

**Figure 1. Soils Map of 2817 Boulevard Rd. SE**



**126, 128 – Yelm fine sandy loam – 57.6%**  
**39 – Giles Silt Loam – 42.4%**

The Yelm fine sandy loam is a deep is moderately well drained soil on terraces. It formed in volcanic ash and glacial outwash. Permeability is moderately rapid. Available water capacity is high. The effective rooting depth for trees is 40 to 60 inches. A seasonal high water table fluctuates between depths of 18 to 36 inches from December to March. Runoff is slow and the hazard to erosion is slight. Windthrow potential is rated as 'slight'.

The Giles silt loam is a deep, well-drained soil found on terraces. It formed in glacial outwash and volcanic ash. Permeability is moderate. Plant available water capacity is high. The effective rooting depth is 40 to 60 inches. The hazard of runoff and erosion is slight. The soil is not suited to year-round logging because of the muddiness of the soil caused by seasonal wetness. The chance of windthrow is 'slight' under normal conditions. Seedling mortality is severe.

Both soils are well suited to the growth of new trees and plants. They can be used in the lawn and all other areas of landscape beds. The addition of a 2 inches of a sandy loam soil plus organic matter (achieve 25% organic matter content) will improve the drainage of what can be wet soils in the winter. Organic matter can also buffer pH and retain moisture during the dry summer months. Incorporate these amendments into the landscape beds of new plantings. It would also be beneficial in the new lawn areas.

### Stand Description

There are 85 significant trees on the parcel, mostly growing on the southern portion of the property. Species include mostly naturalized or exotic species such as cherry (*Prunus avium*), apple (*Malus domestica*), pear (*Pyrus communis*), European mountain-ash (*Sorbus aucuparia*), and English hawthorn (*Crataegus laevigata*). Native species include bigleaf maple (*Acer macrophyllum*), western redcedar (*Thuja plicata*), red alder (*Alnus rubra*), Douglas-fir (*Pseudotsuga menziesii*), cascara (*Rhamnus purshiana*), Ponderosa pine (*Pinus ponderosa*), and noble fir (*Abies procera*). Significant tree size ranges from 6 to 62.5 inches DBH. Tree condition ranges from 'very poor' to 'good,' with most non-native trees described as being in 'poor' condition or worse. Most of the native trees are in 'fair' condition or better.

**Table 1. Summary of Trees at 2817 Boulevard Rd. SE**

Species	DBH Range (in)	# of Healthy Trees	# of Unhealthy Trees	Total # of Trees	% Composition
Cherry	7 – 29	12	29	41	48.2%
Bigleaf Maple	8 – 62.5	11	11	22	25.8%
English Hawthorn	8 - 14	2	5	7	8.2%
Cascara	8 - 10	4	0	4	4.7%
Apple	12 - 17	2	1	3	3.5%
Ponderosa Pine	31.5	1	0	1	1.2%
Noble Fir	31	1	0	1	1.2%
European Mountain Ash	15	0	1	1	1.2%
Douglas-fir	6 - 34	1	1	2	2.4%
Pear	9	1	0	1	1.2%
Western Redcedar	14.5 - 62	1	1	2	2.4%
<b>Totals</b>	<b>6 – 62.5</b>	<b>36</b>	<b>49</b>	<b>85</b>	<b>100.00%</b>

The understory consists of mostly non-native, invasive weeds such as English ivy (*Hedera helix*), English holly (*Ilex aquifolium*), blackberry (*Rubus armeniacus*), Scotch broom (*Cytisus scoparius*), exotic grasses, and broadleaved weeds. Occasional native plants include trailing blackberry (*Rubus ursinus*), Indian plum (*Oemleria cerasiformis*), bracken fern (*Pteridium aquilinum*), and salmonberry (*Rubus spectabilis*).



**Photo 1. View of trees on southern portion of project area looking south.**

### **Off- Site Impacts**

There is a row of Port-Orford cedars (*Chamaecyparis lawsoniana*) growing off-site near the church to the north of the project area. If these trees are to be retained, they will require tree protection fencing to protect them from the impacts of construction. This fencing should be placed at least 5 ft. outside of the dripline of the trees as illustrated in Attachment 2.



**Photo 2. View of off-site Port Orford-cedars to the north of the project area.**

## Landmark and Specimen Trees

No Landmark Trees (Landmark Tree Ordinance) occur on this site. No trees considered to be specimen trees were found (unusual species, exceptional size or quality).

## Discussion

### Potential for Tree Retention

There are **36** healthy trees that are available for retention in the project area, **17** of which are short-lived, non-native trees that should be removed during site clearing and replaced with long-lived, native tree species. Nineteen (**19**) trees grow in the footprint of proposed developments, leaving **0** trees that can be retained in the project area.

### Minimum Density Calculations

The City of Olympia's *Tree Protection and Replacement Ordinance* requires that 30 units per acre of existing trees be retained in the buildable area of the site. If sufficient tree units are not retained in tree protection areas, then trees must be planted to achieve the minimum density requirement.

The following is a summary of the estimated tree density planned for retention:

Total acreage	5.00 acres
Dedicated Public Rights-of-Way	0.50 acres
Wetland and Buffers	<u>0.23 acres</u>
Buildable Area	4.27 acres
Minimum Density Required:	
(30 units/acre x 4.27 acres)	128 Tree Units
Planned Tree Retention:	
Total Tree Units-To be Saved	<u>0 Tree Units</u>
<b>Shortfall of Tree Units on Site</b>	<b>128 Tree Units</b>

Planned tree retention is short of the minimum density requirement by 128 tree units. Planted trees are worth 1 tree unit each and should be 1 inch in caliper at time of planting if broad-leafed and 3 ft. tall if coniferous if planted in a tree tract. Trees planted in other locations should be 1.25 inches in caliper or 4 ft. tall. A total of 128 trees will need to be replanted to meet the required minimum tree density on the 5 acre site.



## **Recommendations**

### **Tree Protection Measures**

Off-site trees near the construction site will need to be protected from construction activities by temporary chain-link fencing (Attachment 4), located at the edge of the critical root zone (CRZ). The individual CRZ are a radius 5 ft. outside the dripline of the tree, unless otherwise delineated by WFCI. The on-site trees to be retained will not require individual protection if fencing is placed at the edge of clearing limits, between the home sites and the open space tract.

There should be no equipment activity (including rototilling) within the critical root zone. No irrigation lines, trenches, or other utilities should be installed within the CRZ. Cuts or fills should impact no more than 20% of a tree's root system. If topsoil is added to the root zone of a protected tree, the depth should not exceed 2 inches of a sandy loam or loamy fine sand topsoil and should not cover more than 20% of the root system.

If roots are encountered outside the CRZ during construction, they should be cut cleanly with a saw and covered immediately with moist soil. Noxious vegetation within the critical root zone should be removed by hand. If a proposed save tree must be impacting by grading or fills, then the tree should be re-evaluated by WFCI to determine if the tree can be saved with mitigating measures, or if the tree should be removed.

## **Conclusions**

The City of Olympia Tree, Soil, and Native Vegetation Protection and Replacement Ordinance requires 128 tree units to be retained or replanted in the 5-acre project area. All 146 trees will need to be replanted in the project area to meet the minimum tree density requirement.

### **Timeline for Tree Protection Activity**

The following is a list of recommended tree protection activities and the proposed timing:

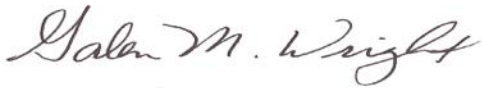
1. Conduct a pre-job conference with WFCI prior to the start of logging and clearing. WFCI can identify the location of tree protection fencing at this time.
2. Complete the logging. Contact WFCI to inspect the save tree areas and mark any other trees that should be removed.
3. Install tree protection fences.
4. Complete land clearing.
5. Construct project, maintaining fences throughout construction.
6. If any unplanned construction activity will impact any tree near or within the project area, contact WFCI prior to the impact. WFCI can assess the proposed impact and recommend cultural care, mitigation, or removal.
7. Conduct an annual tree evaluation to determine short-and long-term effects of site changes to off-site trees. Provide additional cultural care as needed.

## Summary

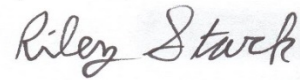
There are no trees growing outside of the wetland at 2817 Boulevard Rd. SE that can be retained given the intensive use of the site. This plan retains 0 tree units, 128 tree units short of the minimum units required by the City of Olympia tree protection ordinance. All 128 tree units will need to be planted to meet the tree density requirement. It will be necessary to develop a planting plan to accommodate the new trees in the required landscaping.

Please give us a call if you have any questions.

Respectfully submitted,



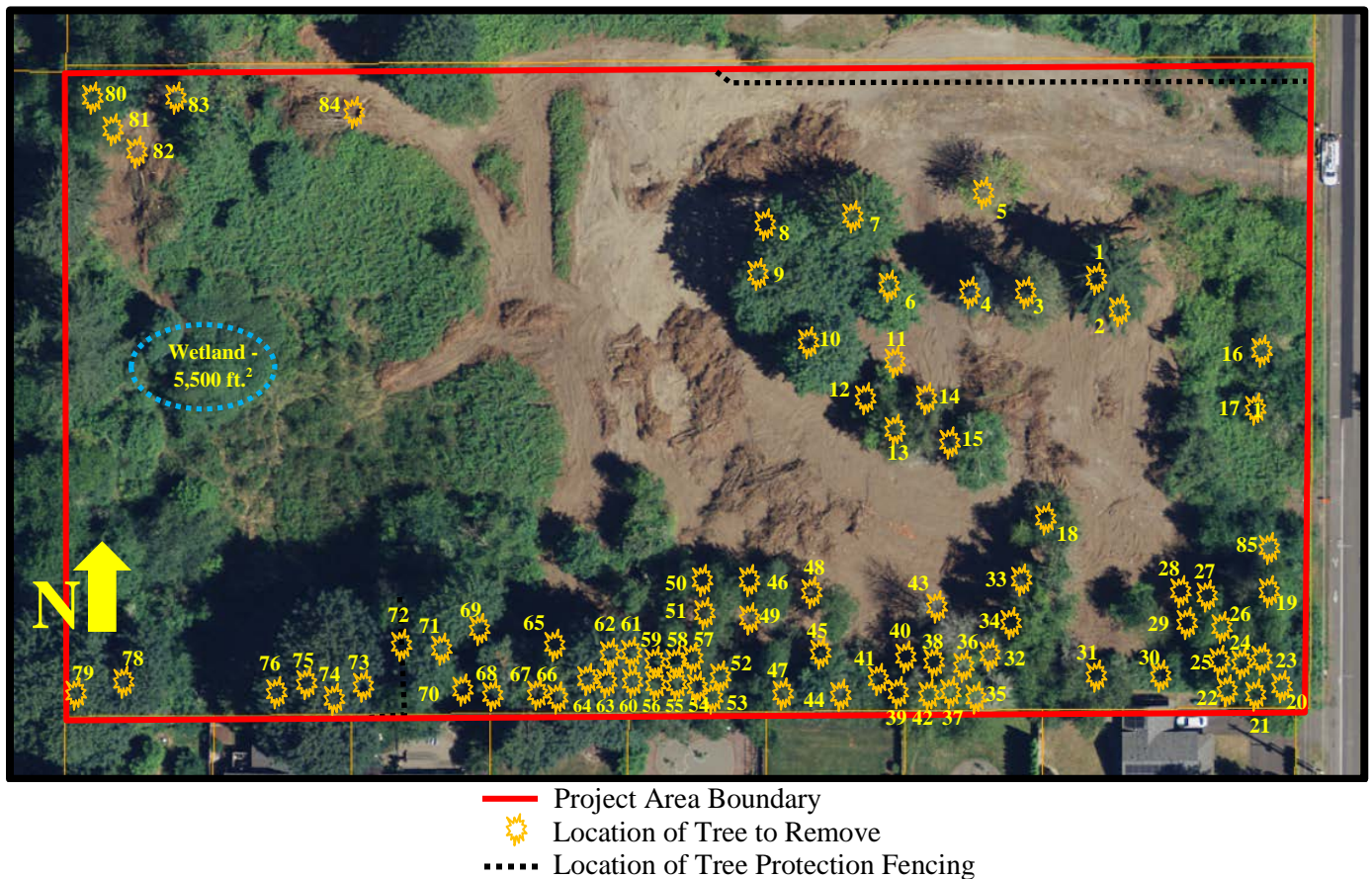
Galen M. Wright, ACF, ASCA  
ISA Bd. Certified Master Arborist PN-129BU  
Certified Forester No. 44  
ISA Tree Risk Assessor Qualified



Riley Stark, Professional Forester  
ISA Bd. Certified Master Arborist  
Municipal Specialist, PN-7780BM  
ISA Tree Risk Assessor Qualified

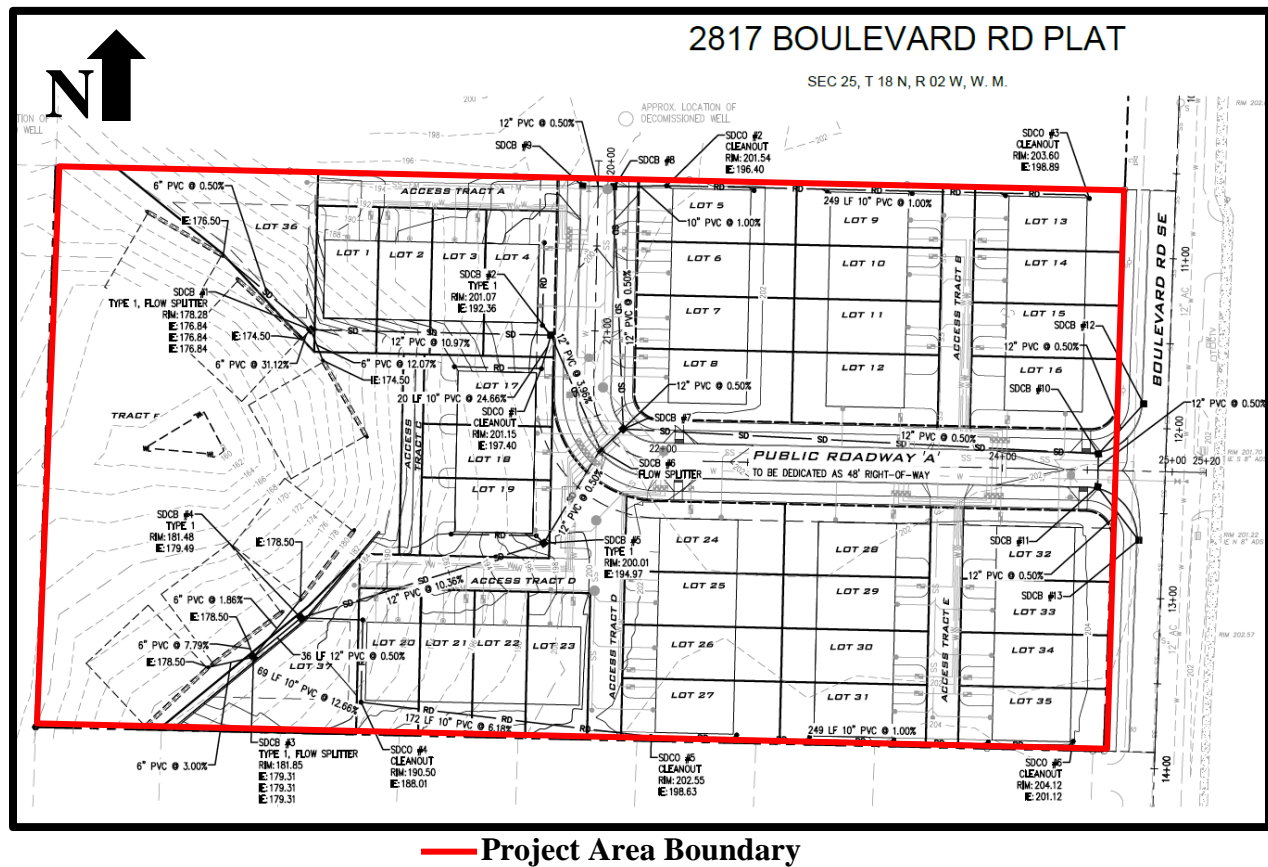
## Attachment 1. Aerial Photo of 2817 Boulevard Rd. SE

(2018 Thurston County GeoData)





## Attachment 2. Site Plan



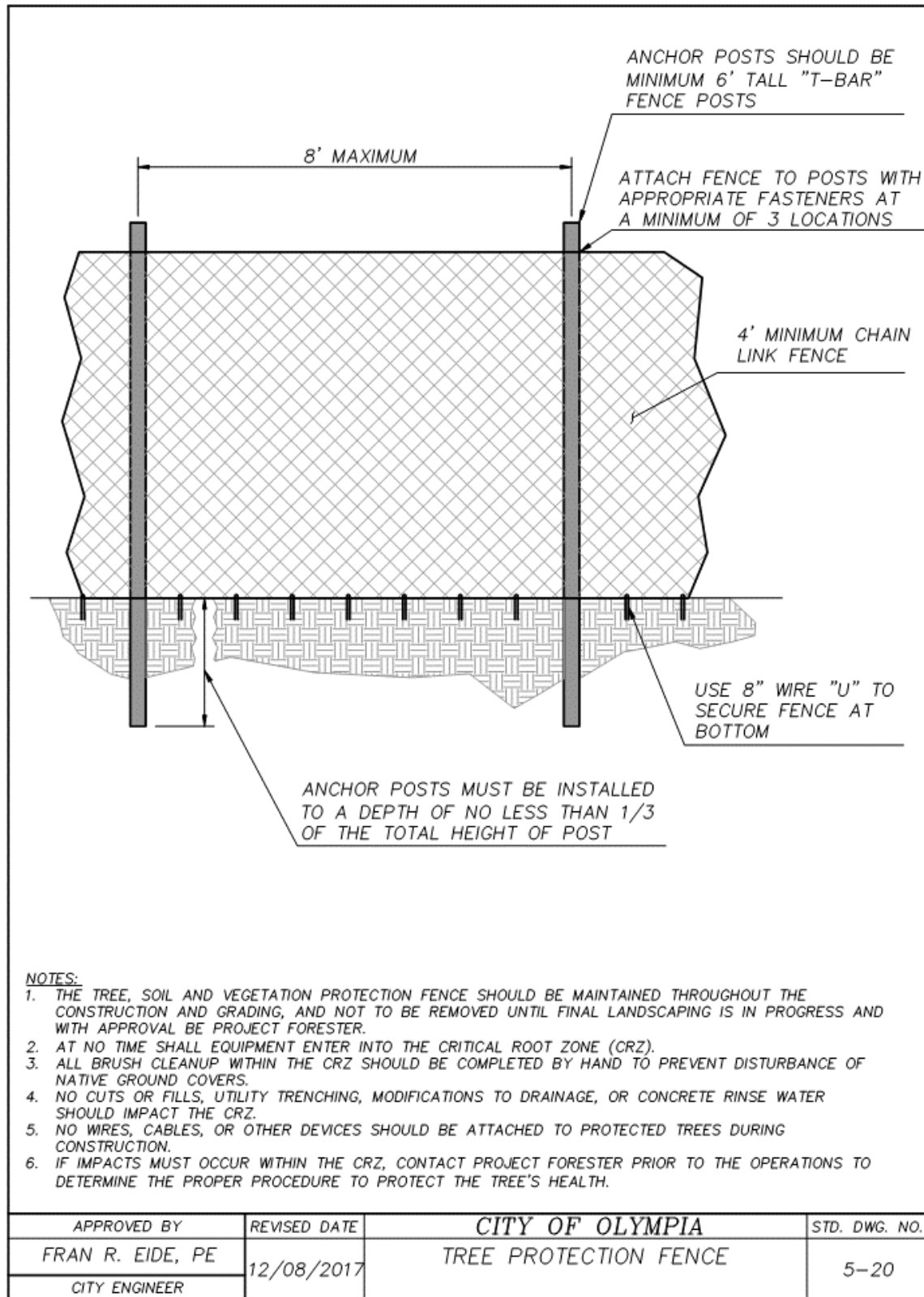
**Attachment 3. List of Trees at 2817 Boulevard Rd. SE**

<b>Tree #</b>	<b>Species</b>	<b>DBH (in.)</b>	<b>Condition</b>	<b>Save Based on Condition Alone? Yes or No</b>	<b>Save Based on Site Plan? Save or Remove</b>	<b>Retainable Tree Units</b>	<b>Comment</b>
1	Douglas-fir	34	Good	Yes	Remove	0	In Footprint
2	Pear	9	Fair	Yes	Remove	0	In Footprint
3	Ponderosa Pine	31.5	Fair	Yes	Remove	0	In Footprint
4	Noble Fir	31	Good	Yes	Remove	0	In Footprint
5	Bigleaf Maple	16	Poor - Dieback	No	Remove	0	
6	Bigleaf Maple	17	Good	Yes	Remove	0	In Footprint
7	Bigleaf Maple	15, 13, 13, 6, 12, 12	Fair	Yes	Remove	0	In Footprint
8	Bigleaf Maple	36, 26, 16	Fair	Yes	Remove	0	In Footprint
9	Cherry	13	Very Poor - Heavy Lean	No	Remove	0	
10	Bigleaf Maple	23, 11	Good	Yes		0	In Footprint
11	Hawthorn	6, 4	Fair	Yes	Remove	0	Weedy Species
12	Hawthorn	14	Fair	Yes	Remove	0	Weedy Species
13	Cherry	11	Very Poor - Mostly Dead	No	Remove	0	
14	Cherry	12	Very Poor - Mostly Ivy	No	Remove	0	
15	Red Alder	25	Fair	Yes	Remove	0	In Footprint
16	Apple	12	Fair	Yes	Remove	0	In Footprint
17	Apple	17	Fair	Yes	Remove	0	In Footprint
18	Mountain-ash	15	Poor - In Decline	No	Remove	0	
19	Cherry	29	Very Poor - Mostly Dead	No	Remove	0	
20	Cherry	16	Fair	Yes	Remove	0	Weedy Species
21	Cherry	8	Fair	Yes	Remove	0	Weedy Species
22	Cherry	8	Fair	Yes	Remove	0	Weedy Species
23	Cherry	7	Fair	Yes	Remove	0	Weedy Species
24	Cherry	6	Fair	Yes	Remove	0	Weedy Species
25	Cherry	8	Fair	Yes	Remove	0	Weedy Species
26	Cherry	7.5	Fair	Yes	Remove	0	Weedy Species
27	Cherry	7	Fair	Yes	Remove	0	Weedy Species
28	Cascara	8	Good	Yes	Remove	0	In Footprint
29	Cherry	7	Fair	Yes	Remove	0	Weedy Species
30	Cherry	10	Poor - In Decline	No	Remove	0	
31	Cherry	14, 13, 12	Poor - In Decline	No	Remove	0	
32	Hawthorn	12	Poor - ivy	No	Remove	0	
33	Cherry	25	Very Poor - Mostly Ivy	No	Remove	0	
34	Cherry	14, 15	Very Poor - Mostly Dead	No	Remove	0	

Tree #	Species	DBH (in.)	Condition	Save Based on Condition Alone? Yes or No	Save Based on Site Plan? Save or Remove	Retainable Tree Units	Comment
35	Hawthorn	8	Poor - Leaning	No	Remove	0	
36	Cherry	10, 11	Poor - Leaning	No	Remove	0	
37	Hawthorn	10	Poor - Suppressed	No	Remove	0	
38	Cherry	16	Poor - In Decline	No	Remove	0	
39	Cherry	15	Poor - Leaning	No	Remove	0	
40	Cherry	14	Poor - In Decline	No	Remove	0	
41	Cherry	15	Very Poor - Mostly Dead	No	Remove	0	
42	Hawthorn	10	Poor - Ivy	No	Remove	0	
43	Cherry	10, 12	Poor - Stem Damage	No	Remove	0	
44	Cascara	8	Fair	Yes	Remove	0	In Footprint
45	Cascara	10	Fair	Yes	Remove	0	In Footprint
46	Cascara	7	Fair	Yes	Remove	0	In Footprint
47	Bigleaf Maple	14, 16	Poor - Ivy, Shattered Stems	No	Remove	0	
48	Apple	6, 10	Poor - In Decline	No	Remove	0	
49	Cherry	15	Poor - Stem Defect	No	Remove	0	
50	Cherry	16	Poor - In Decline	No	Remove	0	
51	Cherry	11.5, 13	Poor - Leaning, Stem Damage	No	Remove	0	
52	Cherry	29	Poor - In Decline	No	Remove	0	
53	Hawthorn	8	Poor - Suppressed	No	Remove	0	
54	Cherry	15	Poor - Stem Decay	No	Remove	0	
55	Bigleaf Maple	8	Poor - Whip	No	Remove	0	
56	Cherry	10	Poor - Stem Defect	No	Remove	0	
57	Cherry	10.5	Poor - Whip	No	Remove	0	
58	Cherry	16	Poor - Leaning	No	Remove	0	
59	Cherry	15	Very Poor - Mostly Dead	No	Remove	0	
60	Bigleaf Maple	15.5	Poor - Stem Decay, Leaning	No	Remove	0	
61	Bigleaf Maple	29	Good	Yes	Remove	0	In Footprint
62	Bigleaf Maple	17	Fair	Yes	Remove	0	In Footprint
63	Bigleaf Maple	11	Poor - Stem Defect	No	Remove	0	

Tree #	Species	DBH (in.)	Condition	Save Based on Condition Alone? Yes or No	Save Based on Site Plan? Save or Remove	Retainable Tree Units	Comment
64	Bigleaf Maple	10	Poor - Leaning	No	Remove	0	
65	Western Redcedar	62	Poor - Stem Decay, Shattered Top	No	Remove	0	
66	Western Redcedar	14.5	Fair	Yes	Remove	0	In Footprint
67	Bigleaf Maple	50	Poor - Stem Decay, In Decline	No	Remove	0	
68	Cherry	25	Fair	Yes	Remove	0	Weedy Species
69	Bigleaf Maple	22	Poor - Stem Decay, In Decline	No	Remove	0	
70	Douglas-fir	6	Poor - Suppressed	No	Remove	0	
71	Cherry	14	Poor - Leaning	No	Remove	0	
72	Cherry	15	Poor - Ivy	No	Remove	0	
73	Bigleaf Maple	25.5	Fair	Yes	Save	7	RPZ – 26 ft.
74	Cherry	26.5	Poor - Stem Decay, Decline	No	Remove	0	
75	Bigleaf Maple	62.5	Fair	Yes	Remove	26	
76	Bigleaf Maple	18	Fair	Yes	Remove	4	
77	Cherry	13, 13	Poor - Dead Stem, Decline	No	Remove	0	
78	Bigleaf Maple	27.5	Poor - Stem Failure	No	Remove	0	
79	Bigleaf Maple	61.5	Fair	Yes	Remove	25	Partially off-site
80	Cherry	12	Fair	Yes	Remove	0	Weedy Species
81	Cherry	12	Fair	Yes	Remove	0	Weedy Species
82	Bigleaf Maple	7.5	Fair	Yes	Remove	1.5	
83	Bigleaf Maple	36, 38	Very Poor - Decay, Dieback, Decline	No	Remove	0	
84	Bigleaf Maple	34.5	Poor - Splitting Stem	Yes	Remove	0	
85	Cherry	13, 14, 15, 16	Poor - Ivy	No	Remove	0	
<b>Total</b>						<b>63.5</b>	

## Attachment 4. . Tree Protection Fence Detail





## **Attachment 5. - Assumptions and Limiting Conditions**

- 1) Any legal description provided to the Washington Forestry Consultants, Inc. is assumed to be correct. Any titles and ownership's to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
- 2) It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations, unless otherwise stated.
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- 7) Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc. -- particularly as to value conclusions, identity of Washington Forestry Consultants, Inc., or any reference to any professional society or to any initialed designation conferred upon Washington Forestry Consultants, Inc. as stated in its qualifications.
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- 9) Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
- 10) Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or other plant or property in question may not arise in the future.

***Note: Even healthy trees can fail under normal or storm conditions. The only way to eliminate all risk is to remove all trees within reach of all targets. Annual monitoring by an ISA Certified Arborist or Certified Forester will reduce the potential of tree failures. It is impossible to predict with certainty that a tree will stand or fail, or the timing of the failure. It is considered an 'Act of God' when a tree fails, unless it is directly felled or pushed over by man's actions.***