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- Preliminary Tree Protection Plan -

OAKVIEW

29401 State Route 507 S.
Roy WA 98580

Prepared for: Roy Meadows Development Group

Prepared by: Washington Forestry Consultants, Inc.

Date of Report: August 3, 2022

Introduction

The project proponent is planning to construct a 79-lot residential development on 38.36 acres in Roy, Washington. The project proponent has retained WFCI to:

- Evaluate and inventory all trees on the site pursuant to Roy Municipal Code 11.24.10.
- Make recommendations for retention of significant trees, along with any required protection and cultural measures.

Observations

Methodology

WFCI has evaluated all significant trees in the project area and assessed their potential to be incorporated into the new project. Potential save trees were given a tree risk assessment as well. The forest stands on the site were stratified into 4 distinct cover types. Healthy significant trees in Cover Types I and II were evaluated individually and are labeled at the base with a blue number corresponding to the table in Attachment 3. Unhealthy trees are similarly labeled in orange. The composition of forest Cover Type III was evaluated by installing 8 variable-radius forestry plots (BAF 20) on a systematic grid across the type. Trees in the wetland area (Cover Type IV) were not evaluated individually.

The tree evaluation phase used methodology developed by Nelda Matheny and Dr. James Clark in their 1998 publication Trees and Development: A Technical Guide to Preservation of Trees during Land Development.

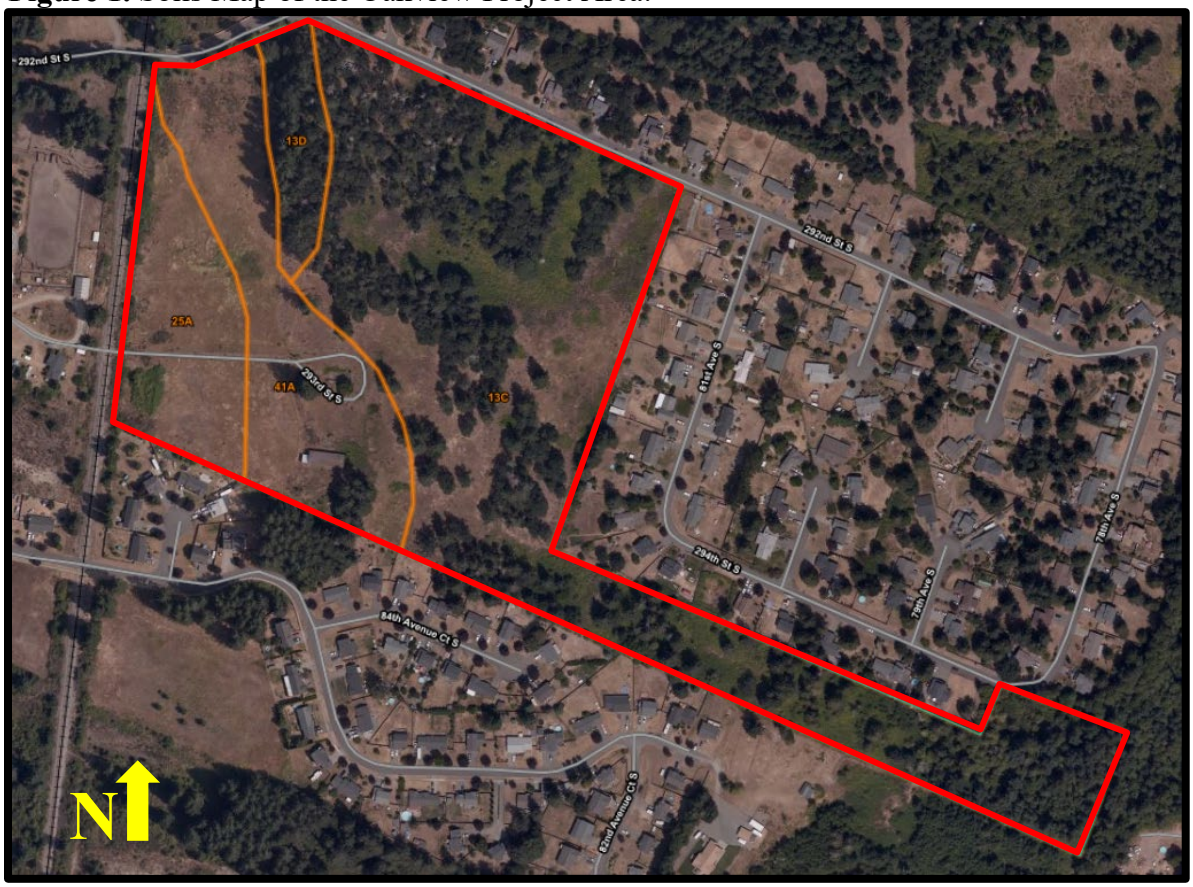
Site Description

The 38.36-acre irregular shaped site contains both flat and sloped portions. The slopes range up to 15% with a westerly aspect. There is a wetland area and associated buffer in the extreme southeast portion or the property. The project area is bordered by railroad rights-of-way to the west, residential subdivisions to the north and south, and low-density residential properties to the east and southeast. There is a communications tower and an old shed on the site.

Soils Description

According to the USDA Natural Resource Conservation Service Web Soil Survey, there are three soil types in the project area; the Everett very gravelly sandy loam, the Nisqually loamy sand, and the Spanaway gravelly sandy loam.

Figure 1. Soils Map of the Oakview Project Area.



Project Area Boundary
13C, 13D - Everett very gravelly sandy loam
41A - Spanaway gravelly sandy loam
25A - Nisqually loamy sand

The most abundant soils in the project area is the Everett very gravelly sandy loam, which is a very deep, somewhat excessively drained soil found on terraces and outwash plains. It formed in glacial outwash. Permeability is rapid. Plant available water capacity is low. The effective rooting depth is 60 inches or more and the hazard of runoff and erosion is slight. The potential for windthrow of trees is slight under normal conditions. Seedling mortality is severe and new trees require irrigation to establish.

Also present on the lower portions of the property is the Spanaway gravelly sandy loam, which is a very deep, somewhat excessively drained soil found on terraces. It is formed in glacial outwash and volcanic ash. Permeability is moderately rapid in the subsoil and very rapid in the substratum. Available water capacity is low. The effective rooting depth for trees is 48 inches or more. The potential for windthrow of trees is slight under normal conditions. New trees require irrigation for establishment.

The Nisqually loamy fine sand is found on the lowest portions of the project area. This soil is a very deep, somewhat excessively drained soil found on terraces. It is formed in sandy glacial outwash. Permeability is moderately rapid in the surface layer and very rapid in the substratum. Available water capacity is moderate. The effective rooting depth for trees is 60 inches or more. The potential for windthrow of trees is slight under normal conditions. New trees require irrigation for establishment.

Tree Conditions

There are 4 forest cover types for the purposes of description. The extent and coverage of these 4 types are illustrated on the aerial photo in Attachment 1.

Forest Cover Type I: This cover type is a mostly open field with scattered individual and small groves of trees. There are 149 trees in this cover type, mostly Oregon white oaks (*Quercus garryana*) with Douglas-fir (*Pseudotsuga menziesii*) trees mixed in. Other species include black cottonwood (*Populus trichocarpa*), silver maple (*Acer saccharinum*), Oregon ash (*Fraxinus latifolia*), and western redcedar (*Thuja plicata*). Tree size ranges from 9 to 51 inches in diameter at breast height (DBH). Tree condition ranges from 'Very Poor' to 'Good,' with most trees described as being in 'Fair' condition or better. The species, diameter range, conditions, numbers and percent composition by species of trees in type I are summarized in Table 1.

Understory vegetation includes common snowberry (*Symphoricarpos albus*), Oregon-grape (*Mahonia aquifolium*), trailing blackberry (*Rubus ursinus*), ocean-spray (*Holodiscus discolor*), Indian-plum (*Oemleria cerasiformis*), woods rose (*Rosa woodsii*), and western hazel (*Corylus cornuta*). Scotch broom (*Cytisus scoparius*), bracken fern (*Pteridium aquilinum*), Himalayan blackberry (*Rubus armeniacus*), grasses and broadleaved weeds dominate the open fields.

Table 1. Summary of Trees in Cover Type I.

Species	DBH Range (in.)	Condition Range	# of Healthy Trees	# of Unhealthy Trees	Total # of Trees	% Composition
Oregon White Oak	9 - 32	'Poor' - 'Good'	108	1	109	73.1%
Douglas-fir	13 - 49	'Very Poor' - 'Good'	27	3	30	20.1%
Black Cottonwood	21 - 34	'Poor' - 'Good'	3	1	4	2.7%
Western Redcedar	12 - 51	'Good'	4	0	4	2.7%
Silver Maple	40	'Poor'	0	1	1	0.7%
Oregon Ash	13	'Good'	1	0	1	0.7%
Total	**9 – 51**	**'Very Poor' - 'Good'**	**143**	**6**	**149**	**100%**

Photo 1. View of Trees in Cover Type I. View looking south from interior portion of property.

Forest Cover Type II: This cover type is a more contiguous, mixed-species stand of Douglas-fir, Oregon white oak, and western redcedar. Bigleaf maple (*Acer macrophyllum*), bitter cherry (*Prunus emarginata*) and black cottonwood are also present. There are 151 trees in this cover type that range in size from 9 to 52 inches in diameter at breast height (DBH). Tree condition ranges from 'Very Poor' to 'Good,' with most trees described as being in 'Fair' condition or better. The species, diameter range, conditions, numbers and percent composition by species of trees in type II are summarized in Table 2.

Understory vegetation in Cover Type II is dense and consists primarily of Himalayan blackberry and Scotch broom. Occasional native plants include trailing blackberry, Oregon-grape, ocean-spray, sword fern (*Polystichum munitum*), ocean-spray, Indian-plum, western hazel, grasses and broadleaved weeds.

Table 2. Summary of Trees in Cover Type II

Species	DBH Range (in.)	Condition Range	# of Healthy Trees	# of Unhealthy Trees	Total # of Trees	% Composition
Douglas-fir	12 - 52	'Very Poor' - 'Good'	62	9	71	47%
Oregon White Oak	9 - 32	'Poor' - 'Fair'	44	1	45	29.8%
Western Redcedar	12 - 60	'Poor' - 'Good'	30	2	32	21.1%
Bigleaf Maple	18	'Good'	1	0	1	0.7%
Bitter Cherry	14	'Good'	1	0	1	0.7%
Black Cottonwood	37	'Good'	1	0	1	0.7%
Total	**9 - 60**	**'Very Poor' - 'Good'**	**139**	**12**	**151**	**100%**

Photo 2. View of Trees in Cover Type II. View looking west from interior portion of property.

Forest Cover Type III: This cover type includes the contiguous 8.05-acre stand of mature Oregon white oak and Douglas-fir with a few bigleaf maple trees in the north-central portion of the project area. Trees in this cover type are generally larger than elsewhere on the site. The Oregon white oaks and Douglas-fir trees are codominant in this type and the understory vegetation is denser and more extensive, but substantially similar in composition to the vegetation in Cover Type II. Tree size ranges from 9 to 54 inches DBH. There are a projected 637 trees in this cover type that range in condition from 'Dead' to 'Good.' Dead trees were not included in the inventory. The species, diameter range, conditions, numbers and percent composition by species of trees in type III are summarized in Table 3.

Table 3. Summary of Trees in Cover Type III.

Species	DBH Range (in.)	Condition Range	# of Healthy Trees	# of Unhealthy Trees	Total # of Trees	% Composition
Douglas-fir	18 - 54	'Very Poor' - 'Good'	83	55	138	21.7%
Oregon White Oak	9 - 46	'Very Poor' - 'Good'	482	13	495	77.7%
Bigleaf Maple†	23 - 32	'Good'	4	0	4	0.6%
Total	**9 - 54**	**'Very Poor' - 'Good'**	**569**	**68**	**637**	**100%**

†*All maples occur outside of proposed conservation tract*

Photo 3. View of trees in Cover Type III looking east from Cover Type I.

Forest Cover Type IV: This cover type includes the stand of trees in the wetland area. This contiguous stand of trees includes mostly red alder (*Alnus rubra*), black cottonwood and western redcedar. The trees in this stand will remain mostly undisturbed from development and were not evaluated individually. Understory vegetation in Cover Type IV includes species typical of mesic habitats such as salmonberry (*Rubus spectabilis*), horsetail (*Equisetum spp.*), sedges (*Carex spp.*), and vine maple (*Acer circinatum*). Invasive Himalayan blackberry is also present in the understory.

Photo 4. View of Trees in Cover Type IV. View looking south from 294th St. S.

Discussion

Potential for Tree Retention

Current site plans show two tracts where trees can be saved. Tract A covers over half of Cover Type III. Twenty-one trees in Cover Type II and all trees in Cover Type IV will be retained in Tract C. There is also potential to save 11 trees on lots. The locations of all trees to be retained are illustrated on the site plans in Attachment 2. Douglas-fir trees in Cover Type III will be removed from the tree retention calculations because of the Garry Oak Exemption rule in RMC 11.24.10.C.

The following is a summary of planned tree retention:

Total Project Acreage:	38.36 acres
Tract A - Oregon White Oak Conservation Area	5.17 acres (309 Healthy Trees)
Tract C - Open Space, Wetland	4.84 acres (21 Healthy Trees)
Total Tract Area	10.01 acres (330 Healthy Trees)

A total of **330** healthy trees can be retained in the 2 tract areas. An additional 11 trees could be retained on individual lots for a total of **341** trees to be retained during construction.

Roy Municipal Code (RMC) requires retention of all healthy significant trees wherever possible. When tree removal is necessary, the trees shall be replaced at a ratio described in Chapter 11, Section 24 (F).

Figure 1. Replacement Ratios Required for Significant Trees to be Removed.

MINIMUM TREE REPLACEMENT RATIO	
Significant Tree	**Replacement Plantings**
Evergreen tree: 12-23 inches dbh	Two 10-foot tall evergreen trees or four evergreen trees between 6 and 10 feet tall
Evergreen tree: ≥ 24 inches dbh	Three 10-foot tall evergreen trees or six evergreen trees between 6 and 10 feet tall
Garry Oak: 9-12 inches dbh Other deciduous tree: 12-15 inches dbh	Three 2-inch caliper deciduous trees, or a larger number of smaller Garry Oak to be determined based on size
Garry Oak: 13-16 inches dbh Other deciduous tree: 16-19 inches dbh	Five 2-inch caliper deciduous trees, or a larger number of smaller Garry Oak to be determined based on size
Garry Oak: ≥ 17 inches dbh Other deciduous tree: ≥ 20 inches dbh	Seven 2-inch caliper deciduous trees, or a larger number of smaller Garry Oak to be determined based on size

The following is a summary of required tree replacement:

Total # of Significant Trees outside Wetland Area:	937 Trees
Trees Excluded from Calculations (Unhealthy):	86 Trees
Healthy Douglas-Fir Trees in Type III (per RMC 11.24.10C)	83 Trees
Total # of Healthy Trees on the Site:	768 Trees
# of Healthy Trees to Retain in Tree Tract Areas	330 Trees
# of Healthy Trees to Retain on Individual lots	11 Trees
# of Trees to Remove from Buildable Area of Project	427 Trees

This plan retains 341 healthy trees in tree tract areas and on lots. A total of 427 healthy trees will need to be removed from the buildable area of the project. They will need to be replaced at the ratios described in Figure 1 above.

Table 4. Summary of Required Tree Replacement

Significant Tree	# of Trees to Replace	# of Required Replacement Trees
Evergreen Tree: 12-23 inches DBH	30	**60** 10 ft. tall conifers - or - **90** 6 ft. tall Conifers
Evergreen Tree ≥24 inches DBH	62	**186** 10 ft. tall conifers - or - **372** 6 ft. tall Conifers
Oregon White Oak 9-12 inches DBH: Other Deciduous Tree 12-15 inches DBH	129	**387** 2-in. caliper deciduous trees
Oregon White Oak 13-16 inches DBH: Other Deciduous Tree 16-19 inches DBH	76	**380** 2-in. caliper deciduous trees
Oregon White Oak ≥17 inches DBH: Other Deciduous Tree ≥20 inches DBH	130	**910** 2-in. caliper deciduous trees
Total	427	**246** 10 ft. tall Evergreen Conifers - and - **1,677** 2-in. caliper Deciduous Trees

By removing 427 trees during site clearing, a total of **1,923 or 2,139** replacement trees will need to be replanted.

Two hundred and forty-six (246) of these will need to be evergreen conifers that are at least 10-ft. tall at the time of planting. Alternatively, 462 6-ft. tall evergreen conifers can be planted to replace the Douglas-fir and western redcedar trees removed from the site.

A total of **1,677** 2-in. caliper deciduous trees can be replanted to replace the 335 Oregon white oak and other deciduous trees removed from the site. Smaller trees may be used if they are Oregon white oaks planted in greater quantities.

Recommended coniferous species for replanting include incense-cedar (*Calocedrus decurrens*), ponderosa pine (*Pinus ponderosa*), cedar-of-Lebanon (C*edrus libiani*), Austrian black pine (*Pinus nigra*) Douglas-fir, and southwest white pine (*Pinus strobiformis*).

Deciduous species should include big-tooth maple (*Acer grandidentata*), bur oak (*Quercus macrocarpa*), Kentucky coffee-tree (*Gymnocladus dioicus*), and Texas red oak (*Quercus buckleyi*). These trees are recommended for their tolerance of dry soils typical of the site.

Tree Protection Measures

Trees to be saved must be protected during construction by a six-foot orange mesh fencing (Attachment 5), located 5 feet outside of the drip line of the trees. Fencing at the perimeter of the tree tracts should be sufficient to protect trees in the 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 25% 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 25% 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 impacted 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.

Pruning and Thinning

All individual trees to be saved near or within developed areas should have their crowns raised to provide a minimum of 8 feet of ground clearance over sidewalks and landscape areas, 15 feet over parking lots or streets, and at least 10 feet of building clearance.

All pruning should be done according to the ANSI A300 standards for proper pruning, and be completed by an International Society of Arboriculture Certified Arborist®, or be supervised by a Certified Arborist®.

Conclusions and Timeline for Activity

1. The final, approved tree protection plan map should be included in the construction drawings for bid and construction of the project and should be labeled as such.
2. Stake and heavily flag the clearing limits.

3. Contact WFCI to attend pre-job conference and discuss tree protection issues with contractors. WFCI can verify all trees to be saved and/or removed are adequately marked for retention or removal.
4. Complete logging. Complete necessary hazard tree removals and invasive plant removals from the tree protection areas. No equipment should enter the tree protection areas during logging.
5. Install tree protection fences along the 'limits of construction'. The fences should be located at the limits of construction or 5 feet outside of the drip line of the save tree or as otherwise specified by WFCI. Maintain fences throughout construction.
6. Complete clearing of the project.
7. Do not excavate stumps within 10' of trees to be saved. These should be individually evaluated by WFCI to determine the method of removal.
8. Complete all necessary pruning on save trees or stand edges to provide at least 8' of ground clearance near sidewalks and trails, and 15' above all driveways or access roads.
9. Complete grading and construction of the project.

Summary

There are 937 significant trees in the Oakview project area, 851 of which are healthy, long-term trees. Eighty-three Douglas-fir trees will be removed in cover type III per RMC 11.24.10.C. A total of 427 healthy trees will need to be removed during site clearing to make room for development. A total of 1,923 trees will need to be replanted to replace the trees removed during site clearing.

Please give us a call if you have any further questions.

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Respectfully submitted,

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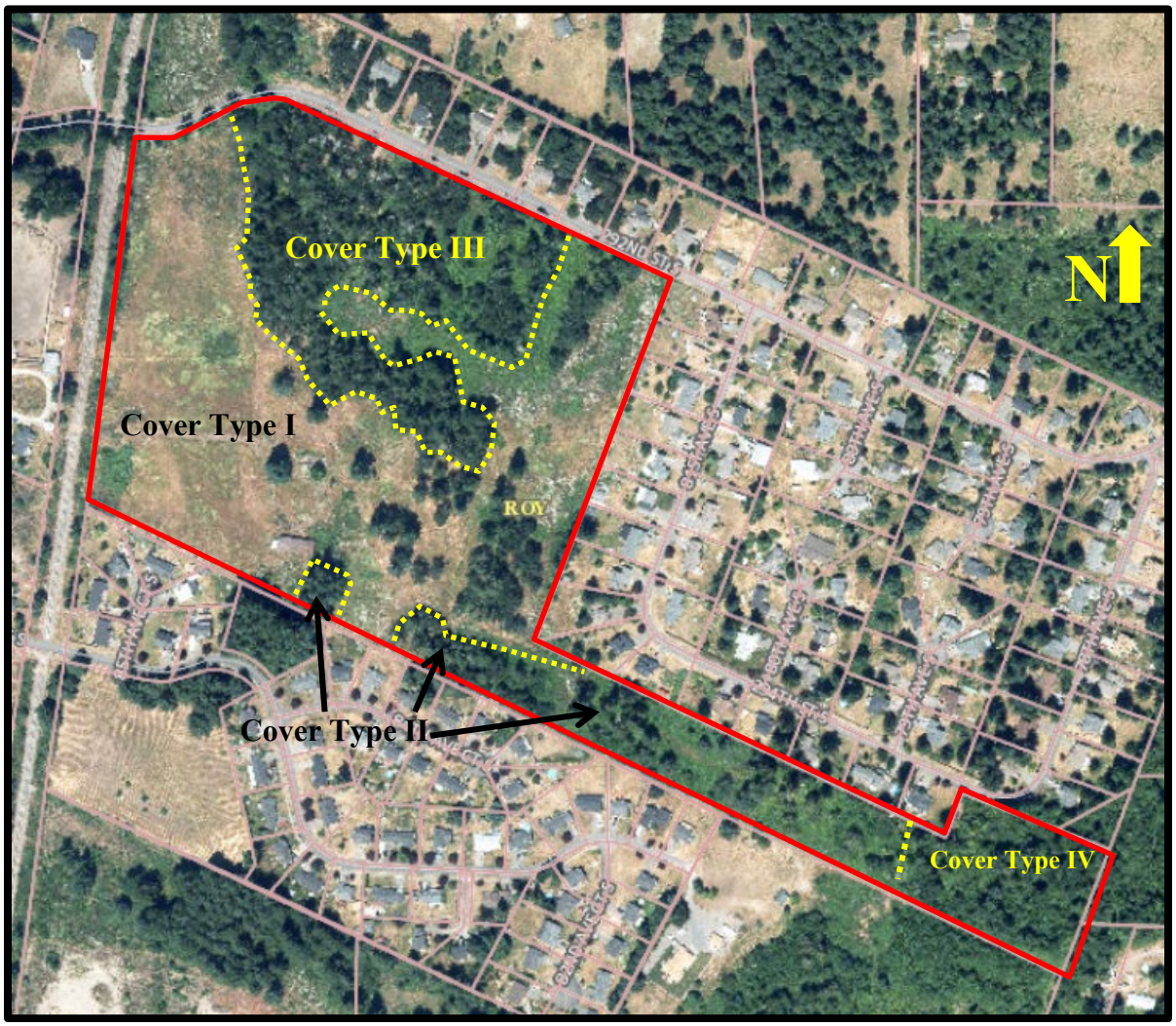
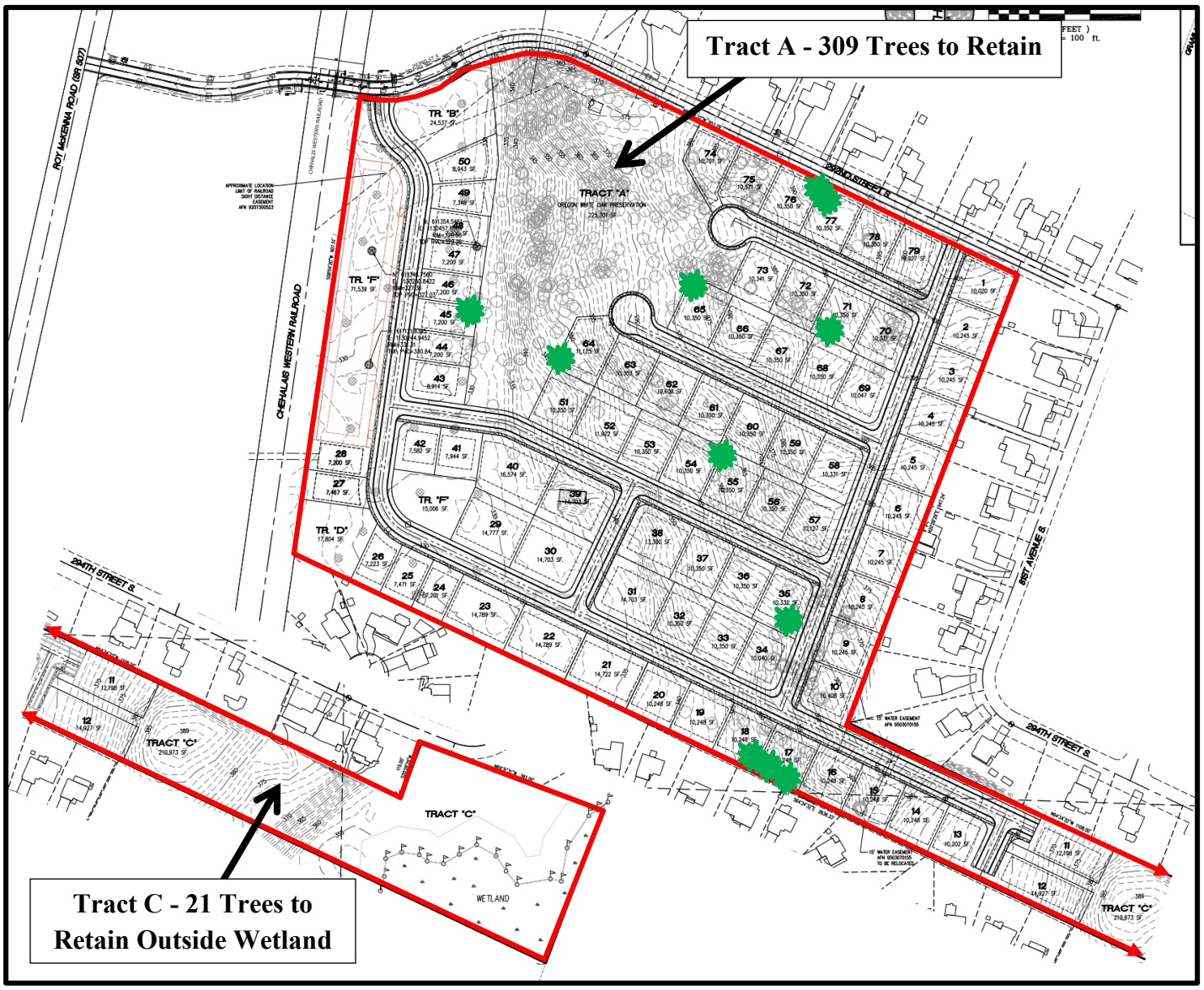
Attachment 1. Aerial Photo of Oakview Project Area with Cover Types

(2015 Pierce County Public GIS)



Attachment 2. Site Plans with Retained Tree Locations Indicated



Project Area Boundary

Lot Tree to Retain

Tree Protection Fence Location

Attachment 3. List of Trees in Cover Types I and II

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
1	Douglas-fir	29, 29	Good	26A*	I	
2	Douglas-fir	31	Good	22W	I	
3	Douglas-fir	45	Good	26E	I	
4	Silver Maple	40	Poor - Broken Stems	20A*	I	
5	Douglas-fir	30	Fair	19N	II	
6	Douglas-fir	19	Fair	11A*	II	
7	Douglas-fir	20	Fair	14W	II	
8	Douglas-fir	22	Fair	15E	II	
9	Douglas-fir	15	Fair	11N	II	
10	Douglas-fir	12	Poor - Suppressed	-	II	
11	Douglas-fir	42	Good	28E	II	
12	Douglas-fir	19	Fair	12A*	II	
13	Douglas-fir	28	Good	18A*	II	
14	Douglas-fir	26	Good	16A*	II	
15	Douglas-fir	17	Fair	11A*	II	
16	Douglas-fir	13	Poor - Suppressed	-	II	
17	Douglas-fir	28	Fair	20A*	II	
18	Douglas-fir	32	Good	19N	II	
19	Douglas-fir	20	Good	16S	II	
20	Douglas-fir	29	Good	18A*	II	
21	Douglas-fir	24, 33	Good	20N	II	
22	Douglas-fir	35	Good	22A*	II	
23	Douglas-fir	19	Fair	12A*	II	
24	Douglas-fir	17	Poor - Suppressed	-	II	
25	Douglas-fir	22, 22	Good	20A*	II	Like a 29 in DBH Tree
26	Douglas-fir	14	Fair	10A*	II	
27	Douglas-fir	33	Good	22A*	II	
28	Douglas-fir	30	Good	20S	II	
29	Douglas-fir	32	Good	21N	II	
30	Douglas-fir	52	Good	32A*	II	
31	Douglas-fir	17	Fair	12A*	II	
32	Douglas-fir	30	Fair	20A*	II	
33	Douglas-fir	32	Good	21A*	II	
34	Oregon White Oak	25	Good	20A*	II	Isolated
35	Douglas-fir	36	Good	22A*	II	
36	Douglas-fir	20	Fair	14W	II	

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
37	Oregon White Oak	17	Fair	18E	II	Isolated
38	Oregon White Oak	33	Good	28N	II	Isolated
39	Douglas-fir	34	Good	22A*	II	
40	Oregon White Oak	30	Good	24A*	II	Isolated
41	Oregon White Oak	27	Good	22A*	II	Isolated
42	Oregon White Oak	32	Good	26A*	II	Start Grove 4
43	Douglas-fir	39	Good	28A*	II	
44	Oregon White Oak	23	Good	18A*	II	
45	Oregon White Oak	23	Good	18A*	II	
46	Oregon White Oak	28	Good	20A*	II	
47	Douglas-fir	36	Fair	24A*	II	
48	Oregon White Oak	18	Fair	16N	II	
49	Oregon White Oak	14	Fair	12S	II	
50	Oregon White Oak	15	Fair	12N	II	
51	Douglas-fir	28	Good	19A*	II	
52	Douglas-fir	22	Fair	15A*	II	
53	Douglas-fir	28	Fair	18N	II	By Fence
54	Oregon White Oak	7, 9	Fair	10N	II	By #53
55	Oregon White Oak	19, 14	Fair	20N	II	
56	Oregon White Oak	9, 6, 5	Fair	12A*	II	
57	Douglas-fir	25	Poor - In Decline	-	II	
58	Douglas-fir	20	Poor - In Decline	-	II	Red Ring Rot
59	Douglas-fir	27	Fair	19A*	II	
60	Oregon White Oak	14	Fair	12A*	II	
61	Douglas-fir	19	Poor - In Decline	-	II	Stem Defect
62	Oregon White Oak	11	Fair	10N	II	
63	Oregon White Oak	15	Good	12NE	II	
64	Oregon White Oak	12	Fair	10A*	II	
65	Oregon White Oak	17	Good	14A*	II	
66	Oregon White Oak	11	Fair	9A*	II	
67	Oregon White Oak	9	Poor - Whip	-	II	
68	Oregon White Oak	25	Fair	24A*	II	
69	Oregon White Oak	14	Fair	12A*	II	
70	Oregon White Oak	18	Good	14A*	II	
71	Oregon White Oak	18	Fair	14N	II	
72	Douglas-fir	25	Poor - In Decline	-	II	
73	Douglas-fir	24	Poor - In Decline	-	II	
74	Oregon White Oak	15	Good	12N	II	
75	Oregon White Oak	12	Fair	10A*	II	

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
76	Douglas-fir	27	Fair	19A*	II	
77	Oregon White Oak	13	Fair	10A*	II	
78	Oregon White Oak	13	Fair	10A*	II	
79	Oregon White Oak	16	Good	14A*	II	
80	Oregon White Oak	32	Good	26A*	II	
81	Oregon White Oak	26	Good	24A*	II	End Grove 4
82	Bigleaf Maple	18	Good	16A*	II	
83	Douglas-fir	20	Fair	14A*	II	
84	Douglas-fir	37	Good	26A*	II	
85	Oregon White Oak	10.5	Fair	8A*	II	Isolated
86	Oregon White Oak	10	Fair	8A*	II	Isolated
87	Oregon White Oak	11	Fair	8A*	II	Isolated
88	Oregon White Oak	23	Good	16A*	II	Isolated
89	Douglas-fir	40	Good	28A*	II	
90	Douglas-fir	32	Good	22A*	II	
91	Oregon White Oak	15	Fair	12A*	II	Isolated
92	Oregon White Oak	11	Fair	9A*	II	Isolated
93	Oregon White Oak	18	Good	14A*	II	Isolated
94	Douglas-fir	24	Fair	15A*	II	
95	Western Redcedar	13.5	Fair	10A*	II	
96	Western Redcedar	38	Good	26A*	II	
97	Douglas-fir	25	Fair	17A*	II	
98	Western Redcedar	31	Good	21A*	II	
99	Douglas-fir	34	Good	22A*	II	
100	Douglas-fir	28	Fair	20A*	II	
101	Bitter Cherry	14	Good	12A*	II	
102	Douglas-fir	40	Good	30A*	II	
103	Douglas-fir	30	Good	20A*	II	
104	Douglas-fir	32	Good	21A*	II	
105	Douglas-fir	30	Good	20A*	II	
106	Douglas-fir	28	Good	19A*	II	by 106
107	Douglas-fir	31	Good	20A*	II	by 105
108	Oregon White Oak	17.5	Good	14A*	II	Isolated
109	Oregon White Oak	19	Good	15A*	II	Isolated
110	Douglas-fir	26	Fair	17A*	II	by 108
111	Douglas-fir	15	Fair	12A*	II	by 111
112	Douglas-fir	25	Good	17A*	II	by 110
113	Douglas-fir	24.5	Good	17A*	II	
114	Douglas-fir	28	Good	18A*	II	
115	Douglas-fir	28	Good	18A*	II	
116	Western Redcedar	44	Good	31A*	II	by 117
117	Western Redcedar	16.5	Good	12N	II	by 116
118	Douglas-fir	22	Fair	16A*	II	
119	Western Redcedar	17, 33	Good	26A*	II	
120	Western Redcedar	27, 33	Fair	22A*	II	

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
121	Western Redcedar	26	Good	20A*	II	
122	Oregon White Oak	9	Fair	8A*	II	Top of hill, Isolated
123	Douglas-fir	28	Good	20A*	II	by 122
124	Western Redcedar	18	Poor - Stem Decay	-	II	butt sweep
125	Western Redcedar	17	Good	13A*	II	
126	Douglas-fir	18	Good	14A*	II	
127	Western Redcedar	15	Good	11A*	II	
128	Douglas-fir	13	Poor - Stem Defect	-	II	
129	Western Redcedar	35, 42	Fair	30A*	II	
130	Western Redcedar	12	Fair	8A*	II	
131	Western Redcedar	12	Good	8A*	II	
132	Western Redcedar	16	Good	11A*	II	
133	Western Redcedar	19	Good	12A*	II	
134	Western Redcedar	14, 15, 16, 22	Good	20A*	II	Like a 32 in DBH Tree
135	Western Redcedar	31	Good	20N	II	
136	Western Redcedar	60	Good	40A*	II	
137	Western Redcedar	16	Good	11A*	II	
138	Western Redcedar	15	Poor - Stem Defect	-	II	
139	Western Redcedar	18, 30	Good	22A*	II	
140	Western Redcedar	40	Good	28A*	II	Not Numbered
141	Western Redcedar	42	Good	29A*	II	Not Numbered
142	Western Redcedar	26	Good	19A*	II	Not Numbered
143	Western Redcedar	32	Fair	21A*	II	
144	Western Redcedar	34	Good	22A*	II	
145	Western Redcedar	29	Good	20A*	II	
146	Western Redcedar	11, 23	Good	21A*	II	Like a 25 in DBH Tree
147	Western Redcedar	31	Good	21A*	II	
148	Western Redcedar	30	Good	21A*	II	
149	Western Redcedar	31	Good	21A*	II	
150	Douglas-fir	34	Good	22A*	II	
151	Black Cottonwood	37	Good	24A*	II	
152	Oregon White Oak	18	Good	16A*	II	Isolated
153	Oregon White Oak	14	Good	12A*	II	Isolated
154	Douglas-fir	32	Good	20A*	II	
155	Douglas-fir	12	Good	9A*	II	
156	Oregon White Oak	13	Fair	10A*	I	Start Grove 3
157	Oregon White Oak	17.5	Fair	13A*	I	

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
158	Oregon White Oak	9, 10, 17	Fair	15A*	I	
159	Oregon White Oak	10, 4	Fair	9A*	I	
160	Oregon White Oak	17	Fair	12A*	I	
161	Oregon White Oak	7, 7	Fair	8A*	I	Like a 9 in DBH tree
162	Oregon White Oak	17	Good	12A*	I	
163	Oregon White Oak	10, 7	Fair	10A*	I	
164	Oregon White Oak	14	Good	11A*	I	
165	Douglas-fir	21	Fair	14A*	I	
166	Oregon White Oak	10	Fair	8A*	I	
167	Oregon White Oak	16	Fair	10A*	I	
168	Douglas-fir	18	Fair	11A*	I	
169	Oregon White Oak	15	Good	11A*	I	
170	Oregon White Oak	21	Good	14A*	I	
171	Oregon White Oak	12, 8	Good	10A*	I	
172	Oregon White Oak	13, 9	Good	11A*	I	
173	Oregon White Oak	12	Good	9A*	I	
174	Oregon White Oak	12	Good	9A*	I	
175	Oregon White Oak	9	Fair	8A*	I	
176	Oregon White Oak	9	Fair	8A*	I	
177	Oregon White Oak	13	Fair	9A*	I	
178	Oregon White Oak	9	Fair	8A*	I	
179	Douglas-fir	33	Good	18A*	I	
180	Douglas-fir	22	Fair	15A*	I	
181	Oregon White Oak	14	Good	12A*	I	
182	Oregon White Oak	20	Good	14A*	I	
183	Oregon White Oak	9	Fair	8A*	I	
184	Oregon White Oak	20	Good	14A*	I	
185	Douglas-fir	36	Poor - Struck by Lightning	-	I	
186	Oregon White Oak	13	Fair	10A*	I	
187	Oregon White Oak	24	Good	18A*	I	
188	Oregon White Oak	11	Fair	9A*	I	
189	Oregon White Oak	11	Fair	9A*	I	
190	Oregon White Oak	18	Good	14A*	I	
191	Oregon White Oak	11	Fair	9A*	I	
192	Oregon White Oak	21	Good	16A*	I	
193	Douglas-fir	32	Good	18A*	I	
194	Oregon White Oak	9	Fair	8A*	I	Intermediate Crown Position
195	Oregon White Oak	20	Good	16A*	I	
196	Oregon White Oak	19	Good	16A*	I	
197	Oregon White Oak	22	Good	17A*	I	
198	Oregon White Oak	11.5	Fair	9A*	I	

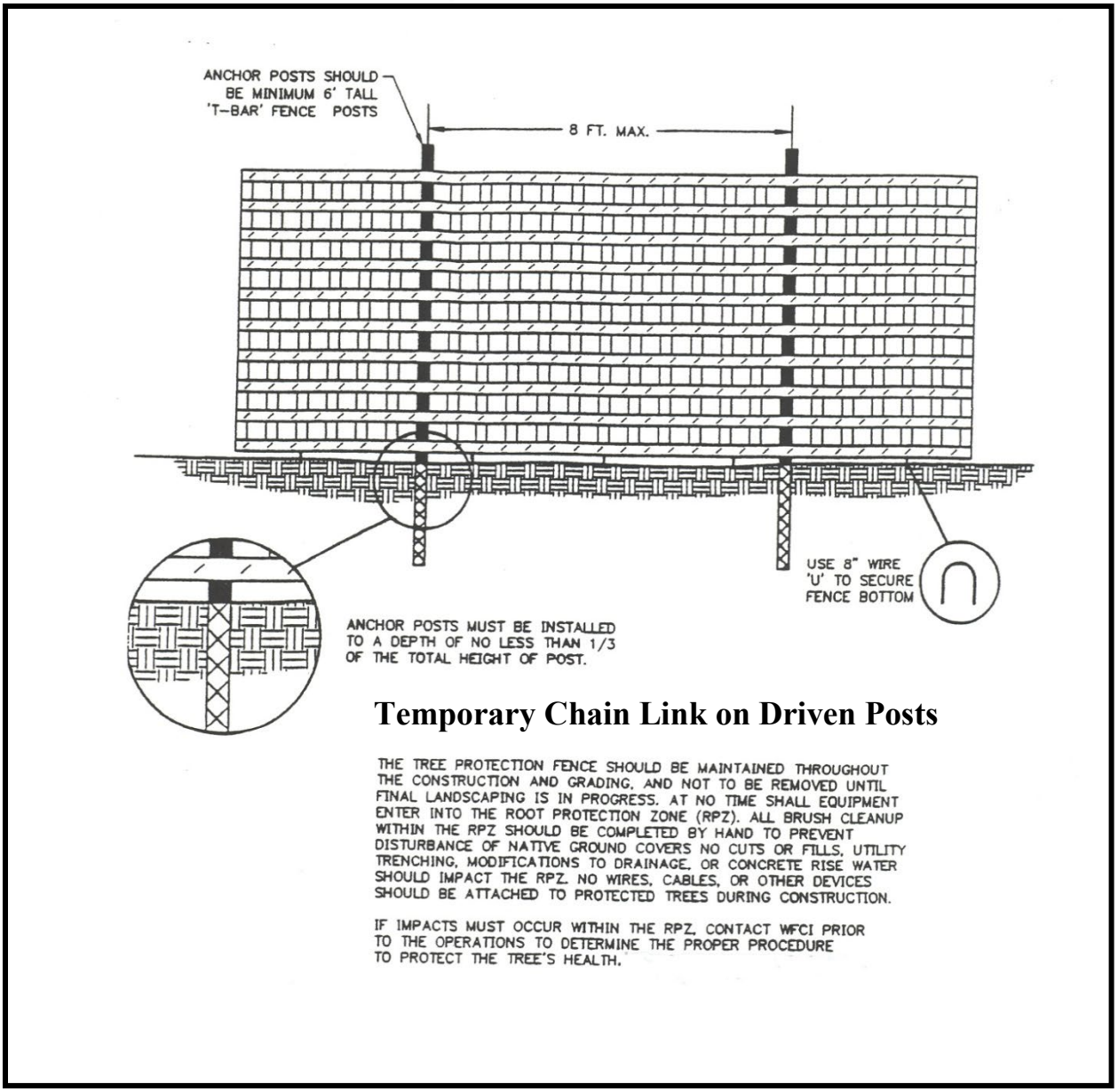
Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
199	Oregon White Oak	11, 11	Fair	12A*	I	Like a 14 in. DBH tree
200	Oregon White Oak	13	Fair	10A*	I	
201	Oregon White Oak	7,14	Fair	12A*	I	
202	Oregon White Oak	9, 9, 10, 10, 20	Good	18A*	I	
203	Oregon White Oak	14	Fair	10A*	I	
204	Oregon White Oak	12	Fair	9A*	I	
205	Oregon White Oak	17, 24	Good	20A*	I	
206	Oregon White Oak	13	Fair	10A*	I	
207	Oregon White Oak	14, 9	Fair	12A*	I	Like a 16 in. DBH tree
208	Oregon White Oak	13	Fair	11A*	I	
209	Oregon White Oak	20, 17	Fair	20A*	I	
210	Oregon White Oak	16	Good	14A*	I	
211	Douglas-fir	21	Poor - In Decline	-	I	
212	Douglas-fir	38	Good	24A*	I	
213	Oregon White Oak	12	Good	10A*	I	
214	Oregon Ash	13	Good	10A*	I	
215	Oregon White Oak	9	Fair	8A*	I	
216	Oregon White Oak	9	Fair	8A*	I	
217	Oregon White Oak	12	Fair	8A*	I	
218	Oregon White Oak	13	Fair	10A*	I	
219	Oregon White Oak	12	Fair	10A*	I	
220	Douglas-fir	38	Good	30A*	I	
221	Oregon White Oak	23	Good	18A*	I	
222	Douglas-fir	25, 15	Fair	18A*	I	
223	Oregon White Oak	13	Fair	10A*	I	
224	Douglas-fir	21	Fair	16A*	I	
225	Douglas-fir	29	Good	20A*	I	
226	Oregon White Oak	23	Good	18A*	I	End Grove 3
227	Douglas-fir	48	Good	32A*	I	
228	Black Cottonwood	26	Fair	19SW	I	Tract B
229	Black Cottonwood	21	Poor - No Top	-	I	
230	Black Cottonwood	19, 34	Fair	22W	I	
231	Black Cottonwood	12, 29	Fair	24SW	I	
232	Douglas-fir	41	Good	26W	I	
233	Douglas-fir	33	Good	22W	I	
234	Douglas-fir	44	Good	28A*	I	
235	Douglas-fir	49	Good	32A*	I	
236	Oregon White Oak	21	Good	18A*	I	Isolated
237	Oregon White Oak	15	Good	13A*	I	Isolated

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
238	Douglas-fir	37	Good	22A*	I	
239	Douglas-fir	29	Fair	18A*	I	
240	Oregon White Oak	15.5	Fair	13A*	I	Isolated
241	Douglas-fir	33	Fair	21A*	I	
242	Oregon White Oak	18	Fair	15A*	I	Isolated
243	Douglas-fir	23	Fair	16A*	I	
244	Oregon White Oak	12	Fair	10A*	I	Isolated
245	Oregon White Oak	18	Fair	16A*	I	Isolated
246	Oregon White Oak	19	Fair	17A*	I	Isolated
247	Douglas-fir	33	Good	26A*	I	
248	Douglas-fir	20	Fair	14A*	I	
249	Oregon White Oak	20	Good	18A*	I	Isolated
250	Douglas-fir	27	Good	19A*	I	
251	Oregon White Oak	14.5	Fair	12A*	I	Isolated
252	Oregon White Oak	21	Fair	19A*	I	Isolated
253	Oregon White Oak	20	Good	18A*	I	Isolated
254	Oregon White Oak	18	Good	16A*	I	Start Grove 2
255	Douglas-fir	15	Very Poor - Falling Over	-	I	
256	Oregon White Oak	17.5	Fair	14A*	I	
257	Oregon White Oak	18	Good	16A*	I	
258	Oregon White Oak	13	Fair	11A*	I	
259	Oregon White Oak	11	Fair	9A*	I	
260	Oregon White Oak	13	Fair	11A*	I	
261	Oregon White Oak	16	Fair	14A*	I	
262	Oregon White Oak	10, 7	Fair	10A*	I	
263	Oregon White Oak	15	Fair	13A*	I	
264	Oregon White Oak	14	Fair	12A*	I	
265	Oregon White Oak	22	Fair	19A*	I	
266	Oregon White Oak	13	Fair	11A*	I	
267	Oregon White Oak	22, 16	Fair	24A*	I	
268	Oregon White Oak	17, 19	Good	23A*	I	
269	Oregon White Oak	12	Fair	10A*	I	
270	Oregon White Oak	11, 9	Fair	10A*	I	
271	Oregon White Oak	9, 9	Fair	10A*	I	
272	Oregon White Oak	16	Fair	14A*	I	
273	Oregon White Oak	12	Fair	10A*	I	
274	Oregon White Oak	16	Fair	14A*	I	
275	Oregon White Oak	18, 9	Fair	17A*	I	
276	Oregon White Oak	17	Fair	15A*	I	
277	Oregon White Oak	12, 8, 8	Poor - Stem Defect	-	I	

Tree #	Species	DBH (in.)	Condition	RPZ (ft. Radius, Direction to Grading)	Cover Type	Comment
278	Oregon White Oak	17, 8, 11	Fair	17A*	I	
279	Oregon White Oak	13	Fair	11A*	I	
280	Oregon White Oak	11	Fair	9A*	I	
281	Oregon White Oak	14	Fair	12A*	I	
282	Oregon White Oak	22	Fair	19A*	I	
283	Oregon White Oak	15, 3	Fair	14A*	I	
284	Oregon White Oak	17	Fair	15A*	I	
285	Oregon White Oak	17	Fair	15A*	I	
286	Oregon White Oak	17.5	Fair	15A*	I	
287	Oregon White Oak	28	Good	24A*	I	
288	Oregon White Oak	9	Fair	8A*	I	
289	Oregon White Oak	17	Fair	15A*	I	
290	Oregon White Oak	24	Good	22A*	I	End Grove 2
291	Oregon White Oak	19	Good	17A*	I	Isolated
292	Oregon White Oak	21	Good	18A*	I	Isolated
293	Oregon White Oak	27	Good	24A*	I	Isolated
294	Oregon White Oak	32.5	Good	28A*	I	Isolated
295	Douglas-fir	31	Fair	22A*	I	
296	Western Redcedar	35	Good	23A*	I	
297	Douglas-fir	13	Fair	10A*	I	
298	Western Redcedar	17	Good	14A*	I	
299	Western Redcedar	12	Good	9A*	I	
300	Western Redcedar	51	Good	25A*	I	

**All Directions*

Attachment 4. Tree Protection Fence Detail



Temporary Chain Link on Driven Posts

THE TREE PROTECTION FENCE SHOULD BE MAINTAINED THROUGHOUT THE CONSTRUCTION AND GRADING, AND NOT TO BE REMOVED UNTIL FINAL LANDSCAPING IS IN PROGRESS. AT NO TIME SHALL EQUIPMENT ENTER INTO THE ROOT PROTECTION ZONE (RPZ). ALL BRUSH CLEANUP WITHIN THE RPZ SHOULD BE COMPLETED BY HAND TO PREVENT DISTURBANCE OF NATIVE GROUND COVERS NO CUTS OR FILLS, UTILITY TRENCHING, MODIFICATIONS TO DRAINAGE, OR CONCRETE RISE WATER SHOULD IMPACT THE RPZ. NO WIRES, CABLES, OR OTHER DEVICES SHOULD BE ATTACHED TO PROTECTED TREES DURING CONSTRUCTION.

IF IMPACTS MUST OCCUR WITHIN THE RPZ, CONTACT WFCI PRIOR TO THE OPERATIONS TO DETERMINE THE PROPER PROCEDURE TO PROTECT THE TREE'S HEALTH.

Attachment 5. Individual Tree Rating Key for Tree Condition

RATING	SYMBOL	DEFINITION
Very Good	**VG**	• Balanced crown that is characteristic of the species • Normal lateral and terminal branch growth rates for the species and soil type • Stem sound, normal bark vigor • No root problems • No insect or disease problems • Long-term, attractive tree
Good	**G**	• Crown lacking symmetry but nearly balanced • Normal lateral and terminal branch growth rates for the species and soil type • Minor twig dieback O.K. • Stem sound, normal bark vigor • No root problems • No or minor insect or disease problems – insignificant • Long-term tree
Fair	**F**	• Crown lacking symmetry due to branch loss • Slow lateral and terminal branch growth rates for the species and soil type • Minor and major twig dieback – starting to decline • Stem partly unsound, slow diameter growth and low bark vigor • Minor root problems • Minor insect or disease problems • Short-term tree 10-30 years
Poor	**P**	• Major branch loss – unsymmetrical crown • Greatly reduced growth • Several structurally import dead or branch scaffold branches • Stem has bark loss and significant decay with poor bark vigor • Root damage • Insect or disease problems – remedy required • Short-term tree 1-10 years
Very Poor	**VP**	• Lacking adequate live crown for survival and growth • Severe decline • Minor and major twig dieback • Stem unsound, bark sloughing, previous stem or large branch failures, very poor bark vigor • Severe root problems or disease • No or minor insect or disease problems • Mortality expected within the next few years
Dead	**DEAD**	• Dead

Cultural Care Needs:

ABBRV.	ACTIVITY	DESCRIPTION
CC	**Crown Cleaning**	Pruning of dead, dying, diseased, damaged, or defective branches over 1/2 inch in diameter –includes removal of dead tops
CT	**Crown Thinning**	Pruning of branches described in crown cleaning, plus thinning of up to 20% of the live branches over ½ inch diameter. Branch should be 1/3 to ½ the diameter of the lateral branch. Thinning should be well distributed throughout crown of tree, and should release healthy, long-term branches.
RC	**Crown Reduction**	Reduction of the crown of a tree by pruning to lateral branches. Generally used to remove declining branches or to lighten end weight on long branches.
CR	**Crown Raising**	Pruning of lower branches to remove deadwood or to provide ground or building clearances.
RMV	**Remove**	Remove tree due to decline or hazardous conditions that cannot be mitigated by pruning.
RS	**Remove Sprouts**	Remove basal sprouts from stem of tree.
Rep	**Replace**	Tree is small – is in decline or dead. Replace with suitable tree species.
HT	**Hazard Tree**	Tree is hazardous and cannot be mitigated by pruning. Recommendation is to remove tree.
None	**No Work**	No work necessary at this time.

Attachment 6. Description of Tree Evaluation Methodology

The evaluation of the tree condition on this site included the visual assessment of:

1. Live-crown ratio,
2. Lateral and terminal branch growth rates,
3. Presence of dieback in minor and major scaffold branches and twigs,
4. Foliage color,
5. Stem soundness and other structural defects,
6. Visual root collar examination,
7. Presence of insect or disease problems.
8. Windfirmness: if tree removal will expose this tree to failure.

In cases where signs of internal defect or disease were suspected, a core sample was taken to look for stain, decay, and diameter growth rates. Also, root collars were exposed to look for the presence of root disease.

In all cases, the overall appearance of the tree was considered relative to its ability to add value to either an individual lot or the entire subdivision. Also, the scale of the tree and its proximity to both proposed and existing houses was considered.

Lastly, the potential for incorporation into the project design is evaluated, as well as potential site plan modifications that may allow otherwise removed tree(s) to be both saved and protected in the development.

Trees that are preserved in a development must be carefully selected to make sure that they can survive construction impacts, adapt to a new environment, and perform well in the landscape. Healthy, vigorous trees are better able to tolerate impacts such as root injury, changes in soils moisture regimes, and soil compaction than are low vigor trees.

Structural characteristics are also important in assessing suitability. Trees with significant decay and other structural defects that cannot be treated are likely to fail. Such trees should not be preserved in areas where damage to people or property could occur.

Trees that have developed in a forest stand are adapted to the close, dense conditions found in such stands. When surrounding trees are removed during clearing and grading, the remaining trees are exposed to extremes in wind, temperature, solar radiation, which causes sunscald, and other influences. Young, vigorous trees with well-developed crowns are best able to adapt to these changing site conditions.

Attachment 7. Glossary of Forestry and Arboricultural Terminology

DBH: Diameter at Breast Height (measured 4.5 ft. above the ground line on the high side of the tree).

Live Crown Ratio: Ratio of live foliage on the stem of the tree. Example: A 100' tall tree with 40 feet of live crown would have a 40% live crown ratio. Conifers with less than 30% live crown ratio are generally not considered to be long-term trees in forestry.

Crown: Portion of a trees stem covered by live foliage.

Crown Position: Position of the crown with respect to other trees in the stand.

Dominant Crown Position: Receives light from above and from the sides.

Codominant Crown Position: Receives light from above and some from the sides.

Intermediate Crown Position: Receives little light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Suppressed Crown Position: Receives no light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Attachment 8. 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.

3) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, Washington Forestry Consultants, Inc. can neither guarantee nor be responsible for the accuracy of information.

4) Washington Forestry Consultants, Inc. shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

5) Loss or alteration of any part of this report invalidated the entire report.

6) Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc.

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.

8) This report and any values expressed herein represent the opinion of Washington Forestry Consultants, Inc., and the fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence neither of a subsequent event, nor upon any finding in to reported.

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.