

# WASHINGTON FORESTRY CONSULTANTS, INC.

FORESTRY AND VEGETATION MANAGEMENT SPECIALISTS



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- Tree Protection Plan -

## DUKES LANDING

16410 NE 47<sup>th</sup> Street  
Redmond, WA

Prepared for: Eric Labrie  
ESM Consulting Engineers, LLC

Prepared by: Washington Forestry Consultants, Inc.

Date: March 11, 2015

### Introduction and Scope of Services

The project proponent is planning to convert 4.27 acres into an 18 lot single family residential subdivision located at 16410 NE 47<sup>th</sup> Street, Redmond, WA. The proponent has retained WFCI to:

- Evaluate all trees on the site pursuant to the requirements of Section **21.72.010** of the Redmond Zoning Code.
- Make recommendations for retention of significant trees in open space or tree tract areas, along with required protection and cultural measures.
- Complete the minimum stocking requirement calculations and the required tree replacement calculations.

### Observations

#### Methodology

WFCI has individually evaluated each tree 6 inches DBH (diameter at breast height) and larger in the proposed project area, and assessed it's potential to be incorporated into the new project. Evaluated trees were painted with a blue number that corresponds to the tree list. Poor quality trees were also marked with orange dots at eye level. The tree evaluation phase used methodology developed by Matheny and Clark (1998) in their text Trees and Development: A Technical Guide to Preservation of Trees During Land

Development, published by the International Society of Arboriculture, Champaign, IL 1998.

In all cases, the overall health of the tree was considered relative to its ability to add value to the new subdivision.

The potential for incorporation into the project design has been evaluated as well.

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.

### **Site History**

The Duke's Landing Project has one single family home with an outbuilding on 4.27 acres in the City of Redmond, Washington. The majority of the area is flat to gently sloping (from 5% to 10%).

### **Soil Depth and Productivity**

According to the King County Soil Survey the soil type on the site is the Alderwood gravelly sandy loam, a moderately deep, moderately well drained soil found on glacial till plains. It is formed in ablation till overlying basal till. A weakly cemented hardpan is at a depth of 20 to 40 inches. Permeability is moderately rapid above the hardpan and very slow in the pan. Available water capacity is low. The effective rooting depth for trees is 20-40 inches. A perched seasonal high water table is at a depth of 18-36 inches from November to March. The potential for windthrow of trees is 'moderate' under normal conditions. New trees require irrigation for establishment.

### **Existing Tree Conditions**

The Duke's Landing property is mostly open grassland, with trees along the current driveway, the edges of the property, and along the vacated rights-of-way to the west of the home. The dominant tree species is Douglas-fir (*Pseudotsuga menziesii*), with western red cedar (*Thuja plicata*), and bigleaf maple (*Acer macrophyllum*). Ponderosa pine (*Pinus ponderosa*), cypress species (*Cupressus* spp.), sweetgum (*Liquidambar styraciflua*), cherry species (*Prunus* spp.), red alder (*Alnus rubra*), and Lombardy poplar (*Populus nigra*) were also present.

Table 1. Species composition on the Duke's Landing Property.

| Parameter     | Species     |                   |               |          |        |       |
|---------------|-------------|-------------------|---------------|----------|--------|-------|
|               | Douglas-fir | Western red cedar | Bigleaf maple | Sweetgum | Poplar | Other |
| # Trees       | 47          | 19                | 11            | 5        | 7      | 4     |
| % Composition | 51%         | 20%               | 12%           | 5%       | 8%     | 4%    |

The condition of the trees ranged very good to very poor with most falling into the fair category. A list of the tree species, size, crown position, condition, and minimum root protection zone is provided in Appendix III.

Table 2. Tree Condition on the Duke's Landing Property.

| Parameter     | Condition |      |      |      |           |
|---------------|-----------|------|------|------|-----------|
|               | Very Poor | Poor | Fair | Good | Very Good |
| # Trees       | 17        | 16   | 43   | 15   | 2         |
| % Composition | 18%       | 17%  | 46%  | 16%  | 2%        |

### Significant Trees

A 100% inventory of the significant tagged trees was completed. These are trees 6 inches diameter a breast height (DBH) and greater. A total of 93 significant trees were found on site. Sixty trees were healthy and have the potential to be retained. Thirty-three of the trees are considered to be unhealthy and are not recommended for retention.

In the city of Redmond on all new developments, a minimum of 35% of significant healthy trees need to be retained.

### Landmark Trees

Two trees (a Lombardy poplar and an overmature bigleaf maple) with a DBH greater than 30 inches were observed growing on site. Both trees are in poor health and considered hazard trees to a new project. According to the Redmond Municipal Code, landmark trees are trees greater than 30 inches DBH and in good health.

### Off-Site Impacts

Tree removal for this project should not have an impact on off-site trees.

## **Discussion and Recommendations**

### **Potential for Tree Retention**

Sixty healthy, significant trees were identified on the site. A list is provided in Appendix III with all species, size, and condition parameters. Of these 60 trees, 22 are planned for retention with the balance being inside the footprint of proposed roads, homes, or significant grade changes.

### **Tree Protection Measures**

Trees to be saved must be protected during construction by temporary chain-link fencing on driven posts, located at the edge of the critical root zone. The individual critical root zones are a radius of 5 ft. outside the dripline of the tree, unless otherwise delineated by WFCI.

There should be no equipment activity (includes rototilling) within the critical root zone. No irrigation lines, trenches, or other utilities should be installed within the critical root zone. If roots are encountered outside the critical root zone, 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 and mitigating measures, or if the tree should be removed.

Any retention walls that will be constructed near save trees must not encroach upon the root protection zone (as delineated by WFCI in Appendix III) more than 25%. Roots encountered during construction greater than one inch in diameter must be cut cleanly with a saw and immediately re-covered with moist soil, rather than ripping them with an excavator.

### **Pruning and Thinning**

Trees retained in the project should be pruned to provide ground clearance and visibility for security purposes. This pruning is recommended to raise the crowns to at least 8 feet in open spaces and 15 feet over streets and sidewalks. If branches encroach in buildings, then at least 10 feet of building clearance should be achieved. All pruning should be done, or be supervised by an International Society of Arboriculture Certified Arborist® and be done to the ANSI A300 standards for proper pruning.

### Minimum Density Calculations

The city of Redmond's *Tree Protection Ordinance* requires that 35 percent of significant trees be retained on site.

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

|   |                 |
|---|-----------------|
| Number of Healthy, Significant Trees on Site: | 60 Trees        |
| Minimum Density Requirement (35%):            | <u>21 Trees</u> |
| Number of Trees Planned for Retention:        | 22 Trees        |

The tree protection ordinance also requires that replacements are planted at a 1:1 ratio for all healthy significant trees removed from the site. **Thirty-eight** trees will need to be planted on site. Minimum size for replacement trees shall be:

1. Two-and-one-half-inch caliper deciduous trees; or
2. Six feet tall conifers.

We recommend planting a mixture of native conifer and deciduous trees along the western boundary of the site; in the vicinity of the current proposed retention trees.

Table 3. Summary of Significant and Landmark Trees at the Duke's Landing Property.

| Proposed Action and Brief Definition |         |          |          |       |
|--------------------------------------|---------|----------|----------|-------|
| Tree Type                            | Removal | Impacted | Retained | Total |
| Landmark (>30" dbh)                  | 0       | 0        | 0        | 0     |
|                                      |         |          |          |       |
| Significant (6"-30")                 | 38      | 0        | 22       | 60    |
|                                      | 63%     |          | 37%      | 100%  |
| Totals                               | 38      | 0        | 22       | 60    |
|                                      | 63%     |          | 37%      | 100%  |
| Replacement Trees                    | 38      | N/A      | N/A      | 38    |

## Conclusions

### Timeline for Activity

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

1. Stake the clearing limits and flag the tree protection fence locations.
2. Conduct a pre-job conference with WFCI prior to the start of clearing.
3. Complete the logging and clearing. Hazard trees should be removed from among the save trees at this time.
4. Install tree protection fences. Maintain fences throughout construction. WFCI should be contacted to inspect the fences prior to the start of grading.
5. Construct project.

## Summary

Sixty significant trees exist on the Duke's Landing Property. Twenty-two of these significant trees are planned for retention, meeting the 35% tree protection ordinance requirement. Thirty-eight replacement trees will also need to be planted to replace the 38 healthy significant trees that are to be removed. The cost of replanting these 38 trees is projected to be \$11,010.

Please give me a call if you have further questions.

Respectfully submitted,

Washington Forestry Consultants, Inc.



Galen M. Wright, ACF, ASCA  
 ISA Board Certified Master Arborist No. PN-0129BU  
 Certified Forester No. 44

attachment: figure 1-2  
 tree list  
 photo log  
 tree protection fence detail

*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.*

APPENDIX I

Aerial Photo of the Duke's Landing Property - Dukes Landing

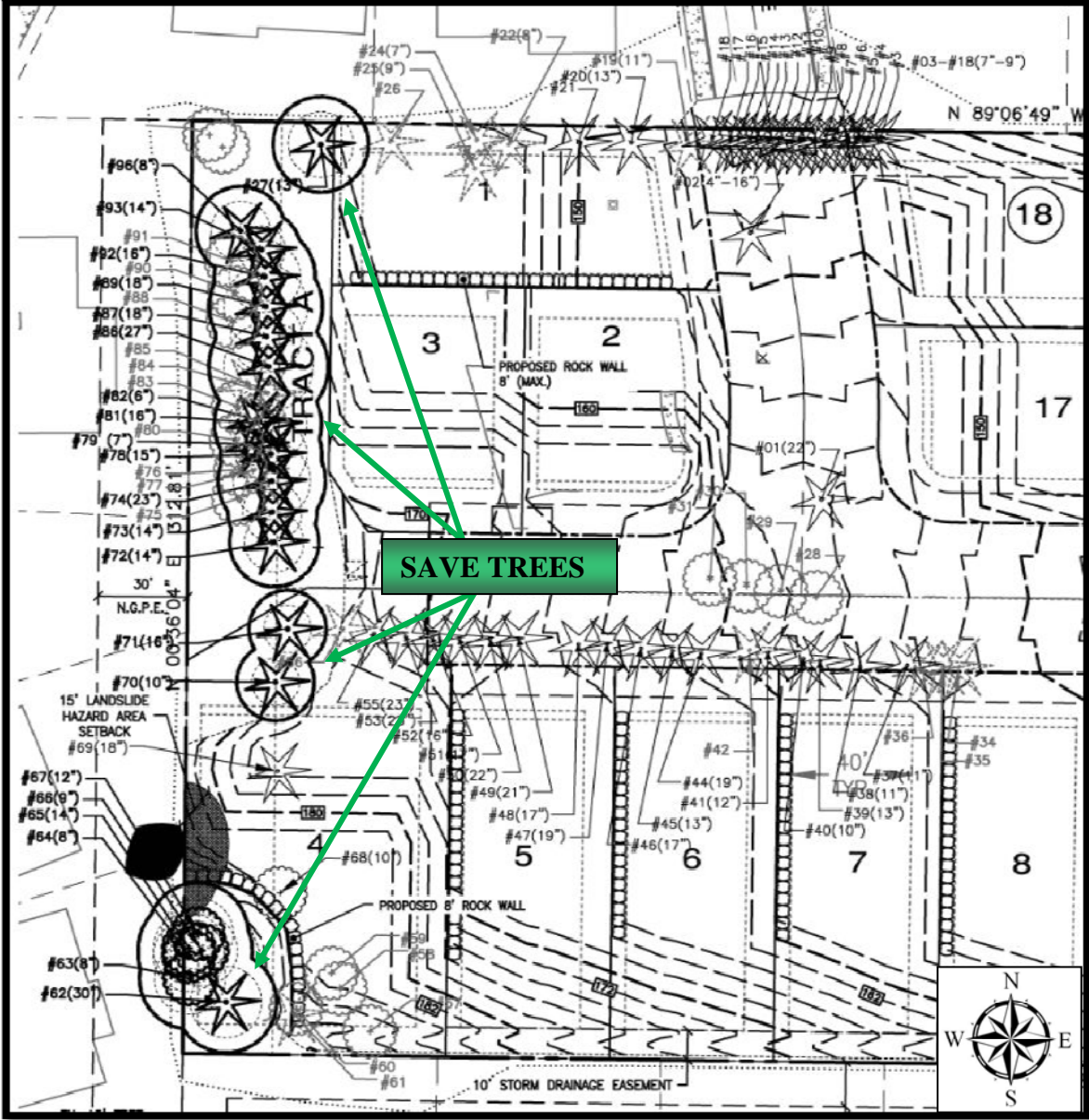




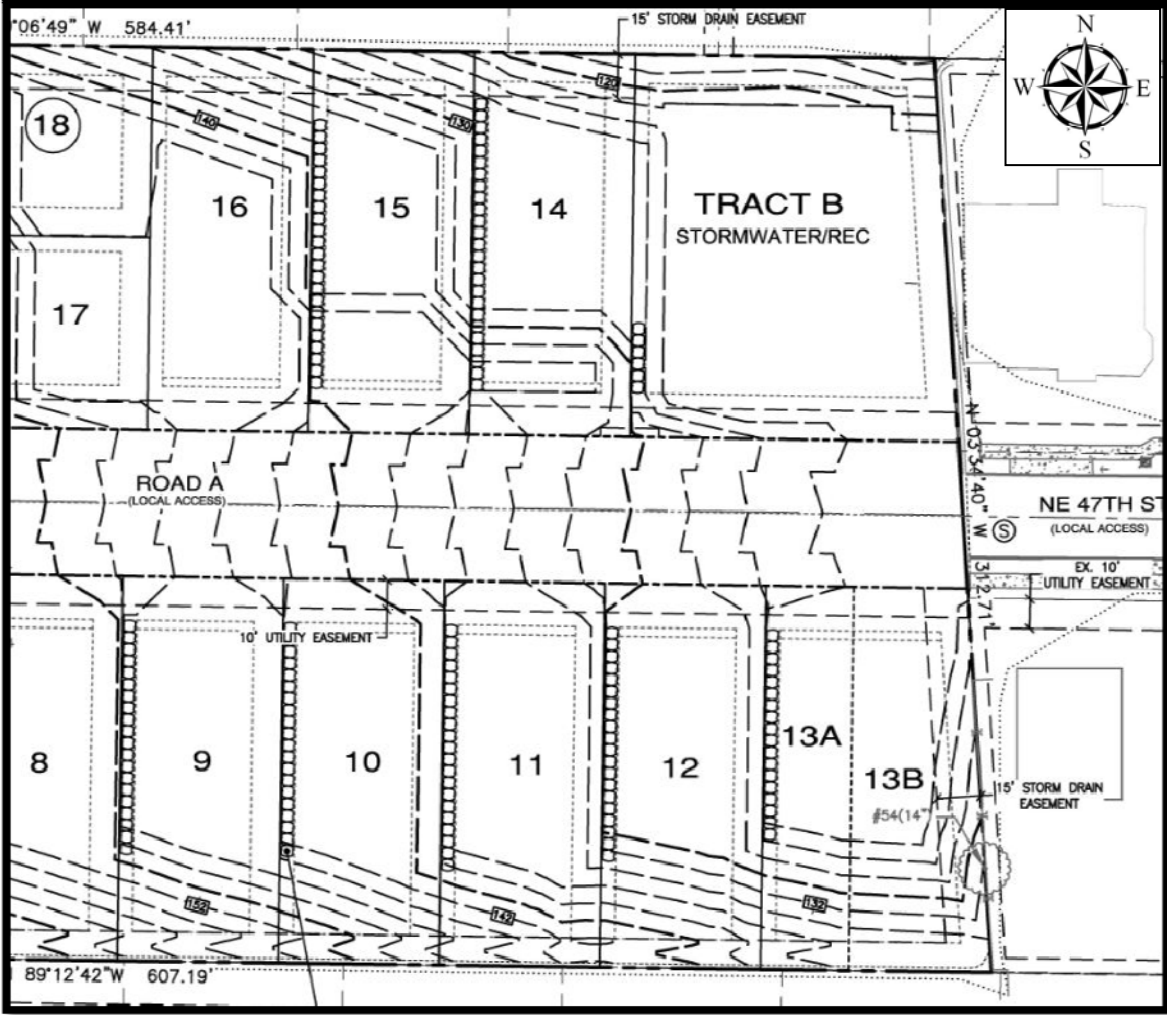




West Half Zoom



East Half Zoom



## APPENDIX III

## List of Significant Trees

| Tree # | Species           | DBH (in.) | Crown Position | Live Crown Ratio (LCR) | Condition | Notes                                     | Minimum Root Protection Zone (RPZ) ft | Project Plan Save / Remove |
|--------|-------------------|-----------|----------------|------------------------|-----------|---|---------------------------------------|----------------------------|
| 1      | Ponderosa Pine    | 22        | Dominant       | 60                     | Fair      | sound; minor lower branch dieback - O.K.; |                                       | Remove                     |
| 2      | Cypress           | 4-16      | Dominant       | 90                     | Fair      | 5 stems                                   | 11                                    | Remove                     |
| 3-18   | Western Red Cedar | 7-9       |                | 100                    | Fair      | 16 trees in hedge row                     |                                       | Remove                     |
| 19     | Douglas-fir       | 11        | Dominant       | 10                     | Very Poor | top gone                                  |                                       | Remove                     |
| 20     | Douglas-fir       | 13        | Dominant       | 60                     | Good      | sound and healthy                         |                                       | Remove                     |
| 21     | Douglas-fir       | 15        | Dominant       | 70                     | Good      | sound and healthy                         |                                       | Remove                     |
| 22     | Douglas-fir       | 8         | Co-dominant    | 10                     | Very Poor | topped-under power line                   |                                       | Remove                     |
| 24     | Douglas-fir       | 7         | Co-dominant    | 10                     | Very Poor | topped-under power line                   |                                       | Remove                     |
| 25     | Douglas-fir       | 9         | Co-dominant    | 10                     | Very Poor | topped-under power line                   |                                       | Remove                     |
| 26     | Douglas-fir       | 10        | Dominant       | 30                     | Very Poor | in decline                                |                                       | Remove                     |
| 27     | Douglas-fir       | 13        | Dominant       | 35                     | Fair      | remove ivy                                | 11                                    | Save                       |
| 28     | Sweetgum          | 6         | Co-dominant    | 60                     | Poor      |   |                                       | Remove                     |
| 29     | Sweetgum          | 17        | Co-dominant    | 70                     | Very Poor | hollow                                    |                                       | Remove                     |
| 30     | Sweetgum          | 8         | Co-dominant    | 50                     | Very Poor | decay in stem                             |                                       | Remove                     |
| 31     | Sweetgum          | 15        | Co-dominant    | 40                     | Very Poor | co-dominant top, tight v crotch           |                                       | Remove                     |
| 32     | Sweetgum          | 10        | Co-dominant    | 20                     | Very Poor | decay in stem                             |                                       | Remove                     |
| 33     | Douglas-fir       | 10        | --             | --                     | --        | Removed Feb 2015                          |                                       | --                         |
| 34     | Douglas-fir       | 7         | Co-dominant    | 80                     | Poor      | old break in stem at 7 feet               |                                       | Remove                     |
| 35     | Douglas-fir       | 8         | Co-dominant    | 75                     | Poor      | old break in stem at 9 feet               |                                       | Remove                     |
| 36     | Douglas-fir       | 9         | Co-dominant    | 80                     | Poor      | old break in stem at 10                   |                                       | Remove                     |

## Dukes Landing - Tree Protection Plan

| Tree # | Species       | DBH (in.) | Crown Position | Live Crown Ratio (LCR) | Condition | Notes  | Minimum Root Protection Zone (RPZ) ft | Project Plan Save / Remove |
|--------|---------------|-----------|----------------|------------------------|-----------|--|---------------------------------------|----------------------------|
|        |               |           |                |                        |           | feet   |                                       |                            |
| 37     | Douglas-fir   | 11        | Co-dominant    | 75                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 38     | Douglas-fir   | 11        | Co-dominant    | 90                     | Good      | sound and healthy                            |                                       | Remove                     |
| 39     | Douglas-fir   | 13        | Co-dominant    | 90                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 40     | Douglas-fir   | 10        | Intermediate   | 70                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 41     | Douglas-fir   | 12        | Co-dominant    | 75                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 42     | Douglas-fir   | 9         | Intermediate   | 30                     | Poor      | in decline                                   |                                       | Remove                     |
| 44     | Douglas-fir   | 19        | Co-dominant    | 95                     | Good      | sound and healthy                            |                                       | Remove                     |
| 45     | Douglas-fir   | 13        | Co-dominant    | 85                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 46     | Douglas-fir   | 17        | Co-dominant    | 95                     | Good      | sound and healthy                            |                                       | Remove                     |
| 47     | Douglas-fir   | 19        | Co-dominant    | 95                     | Good      | sound and healthy                            |                                       | Remove                     |
| 48     | Douglas-fir   | 17        | Co-dominant    | 65                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 49     | Douglas-fir   | 21        | Co-dominant    | 90                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 50     | Douglas-fir   | 22        | Co-dominant    | 75                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 51     | Douglas-fir   | 17        | Co-dominant    | 60                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 52     | Douglas-fir   | 16        | Co-dominant    | 70                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 53     | Douglas-fir   | 23        | Co-dominant    | 65                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 54     | Cherry        | 14        | Dominant       | 60                     | Very Poor | Large scar/stem decay                        |                                       | Remove                     |
| 55     | Douglas-fir   | 23        | Co-dominant    | 65                     | Fair      | sound and healthy                            |                                       | Remove                     |
| 56     | Douglas-fir   | 18        | Co-dominant    | 35                     | Very Poor | severe decay in butt                         |                                       | Remove                     |
| 57     | Bigleaf Maple | 46        | Dominant       | 65                     | Poor      | hollow stem and upper leads, branch failures |                                       | Remove                     |
| 58     | Bigleaf Maple | 26        | Co-dominant    | 35                     | Very Poor | elevated buttress roots                      |                                       | Remove                     |
| 59     | Bigleaf Maple | 29        | Co-dominant    | 50                     | Very Poor | big lead broken off                          |                                       | Remove                     |

## Dukes Landing - Tree Protection Plan

| Tree # | Species           | DBH (in.) | Crown Position | Live Crown Ratio (LCR) | Condition | Notes                                 | Minimum Root Protection Zone (RPZ) ft | Project Plan Save / Remove |
|--------|-------------------|-----------|----------------|------------------------|-----------|---------------------------------------|---------------------------------------|----------------------------|
| 60     | Bigleaf Maple     | 18,19     | Co-dominant    | 35                     | Poor      | forked at 3 feet                      |                                       | Remove                     |
| 61     | Western Red Cedar | 17        | Co-dominant    | 35                     | Poor      | entangled in tree #60                 |                                       | Remove                     |
| 62     | Western Red Cedar | 30        | Dominant       | 95                     | Very Good | sound and healthy                     | 12                                    | Save                       |
| 63     | Bigleaf Maple     | 8         | Co-dominant    | 30                     | Fair      | sound and healthy                     | 12                                    | Save                       |
| 64     | Bigleaf Maple     | 8         | Intermediate   | 20                     | Fair      | sound and healthy                     | 12                                    | Save                       |
| 65     | Bigleaf Maple     | 14        | Co-dominant    | 30                     | Fair      | sound and healthy                     | 12                                    | Save                       |
| 66     | Bigleaf Maple     | 9         | Co-dominant    | 30                     | Fair      | sound and healthy                     | 12                                    | Save                       |
| 67     | Bigleaf Maple     | 12        | Co-dominant    | 35                     | Fair      | sound and healthy                     | 12                                    | Save                       |
| 68     | Red Alder         | 10        | Dominant       | 60                     | Good      | sound and healthy                     |                                       | Remove                     |
| 69     | Douglas-fir       | 14        | Dominant       | 70                     | Good      | sound and healthy, black berries no # |                                       | Remove                     |
| 70     | Douglas-fir       | 12        | Dominant       | 60                     | Good      | sound and healthy, black berries no # | 10                                    | Save                       |
| 71     | Douglas-fir       | 13        | Dominant       | 70                     | Good      | sound and healthy, black berries no # | 10                                    | Save                       |
| 72     | Douglas-fir       | 14        | Co-dominant    | 70                     | Fair      | sound and healthy, black berries      | 10                                    | Save                       |
| 73     | Douglas-fir       | 14        | Co-dominant    | 60                     | Fair      | sound and healthy, black berries      | 10                                    | Save                       |
| 74     | Douglas-fir       | 23        | Co-dominant    | 60                     | Fair      | sound and healthy, black berries no # | 13                                    | Save                       |
| 75     | Lombardy Poplar   | 6         | Suppressed     | 10                     | Very Poor | nearly dead                           |                                       | Remove                     |
| 76     | Lombardy Poplar   | 22        | Dominant       | 35                     | Poor      | not suitable for new development      |                                       | Remove                     |
| 77     | Douglas-fir       | 7         | Suppressed     | 3                      | Very Poor | sunscauld and stem decay              |                                       | Remove                     |

## Dukes Landing - Tree Protection Plan

| Tree # | Species           | DBH (in.) | Crown Position | Live Crown Ratio (LCR) | Condition | Notes  | Minimum Root Protection Zone (RPZ) ft | Project Plan Save / Remove |
|--------|-------------------|-----------|----------------|------------------------|-----------|--|---------------------------------------|----------------------------|
| 78     | Douglas-fir       | 15        | Co-dominant    | 60                     | Fair      | sound and healthy                                | 12                                    | Save                       |
| 79     | Douglas-fir       | 7         | Suppressed     | 50                     | Fair      | Sound and healthy                                | 7                                     | Save                       |
| 80     | Lombardy Poplar   | 28        | Dominant       | 30                     | Poor      | not suitable for new development                 |                                       | Remove                     |
| 81     | Douglas-fir       | 16        | Dominant       | 50                     | Fair      | sound and healthy                                | 13                                    | Save                       |
| 82     | Douglas-fir       | 6         | Suppressed     | 60                     | Fair      | sound and healthy                                | 6                                     | Save                       |
| 83     | Lombardy Poplar   | 26        | Dominant       | 40                     | Poor      | not suitable for new development                 |                                       | Remove                     |
| 84     | Douglas-fir       | 6         | Suppressed     | 20                     | Very Poor | dying  |                                       | Remove                     |
| 85     | Douglas-fir       | 9         | Intermediate   | 30                     | Poor      | poor LCR   |                                       | Remove                     |
| 86     | Douglas-fir       | 27        | Dominant       | 90                     | Good      | sound and healthy                                | 15                                    | Save                       |
| 87     | Douglas-fir       | 18        | Co-dominant    | 85                     | Good      | sound and healthy                                | 12                                    | Save                       |
| 88     | Lombardy Poplar   | 19        | Co-dominant    | 30                     | Poor      | not suitable for new development                 |                                       | Remove                     |
| 89     | Douglas-fir       | 18        | Co-dominant    | 90                     | Good      | sound and healthy                                | 14                                    | Save                       |
| 90     | Lombardy Poplar   | 32        | Dominant       | 50                     | Poor      | branch failure, not suitable for new development |                                       | Remove                     |
| 91     | Lombardy Poplar   | 9         | Intermediate   | 60                     | Poor      | not suitable for new development                 |                                       | Remove                     |
| 92     | Douglas-fir       | 16        | Co-dominant    | 80                     | Good      | sound and healthy                                | 12                                    | Save                       |
| 93     | Douglas-fir       | 14        | Co-dominant    | 85                     | Good      | sound and healthy                                | 8                                     | Save                       |
| 96     | Western Red Cedar | 6         | Suppressed     | 100                    | Very Good | black berries, no #                              | 10                                    | Save                       |
| 97     | Bigleaf Maple     | 24-36     | Intermediate   | 10                     | Very Poor | Mostly dead, topped                              |                                       | Remove                     |
| 98     | Bigleaf Maple     | 10-12     | Intermediate   | 20                     | Poor      | Poor structure, branch dieback, no #             |                                       | Remove                     |



**APPENDIX IV  
Photo Log (WFCI 8/8/13)**



**Photo A. View of tree numbering on tree # 53.**



**Photo B. View of marking on a tree recommended for removal.**

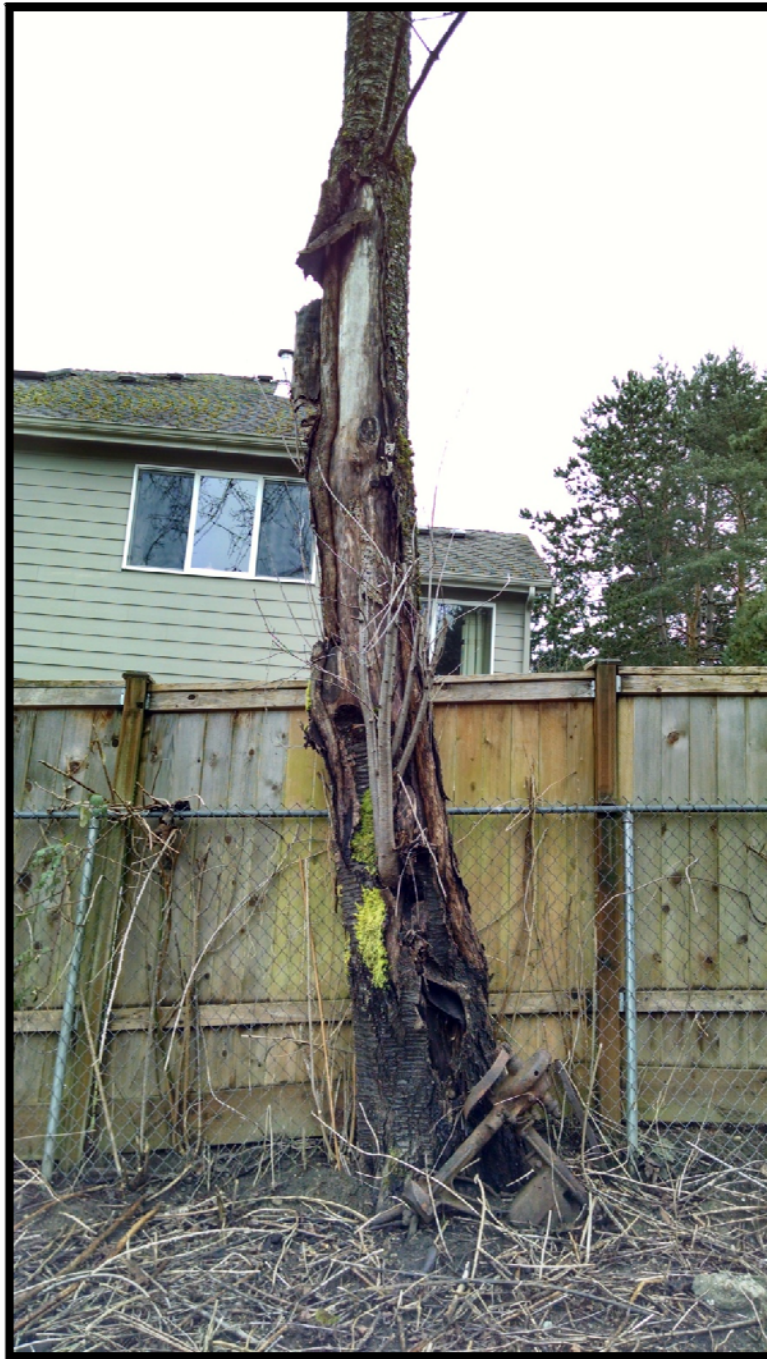


**Photo C. View of decayed stem on #29, a 17" DBH Sweetgum.**



**Photo D. View of the row of Douglas-fir in the central portion of the parcel.**

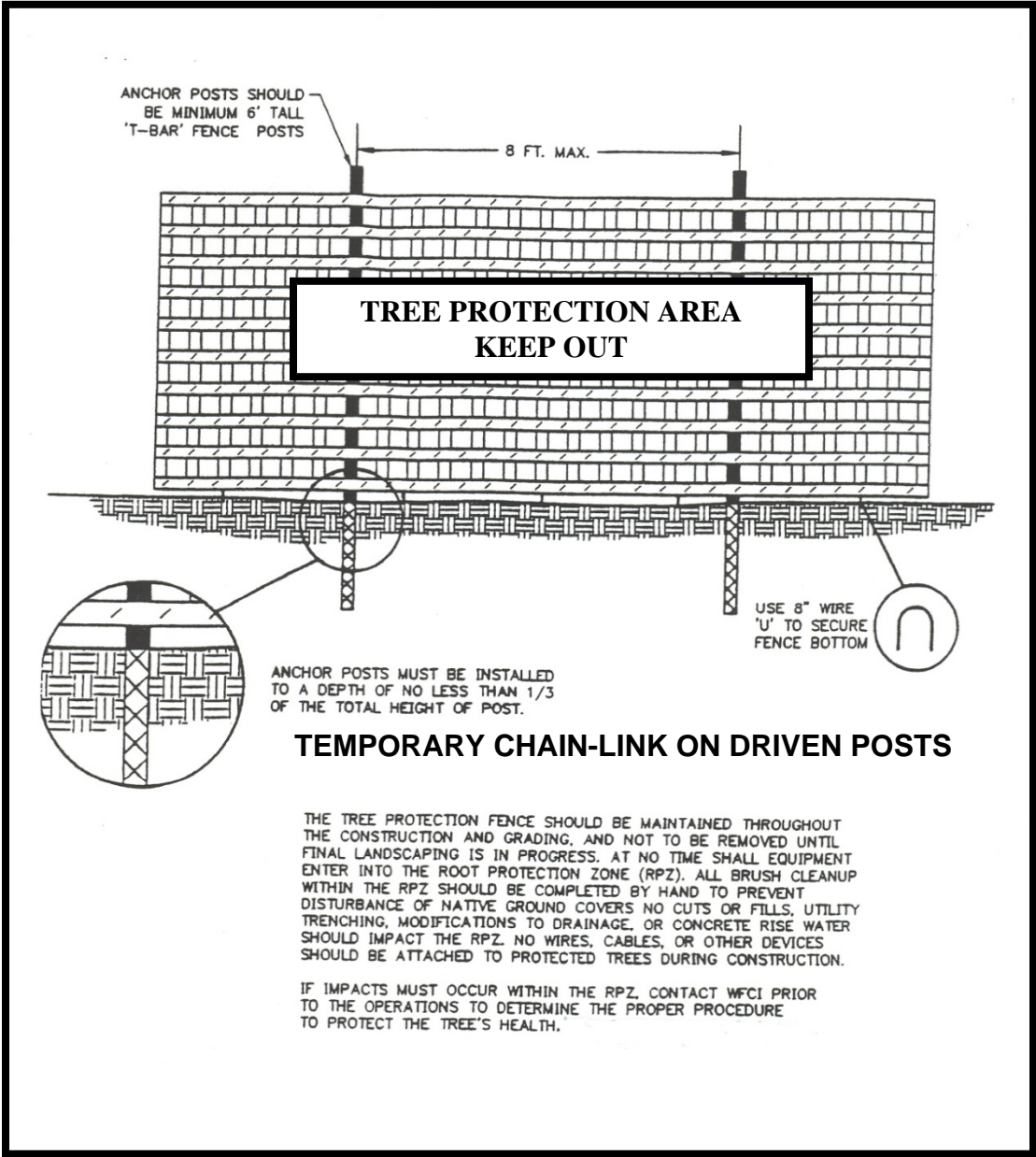




**Photo E. Severely damaged cherry tree on eastern property line.**

APPENDIX V

Tree Protection Fence Detail



**APPENDIX VI****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.

## APPENDIX VII

### INDIVIDUAL TREE RATINGS KEY - CONDITION

| RATING           | SYMBOL | DEFINITION   |
|------------------|--------|--|
| <b>VERY GOOD</b> | VG     | <ul style="list-style-type: none"> <li>• Balanced crown that is characteristic of the species</li> <li>• Normal lateral and terminal branch growth rates for the species and soil type</li> <li>• Stem sound, normal bark vigor</li> <li>• No root problems</li> <li>• No insect or disease problems</li> <li>• Long-term, attractive tree</li> </ul>  |
| <b>GOOD</b>      | G      | <ul style="list-style-type: none"> <li>• Crown lacking symmetry but nearly balanced</li> <li>• Normal lateral and terminal branch growth rates for the species and soil type</li> <li>• Minor twig dieback O.K.</li> <li>• Stem sound, normal bark vigor</li> <li>• No root problems</li> <li>• No or minor insect or disease problems – insignificant</li> <li>• Long-term tree</li> </ul>  |
| <b>FAIR</b>      | F      | <ul style="list-style-type: none"> <li>• Crown lacking symmetry due to branch loss</li> <li>• Slow lateral and terminal branch growth rates for the species and soil type</li> <li>• Minor and major twig dieback – starting to decline</li> <li>• Stem partly unsound, slow diameter growth and low bark vigor</li> <li>• Minor root problems</li> <li>• Minor insect or disease problems</li> <li>• Short-term tree 10-30 years</li> </ul> |
| <b>POOR</b>      | P      | <ul style="list-style-type: none"> <li>• Major branch loss – unsymmetrical crown</li> <li>• Greatly reduced growth</li> <li>• Several structurally important dead or branch scaffold branches</li> <li>• Stem has bark loss and significant decay with poor bark vigor</li> <li>• Root damage</li> <li>• Insect or disease problems – remedy required</li> <li>• Short-term tree 1-10 years</li> </ul>                                       |
| <b>VERY POOR</b> | VP     | <ul style="list-style-type: none"> <li>• Lacking adequate live crown for survival and growth</li> <li>• Severe decline</li> <li>• Minor and major twig dieback</li> <li>• Stem unsound, bark sloughing, previous stem or large branch failures, very poor bark vigor</li> <li>• Severe root problems or disease</li> <li>• No or minor insect or disease problems</li> <li>• Mortality expected within the next few years</li> </ul>         |
| <b>DEAD</b>      | DEAD   | <ul style="list-style-type: none"> <li>• Dead</li> </ul>   |