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September 15, 2016

Planning Dept.  
City of Lake Forest Park  
17425 Ballinger Way NE  
Lake Forest Park, WA 98155

**Re:** Arborist Review Tree Permit #2016-ARP-0040, Review and Recommendations  
**Site:** Nor Wes property, 190XX 195th St. (parcel #4022903193), Lake Forest Park, WA 98155.

The tree removal application was checked for compliance with the standards and requirements pursuant to Chapter 16.14 LFPMC. On August 30, 2016 I completed my site inspection and tree inventory for the Nor Wes project area. On September 9, I met with Lee, of Nor Wes Construction, to discuss the proposed project and the tree plan. The Existing Trees and Tree Removal Site Plan map, provided with the tree removal application was used to assist with my task, see Appendix B: *Site Plan*. This report outlines my findings, conclusions, and recommendations.

### **Proposed Activity**

Construction of a single family residence is proposed for the property; please refer to the Survey and Preliminary Site Plan drawing. Twenty (20) significant trees (a tree that is 6.0" in diameter at breast height (DBH), 4.5 feet above grade) are proposed for removal to allow for the construction of a single family residence. Four (4) of the trees proposed for removed are landmark trees (a tree that is 28 inches in diameter and larger).

### **Methods**

I conducted my tree inspection and evaluation for the trees following the protocol of the International Society of Arboriculture (ISA) for Visual Tree Assessment (VTA) that employs a visual and non invasive inspection of the overall health and external condition of each tree and site conditions. I also conducted a basic level tree risk assessment, adhering to tree care industry standards, protocols and practices set by the American National Standards Institute (ANSI), and the International Society of Arboriculture (ISA), that employs a 360-degree, ground- based detailed visual and non-invasive inspection of a tree, including tree crown, trunk, trunk flare,

above ground roots and site conditions around the tree in relation to targets. The time frame for tree risk assessments, the period in which estimating the likelihood of failure, is generally 1-5 years, unless otherwise noted. The time frame for risk categorization should not be considered a guarantee period for the risk assessment.

All significant trees were inspected and assessed for species, size, health and structural condition, critical root zone, and drip line, and canopy spread area, see Attachment: *Table of Trees*, for complete inventory and assessment.

All inspected trees were tagged with aluminum tree tags stapled at approximately six feet above grade. Trees are numbered #1 through #67, beginning with Tree #1 located the SW corner of the lot, bordering 40<sup>th</sup> Pl NE, and continuing east to west through the lot ending with Tree #67. Tree numbers and tree locations are shown on the Appendix B: *Site Plan*.

## **Findings**

### Site

The site is an undeveloped wooded residential lot, 31,918 square feet in size. The current canopy coverage is approximately 95% (30,322 sq. ft.), as determined either by collected tree data and/or interpretation of high resolution aerial photography, see Appendix A: *2013 Aerial Site Photo*.

### Subject Trees

There are sixty seven (67) significant trees on the lot that were inventoried and assessed. A total of twenty (20) trees are proposed or recommended for removal and a total of forty seven (47) trees are proposed to retain, see Attachment : *Table of Trees*, for complete inventory and assessment and Appendix B: *Site Plan*, for tree locations.

Trees proposed for removal:

The 20 trees that are located within or near the proposed building site and driveway that are unsuitable to retain or that can be adequately protected that are proposed to be removed to allow the project to be completed safely and as planned. Removal of all 20 trees will reduce the total tree canopy coverage by approximately 11,221sq. ft. (35%)

Tree proposed for retention:

There are 47 trees that are proposed to retain. Most of the trees to be retained are located outside of the proposed construction boundary and should not be impacted by construction activities. For those trees proposed to be retained that are within the construction boundary they are generally in good overall health and condition and have the potential to tolerate construction activities, provided the recommended tree protection measures described in Appendix C: *Tree Protection Specifications* are followed. Retention of all 47 trees will leave approximately 19,101 sq. ft. (60%) of canopy coverage on the lot.

Any of the trees that are currently proposed for removal that are determined, by the final site plans, or changes in the site plans, and the onsite preconstruction meeting, as not being necessary to remove and that are suitable to tolerate proposed construction activities, should be retained and tree protection measures followed.

There are no offsite trees within 5 feet of the lot that would be impacted by the proposed project.

### Tree Canopy Replacement

The current tree canopy coverage over the entire parcel is approximately 30,322 sq. ft. (95%). The proposed tree removals will reduce tree canopy coverage that originates from trees on the parcel by approximately 11,221 sq. ft. (35%). The total amount of retained tree canopy coverage over the parcel will be approximately 19,101 sq. ft. (60%). Therefore, pursuant to Chapters 16.14.080 LFPMC, a Tree Replacement Plan is not required to replace removed tree canopy coverage.

### **Conclusion**

The 20 trees proposed for removed will allow the project to go forward safely and as proposed. The trees that can be retained provide economic and environmental benefits that are an asset to the owner and to the community as a whole and are worthy of the energy required preserving them.

### **Limitations**

Tree risk assessment considers known targets and visible or detectable tree conditions. Unless expressed otherwise, information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection. It must be realized that trees are living organisms and their health and vigor constantly change over time. They are not immune to changes in the site conditions or seasonal variations in the weather.

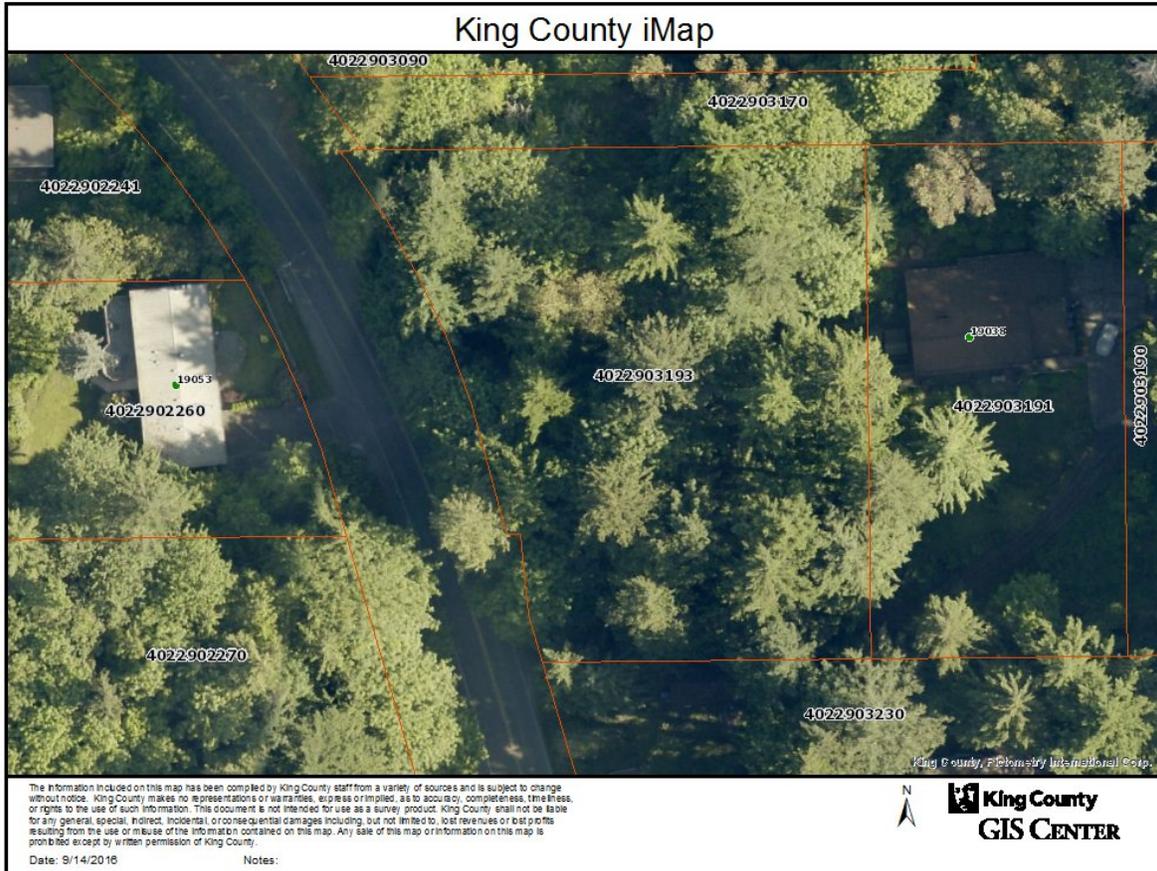
There is no warranty or guarantee expressed or implied that problems or deficiencies of the trees in question may not arise in the future. The report and conclusions expressed herein represent the opinion of Michael Woodbury d/b/a M. Woodbury Consulting Arborist.

Please contact me should you have questions regarding this report.

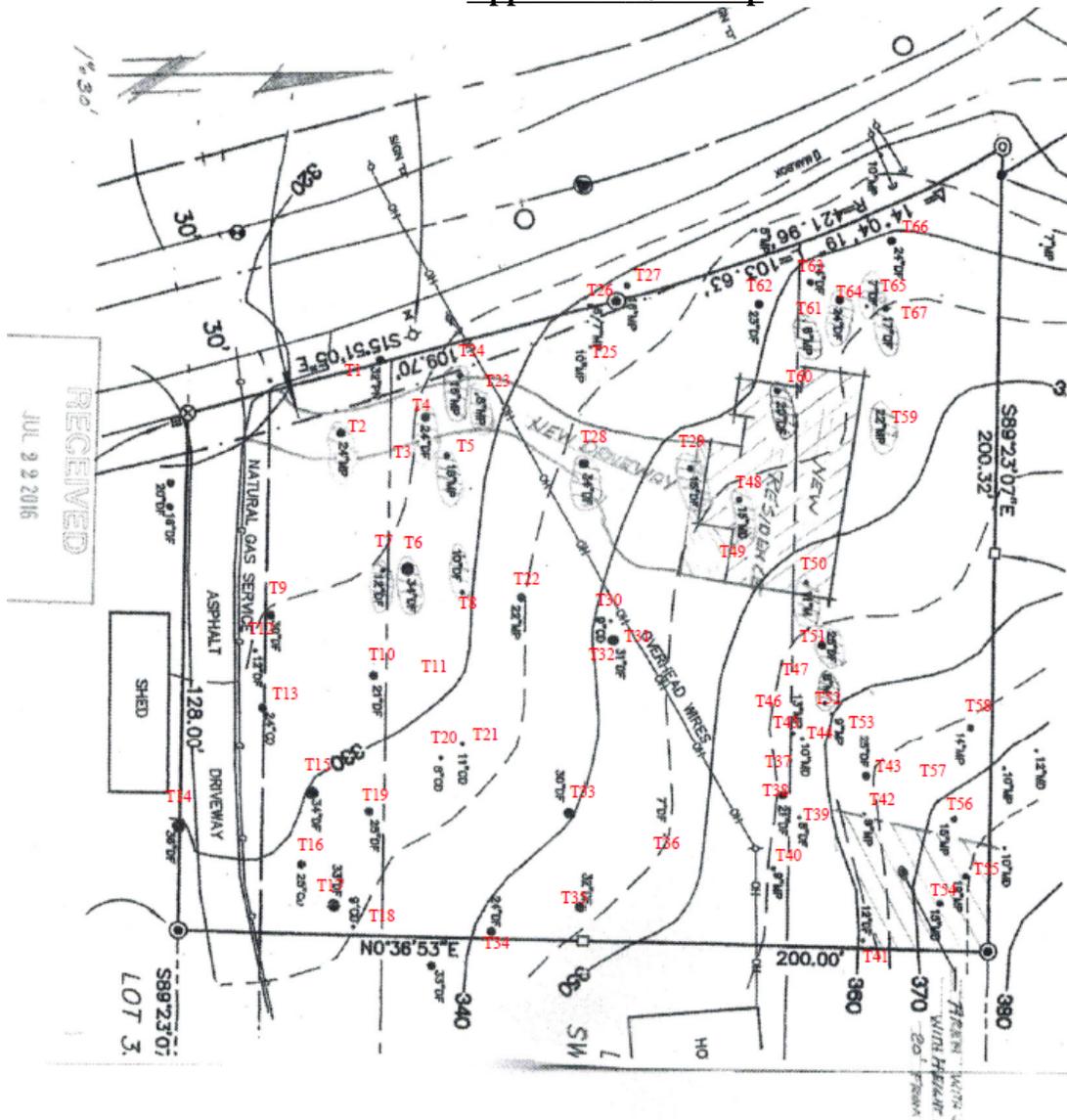
Respectfully submitted,  
Michael A. Woodbury

Michael A. Woodbury, Consulting Arborist  
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ISA Tree Risk Assessment Qualified

**Appendix A: 2013 Aerial Site Photo  
Parcel #4022903193  
190XX 40<sup>th</sup> PL NE  
Lake Forest Park, WA**



**Appendix B: Site Map**



**EXISTING TREES AND TREE REMOVAL SITE PLAN**

Refer to Attachment: Table of Trees for the proposed Tree Plan.

## **Appendix B: Tree Protection Specifications**

In order for trees to survive the stresses placed upon them in the construction process, tree protection must be planned in advance of equipment arrival on site. If tree protection is not planned integral with the design and layout of the project, the trees will suffer needlessly and will possibly die. With proper preparation, often costing little, or nothing extra to the project budget, trees can survive and thrive after construction. This is critical for tree survival because damage prevention is the single most effective treatment for trees on construction sites. Once trees are damaged, the treatment options available are limited.

1. This specification must be followed for all trees that are in close proximity to any clearing and grading limits.
2. Educate all workers on site about tree protection techniques and requirements during preconstruction meetings and by sharing and posting this Tree Protection Specification.
3. After the site has been surveyed and clearing and grading stakes are in place, the project arborist should visit the site to determine the actual placement of tree protection measures based on the potential impact to tree root systems. Final adjustment of clearing limits by the arborist will be made on site prior to construction.
4. Tree Protection Zone (TPZ) fencing or other barriers shall be installed along all clearing limits to protect the Critical Root Zones (CRZ) of trees that are to be preserved. Optimal CRZ areas should be the greater of the drip line or calculated at 1-foot radius for every 1-inch of tree diameter. TPZ fencing shall be a minimum of a 4-foot tall orange plastic fencing anchored with steel stakes or a 6 foot tall chain link fence, depending on the project needs. Alternative barriers may be approved with consent of the project arborist. One entry point into the TPZ to gain access to the tree shall be provided for all trees, especially those surrounded by a chain link fence. Damaged barriers shall be re-established or replaced.
5. The project arborist may require chain link fencing or plywood boxing around trees in certain high traffic areas. The arborist will meet on site with the contractor to determine the specific types of fencing and placement, and the specific clearing instructions for areas near preserved trees. Adjustment of the initial TPZ lay out may be required as construction progresses and should be approved by the project arborist.
6. Post appropriate signage to the fencing to help convey the importance of the CRZ to workers.
7. TPZ fencing shall not be moved without authorization from the project arborist or the site supervisor. All fencing is to be left in place until the completion of the project. Tree protection signage shall be attached to fencing only.
8. A 4 to 6-inch deep layer of coarse arborist woodchips or hog fuel mulch shall be layered over the top of the soil surface. The mulch shall be kept 12-inches away from the base of any tree. Alternative mulch may be used with the prior approval of the project arborist.

9. Work required for removal of unwanted vegetation within the CRZ areas will be hand work only. NO HEAVY EQUIPMENT SHALL BE USED IN THE TPZ.
10. Within the TPZ areas, no parking, materials storage, dumping, or burning is allowed.
11. Do not attach anything to trees using nails, screws, and/or spikes.
12. Any trees adjacent to high traffic areas or building envelopes shall be pruned to attain proper safety and clearance prior to the construction. The project arborist will provide a recommendation using American National Standards Institute ANSI 4300 Standard Practices for Pruning. Use of an International Society of Arboriculture Certified Arborist to perform the recommended work is strongly recommended.
13. When removing trees outside of the TPZ determined to be unacceptable for retention, use methods such as directional felling to avoid damage to trees and other valuable vegetation that is being retained. Small trees and other native vegetation in these areas should be carefully preserved.
14. Tree stumps that are within a TPZ or immediately adjacent to the CRZ of a preserved tree or other vegetation shall be removed by grinding.
15. Where the project arborist has determined that roots of a preserved tree may be encountered during excavation or grading, a Certified Arborist shall be on site to supervise any root pruning and to assess the potential impact of such pruning.
16. Excavation equipment shall have flat front buckets to be used when lowering the grade that may contact roots of a preserved tree.
17. Excavation should occur at perpendicular angles that will reduce the potential to tear and break roots further back towards the tree.
18. Any root greater than 1-inches in diameter that is encountered shall be carefully cut with a sharp tool and not torn with a backhoe. Avoid, when feasible, cutting any root greater than 4 inches in diameter. Roots cut shall be immediately covered with soil or mulch and kept moist. When roots must be exposed around concrete forms before back-filling can occur, cover the roots with wet burlap and white plastic sheeting.
19. Where access for machinery or any vehicle is required within the CRZ or TPZ of any preserved tree, the soil should be protected from compaction. Acceptable methods include an 18 inch deep layer of wood chips or hog fuel, 1 inch thick plywood, Alturna Mats, or steel sheets be placed over the soil surface.
20. Do not trench for utilities installation or repair, or for irrigation system installation within the TPZ without consent of the project arborist. Alter routes of underground infrastructure or use alternate methods such as pipe boring, air excavation, or HVAC to work around roots.

21. Landscaping specified within the TPZ areas shall be designed to limit disturbance of surface soils and preserved vegetation. No root pruning is permitted. New plants added in these areas should be of the smallest size possible to minimize disturbance.

22. Do not change grade by cutting or filling within the TPZ without consent of the project arborist.

23. Where backfill is required within a CRZ or TPZ area, the project arborist shall determine the amount and type of fill material to be used.

24. Supplemental irrigation for all protected trees is required during the summer months or prolonged periods of dry weather. In the absence of adequate rainfall, apply at least 1 inch of water per week by deep soaking methods. **THIS IS MOST IMPORTANT FOR SUCESSFUL TREE RETENTTON.**

25. Fertilize trees as necessary with phosphorus, potassium, calcium, magnesium, and other macro- and micro-nutrients as indicated by a soil nutrient analysis test, but wait at least 1- year to apply any nitrogen. Nitrogen shall only be applied according to the American National Standards Institute 4300 (part 2) Standard Practices for Fertilization or the International Society of Arboriculture's Best Management Practice for Fertilization.

26. Monitoring of all trees, especially those exposed to new environmental conditions such as exposure to wind, sun, or deep shade, should be monitored during construction and annually for several seasons following construction to check for adverse changes to the tree health or stability.

The Tree Protection Fences need to be clearly marked with the following or similar text in four inch or larger letters:

**“TREE PROTECTION FENCE  
DO NOT ENTER THIS AREA  
DO NOT PARK OR STORE MATERIALS WITHIN THE PROTECTED AREA”  
To report violations call the City of Lake Forest Park, 206-368-5440**

Refer to Figure 1: Tree Protection Fence Diagram.

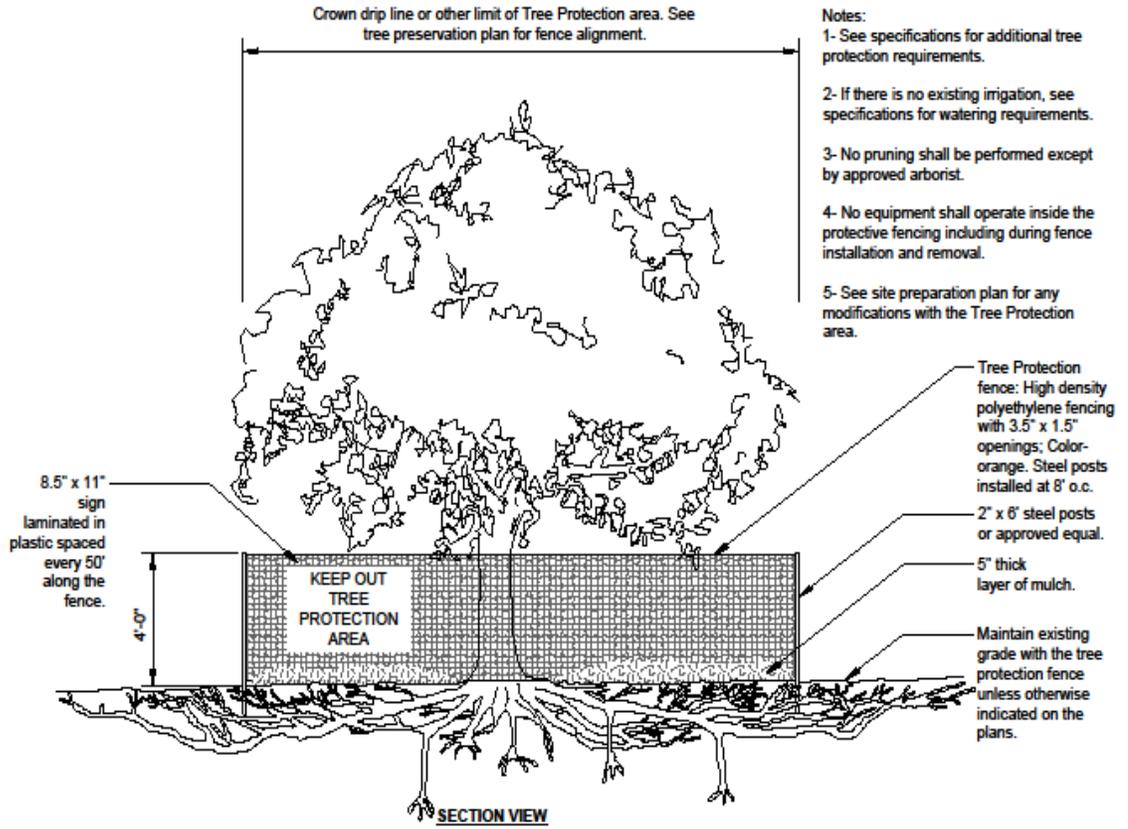
Additional Tree Protection Measures:

- During excavation roots over 1 inch in diameter can be cleanly cut back to the edge of disturbance using loppers. Roots over 2 inches in diameter shall be cleanly cut with a saws all saw.
- If pruning is needed for clearance, it should be done by a certified arborist or under his/her supervision. The construction crew should not perform the pruning task.
- Water the TPZ of the retained trees during the construction period.
- Other appropriate tree protection measures not withstanding to Chapter 16.14.090 LFPMC

### Summary Timeline for Tree Protection Measures

1. Project crew to install tree protection fencing.
2. The City arborist to inspect tree protection fences and attend the pre-work meeting with the project and construction representatives.
3. The City arborist to make site visits during tree removal and demolition and during peak construction activities.
4. The City arborist to make a post - construction inspection and recommend post-construction tree maintenance treatments, as needed.

Figure 1: Tree Protection Fence Drawing.



**S-X** TREE PROTECTION

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