

## TECHNICAL MEMORANDUM

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Date: July 12, 2019  
To: Donnelle Dayao  
From: Roen Hohlfeld  
Project Name: Pfingst Animal Acres Park  
Project Number: 190217

### **Subject: Pfingst Animal Acres Park – Arborist Assessment**

On February 28, 2019, Roen Hohlfeld, an ISA Certified Arborist, of the Watershed Company visited Pfingst Animal Acres Park (Parcel #1154100510) located at 17435 Brookside Boulevard in Lake Forest Park, Washington to assess trees near the proposed location for the development of a new picnic shelter. This memo summarizes the findings of the study and details applicable local regulations.

### **Methods**

Subject trees within the study area were determined to be significant using the definition in the Lake Forest Park Municipal Code (LFPMC) Section 16.14.030. The LFPMC defines a significant tree as “a tree six inches or greater in diameter (DBH) or required replacement tree of any size;” a landmark tree as “a significant tree that is at least 24 inches in diameter (DBH);” and an exceptional tree as “a viable tree, which because of its unique combination of size and species, age, location, and health is worth of long-term retention, as determined by the city’s qualified arborist.” Exceptional trees must meet species and diameter requirements described in Table 1 of LFPMC 16.14.030. Exceptional trees must also exhibit healthful vigor for its age and species and can be expected to remain viable with reasonable and prudent management and care, and must not be a hazard or have visual structural defects that cannot be mitigated.

Per accepted practice, DBH was measured at 4.5 feet above the ground surface using a graduated metal DBH tape. Trees with multiple trunks arising from the ground were measured using the ‘multi-stemmed tree’ definition per LFPMC 16.14.030. The critical root zone (CRZ) is measured by the International Society of Arboriculture standard of one-foot radius per inch of DBH, as required by the LFPMC 16.14.030.

Each assessed tree was tagged with a 1.25-inch aluminum tag affixed to the trunk of the tree with a nail at a height of approximately one foot. Canopy radius is the average branch length from the trunk as measured with a tape measure; tree height is a visual estimate. A basic Level 1 visual assessment was used to evaluate the health and condition of trees within the study area

in accordance with the International Society of Arboriculture (ISA) standards. Each tree was given a rating from 1-5 (Excellent – Severe) summarized in Table 1 below.

Table 1. Conditions Summary

<b>1 – Excellent</b>	<ul style="list-style-type: none"> <li>• Healthy crown, symmetrical canopy, balanced branch growth.</li> <li>• Sound trunk, normal bark growth.</li> <li>• Absence of root, insect, and disease problems.</li> <li>• Long-term lifespan expected, attractive tree</li> </ul>
<b>2 – Good</b>	<ul style="list-style-type: none"> <li>• Mostly healthy crown, balanced branch growth (minor dieback okay).</li> <li>• Sound trunk, normal bark growth.</li> <li>• No root problems, no or insignificant insect or disease problems.</li> <li>• Long-term lifespan expected.</li> </ul>
<b>3 – Fair</b>	<ul style="list-style-type: none"> <li>• Crown has some branch loss, slow branch growth, minor or major twig dieback.</li> <li>• Partly unsound trunk, slow diameter growth, low bark growth.</li> <li>• Minor root, insect, or disease problems.</li> <li>• Short-term lifespan expected (10-30 years).</li> </ul>
<b>4 – Poor</b>	<ul style="list-style-type: none"> <li>• Major branch loss creating asymmetrical crown, majorly reduced branch growth, loss of several structurally important branches.</li> <li>• Trunk has bark loss and/or significant decay, poor bark growth.</li> <li>• Root, insect, or disease problems requiring immediate attention.</li> <li>• Short-term lifespan expected (1-10 years).</li> </ul>
<b>5 – Severe (Dead)</b>	<ul style="list-style-type: none"> <li>• Lacks sufficient crown growth for survival.</li> <li>• Major branch dieback.</li> <li>• Unsound trunk, significant bark loss, very poor bark growth.</li> <li>• Severe root, insect, or disease problems.</li> <li>• Mortality expected within the next few years.</li> </ul>

## Findings

A total of 29 trees were inventoried within the study area (see Tree Inventory Map). Douglas-fir (*Pseudotsuga menziesii*) is the most abundant significant tree species, with 20 individuals rooted throughout the study area. Douglas firs had an average DBH of 26 inches and were in average to good condition at the time of the site visit. The remaining trees included 6 bigleaf maple (*Acer macrophyllum*), 2 western hemlock (*Tsuga heterophylla*), and one black hawthorn (*Crataegus monogyna*). Bigleaf maple trees within the study area have an average DBH of 30 inches.

Of the trees inventoried, 18 meet the LFPMC definition of a ‘landmark tree’. This is defined as any ‘significant tree’ having a DBH of at least 24-inches or greater. These trees can be found throughout the study area. Additionally, two Douglas-fir and one bigleaf maple tree (Trees #2772, 2789, and 2795) meet the LFPMC definition of an ‘exceptional tree’ which is defined by a combination of species, size (DBH), and overall tree health. These criteria are compiled into a

species-specific table found in Table 1 of LFPMC section 16.14.030. A summary of exceptional and landmark trees within the study area can be found in the enclosed Tree Inventory Sheet.

## Impact Assessment

According to the site plan the picnic shelter is cited strategically to minimize impacts within critical root zones (CRZ) and to entirely avoid any impact to the inner critical root zones (ICRZ) of trees. Although site development is further constrained by critical area buffers which nearly encumber the parcel, the footprint of the picnic shelter and associated ADA access path is proposed to be located outside of the CRZ of all trees. Additionally, utility connection plans avoid impacting a large grove of trees by trenching indirectly to the connection point, skirting around the edge of the CRZ of trees as much as is feasible.

A total of seven trees (#2772, 2787, 2788, 2792, 2793, 2794, and 2795) are expected to have minimal impacts to the outer portion of their CRZ. While some impacts associated with utility trenching are anticipated, the majority of these impacts will result from temporary superficial ground disturbance within the defined clearing limits during construction.

Tree #2772 is an exceptional Douglas-fir located centrally on the subject parcel that will experience the largest CRZ disturbance, with 13% of the area being impacted. The majority of impacts will be superficial; trenching is proposed approximately 36 feet from the base of the trunk of this tree.

Tree #2787 is a landmark Douglas-fir located near the existing power utility connection point. Trenching and temporary construction impacts will affect 6% of the tree's CRZ.

Tree #2795 is an exceptional bigleaf maple rooted between the parking stalls off of Brookside Blvd NE and the compacted dirt pedestrian path near the proposed picnic shelter. It is anticipated that temporary impacts within the defined clearing limits will impact only 1% of the CRZ of this tree.

Trees #2788, 2792, 2793, and 2794 consist of two bigleaf maples, one Douglas-fir, and one black hawthorn, all measuring less than 24-inches in DBH. These trees are expected to have 1-9% of their CRZ impacted by trenching or temporary ground disturbance.

According to this impact assessment, it is not expected that the proposed site construction will result in the direct or indirect removal of any trees on or adjacent to the subject parcel. Tree removal is defined as "the direct or indirect removal of a tree(s) through actions including, but not limited to: clearing, cutting, girdling, topping, or causing irreversible damage to roots or

stems; destroying the structural integrity of trees through improper pruning; poisoning; filling, excavating, grading, or trenching within the dripline that results in the loss of more than 20 percent of the tree's root system; or the removal through any of these processes of greater than 50 percent of the live crown of the significant tree" (LFPMC 16.14.030).

Critical root zone impacts to the seven trees as described above range from 1-13%, well below the 20% root system loss threshold as defined by Lake Forest Park. Accordingly, the proposed impacts to seven trees as described above are minimal enough that all trees are anticipated to have a strong likelihood of survival following the proposed construction activities.

LFPMC 16.14.070.D requires that structures and utilities be set back a minimum of five feet from a tree's CRZ, however, exceptions may be allowed when it can be demonstrated that the proposed activity will not adversely affect the long-term viability of the tree. Ideally all grading, excavation, and construction within the root zones should be avoided. However, due to the location of trees, critical area buffers, and existing utility connections, a 5-foot setback from the critical root zone is not feasible. However, this development proposal has placed a strong emphasis on tree protection and prioritizes retention of exceptional and landmark trees and trees located in critical area buffers. Tree protection opportunities have been considered in the design and location of proposed structures and utilities, and the site plan proposes to avoid and minimize CRZ impacts while achieving the project goals.

No further mitigation is needed except to comply with the standard tree protection measures as outlined below.

## **Conclusions and Recommendations**

The seven trees that are expected to have CRZ impacts as a result of the proposed plan are considered by Lake Forest Park to be at-risk trees during the construction process. According to LFPMC 16.14.030, an at-risk tree is "a tree that is exposed to potential damage but can be preserved during the construction process of major or minor development, through strict adherence to recommendations from the city's qualified arborist."

In order to minimize CRZ impacts, mitigation measures should be employed when feasible while conducting work within the CRZ of all retained trees. Please refer to the Tree Protection Plan on sheet W4 of the Pfingst Animal Acres Park Mitigation Plan (The Watershed Company, 7/12/2019) for details and notes related to protecting trees during the construction process. Additionally, tree protection measures, listed below, should be used as a best effort to ensure tree survival following project completion:

- **Reduce compaction:** Where root removal will not be required, temporarily apply 6 to 12 inches of coarse mulch within tree protection fencing to prevent compaction of soil by heavy equipment.
- **Alternatives to trenching for utility installation:** Use an air-spade to air-excavate or hand-dig around tree roots to prevent significant damage or loss when installing utilities. Horizontal drilling, tunneling, or boring would also reduce impacts to roots and allow for installation of utilities.
- **Minimize injury:** When tree roots must be removed, cut roots cleanly using a sharp saw or pruners. Do not rip or cut tree roots with heavy equipment. When roots will be temporarily exposed as a result of excavation, cover roots with moist burlap or soil during non-working hours.
- **Construction oversight:** An ISA-certified arborist should be present on-site during construction activities within the driplines of retained trees to monitor tree protection, assist with changes in the field, and document construction impacts.
- **Monitor:** An ISA-certified arborist should monitor retained trees after construction activities to identify changes in the health and structural conditions. Despite best efforts, retained trees may die as a result of construction and may require removal.

## Limitations of This Study

The findings of this report are based on the best available science and are limited to the scope, budget and site conditions at the time of the assessment. Although the information in this report is based on sound methodology, internal structural flaws (such as cracking or root rot) or other conditions that are not visible cannot be detected with this limited basic visual screening. Trees are inherently unpredictable. Even vigorous and healthy trees can fail due to high winds, heavy snow, ice storms, or rain.

This report is based on the current observable conditions and may not represent future conditions of the trees. Any change in site condition, including clearing and grading, will alter the condition of assessed trees in a way that is not predictable. Retained trees should be monitored for signs of stress, pathogens and structural defects after any adjacent construction activities. The conclusions contained within this report have been made for permitting purposes only.

Please call if you have any questions or if we can provide you with any additional information.

TAG #	TREE NAME	E/DEC	STEMS	COMBINED DBH (IN, ROUNDED)	HEIGHT (FT)	CANOPY RADIUS (FT)	CONDITION	CRITICAL ROOT ZONE (CZ) (FT)	HANDMARK PER DPMVC	EXCEPTIONAL PER LPPAC	IMPACTS TO INTERIOR CZ	IMPACTS TO OUTER CZ	OUTER CZ % IMPACT
2772	Pseudotsuga menziesii (Douglas-fir)	E	1	44	85	30	3	44	Y	Y	N	Y	13%
2773	Pseudotsuga menziesii (Douglas-fir)	E	1	28	90	30	3	28	Y	N	N	N	N/A
2774	Pseudotsuga menziesii (Douglas-fir)	E	1	27	90	30	3	27	Y	N	N	N	N/A
2775	Pseudotsuga menziesii (Douglas-fir)	E	1	27	85	15	3	27	Y	N	N	N	N/A
2776	Pseudotsuga menziesii (Douglas-fir)	E	1	27	90	30	3	27	Y	N	N	N	N/A
2777	Pseudotsuga menziesii (Douglas-fir)	E	1	38	90	25	3	38	Y	N	N	N	N/A
2778	Pseudotsuga menziesii (Douglas-fir)	E	2	18	50	20	3	18	N	N	N	N	N/A
2779	Pseudotsuga menziesii (Douglas-fir)	E	1	21	85	30	3	21	N	N	N	N	N/A
2780	Tsuga heterophylla (Western hemlock)	E	1	24	85	20	3	24	Y	N	N	N	N/A
2781	Pseudotsuga menziesii (Douglas-fir)	E	1	30	95	25	3	30	Y	N	N	N	N/A
2782	Tsuga heterophylla (Western hemlock)	E	1	11	40	10	3	11	N	N	N	N	N/A
2783	Pseudotsuga menziesii (Douglas-fir)	E	1	24	95	15	3	24	Y	N	N	N	N/A
2784	Pseudotsuga menziesii (Douglas-fir)	E	1	36	90	30	3	36	Y	N	N	N	N/A
2785	Pseudotsuga menziesii (Douglas-fir)	E	1	17	75	15	3	17	N	N	N	N	N/A
2786	Pseudotsuga menziesii (Douglas-fir)	E	1	18	85	20	3	18	N	N	N	N	N/A
2787	Pseudotsuga menziesii (Douglas-fir)	E	1	35	80	30	2	35	Y	N	N	Y	6%
2788	Pseudotsuga menziesii (Douglas-fir)	E	1	16	55	15	2	16	N	N	N	Y	5%
2789	Pseudotsuga menziesii (Douglas-fir)	E	1	42	90	20	2	42	Y	Y	N	N	N/A
2790	Pseudotsuga menziesii (Douglas-fir)	E	2	35	95	25	3	35	Y	N	N	N	N/A
2791	Acer macrophyllum (Bigleaf maple)	D	1	26	50	25	3	26	Y	N	N	N	N/A
2792	Acer macrophyllum (Bigleaf maple)	D	1	22	50	20	3	22	N	N	N	Y	4%
2793	Acer macrophyllum (Bigleaf maple)	D	1	23	50	25	3	23	N	N	N	Y	9%
2794	Crataegus monogyna (Common hawthorn)	D	2	17	30	12	3	17	N	N	N	Y	1%
2795	Acer macrophyllum (Bigleaf maple)	D	1	46	80	35	4	46	Y	Y	N	Y	1%
2796	Pseudotsuga menziesii (Douglas-fir)	E	1	11	35	8	2	11	N	N	N	N	N/A
2797	Acer macrophyllum (Bigleaf maple)	D	1	24	45	18	3	24	Y	N	N	N	N/A
2798	Acer macrophyllum (Bigleaf maple)	D	2	38	45	25	3	38	Y	N	N	N	N/A
2799	Pseudotsuga menziesii (Douglas-fir)	E	1	8	30	8	3	8	N	N	N	N	N/A
2800	Pseudotsuga menziesii (Douglas-fir)	E	1	33	85	15	2	33	Y	N	N	N	N/A