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Jason Koehler
RKK Construction, Inc.
3065 70th Ave. SE
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RE: Tree Inventory Report- 3400, 3402, 3404, 3406 72nd Pl SE. Mercer Island, WA.

Jason:

This report report is provided to address the recent inventory I conducted of the trees on the propertis at the addresses of 3400, 3402, 3404, 3406 72nd Pl. SE in Mercer Island and the recent comments issued by the City of Mercer Island. The tree retention and replacement requirements for developing lots are specified in the revised section 19.10 of the Mercer Island City Code (MICC). Please see the Tree Retention Plan prepared by Terrane showing the trees I evaluated identified by number and the protection elements.

The contents of this report address the City of Mercer Island's checklist for tree reports so there should be no need for any revisions for additional information.

1.0 Professional Qualifications and Experience

Following is a summary of my qualifications and experience in the field of arboricultural consulting. This is how I meet the threshold qualifications for a qualified arborist in the City of Mercer Island.

Education

- Master of Science, Urban Horticulture, University of Washington, 1996.
- Bachelor of Science, Environmental Policy and Assessment, Western Washington University, 1993.

Experience

- Consulting Arborist, Self Employed, 1999 - Present.
- Wetland Biologist, Wetland Resouces, Inc., 1997-1999.
- Bellevue Natural Resources, 1996-1997.
- Bellevue Botanical Garden, 1996.
- City of Everett Urban Forestry Staff, 1991-1993 (seasonal).

Certifications

- ISA Certified Arborist #PN-0909A - 1996 to present.
- Tree Risk Assessor Qualification - 2013 to present.

In summary, I have over 20 years experience in the field of ecology and horticulture and approximately 20 years experience as a consulting arborist here in the Pacific Northwest.

2.0 Tree Inventory - Methods and Results

I conducted visual evaluations of all the trees according to ISA standards and based upon many years conducting such evaluations on trees in the Pacific Northwest. I oberserved trees up close to inspect conditions of the trunk and from afar to inspect conditions in the crowns. All assessments were conducted according to the methods specified in the ISA Tree Risk Assessment Manual (Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lily. 2013. Tree Risk Assessment Manual. Champaign, Illinois: International Society of Arboriculture) and on nearly 20 years experience conducting such evaluations.

The investigations involved the gathering of the following information:

- Tree species
- Trunk diameter
- Crown spread diameter
- Location factors
- Health and condition notes (general level of vigor, defects, disease or pest problems)

3.0 Site Conditions and Proposed Development

The property is located in a residential neighborhood and is developed with a single family residence. The properties to the north and south are developed with single family residences. To the east is a wooded area on a downward slope.

4.0 Tree Inventory and Exceptional Status

The City of Mercer Island's tree retention, replacement and protection requirements for developing properties are provided in chapter 19.10 of the revised Mercer Island City Code. Information on the existing trees are found in the accompanying tree evaluation data spread sheet.

Mercer Island prioritizes tree retention based upon the following criteria (a summary of the requirements):

- A minimum of 30% of trees 10 inches diameter and greater are required to be retained through development.

- The development proposal shall be designed to further minimize the removal of large trees and maximize large tree retention.

- Exceptional trees (24" greater dbh) are to be prioritized for retention.

- Trees that are healthy and have a greater likelihood of longevity.

- Trees that are part of a healthy grove (8 or more trees 10” dbh or greater that form a continuous canopy.

Limits of Disturbance (LOD)
The City of Mercer Island requires the establishment of limits of disturbance (LOD) for all trees, regardless of proposed retention status. To determine the LOD for each of the trees on this property, the following criteria were utilized.

- For trees with low crowns, the drip line was used as a minimum protection zone in order to protect the crown.
- For trees with high crowns with adequate clearance underneath for encroachment into the drip line, the LOD is set at or beyond the specified root plate for the tree’s trunk diameter.

4.1 Tree Evaluation Data

This section provides “a complete description of each trees diameter, species, critical root zone, limits of allowable disturbance, health condition and viability,” as required by the City of Mercer Island.

The methods and rational used to determine limits of disturbance for larger trees with higher crowns is to use the root plate radius to provide protection for this zone by limiting impacts therein. For smaller trees with lower crowns, the LOD was determined by dripline radius in order to protect the crown.

The critical root zone for each tree is one foot of radial feet for every inch of trunk diameter.

Following is the required information on each tree, provided in order as specified in the checklist, providing complete descriptions to the best of my ability.

Tree #	Description
109	This tree, listed on the survey as a deciduous tree, has a trunk diameter of 58”. The species of this tree is Pacific madrone (*Arbutus menzeisii*), a broad leaf evergreen that is native to the Pacific Northwest. The crown spread of this tree is 64’ diameter. The critical root zone is 58 radial feet. This tree is very tall and the crown is very high, however, it is important to protect its root system and maintain a good distance to any impacts. This tree is in good condition, health and viability. for its size, age and species. At 58” this tree qualifies as exceptional and is required to be retained. The lower branches of the crown are high enough that encroachment into the drip line is possible without requiring any pruning; LOD to be at 18’ minimum on the north side. This tree is proposed to be retained.
110	This tree has a trunk diameter of 14”. It is an English laurel (*Prunus laurocerasus*), a species of tree that is evergreen and produces berries therefore can be somewhat invasive. The critical root zone is 14 radial feet. The limits of allowable disturbance, in order to provide protection for the low crown of 20 feet diameter, is a minimum of 12 radial feet. This tree is not very

tall and fully branched to the ground with dark green, full leaves. Based upon the appearance, my conclusion is that this tree is in good condition and health and has high viability under the existing site conditions. This tree is proposed to be removed.

113 This tree has multiple trunks and a maximum trunk diameter of 22”. It is a bittercherry (*Prunus emarginata*), a deciduous species of cherry that is native to this region. The dripline diameter is 45’ and the critical root zone is 22 radial feet. The limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 23’ radial feet. This tree is not very tall and fully branched to a low height. Based upon the appearance of the crown and trunk, my conclusion is that this tree is in good condition and health and has sufficient viability under the existing site conditions. This tree is proposed to be retained.

114 This tree has a trunk diameter of 28”. It is a Norway spruce (*Picea abies*), a non-native, evergreen tree that grows very well in this region. It has a crown spread diameter of 32 feet and a critical root zone of 28 feet radius. The limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 28’ radial feet. This tree is not very tall and fully branched to a low height. Based upon the appearance of the crown and trunk, my conclusion is that this tree is in good condition and health and has sufficient viability under the existing site conditions. This tree is proposed to be retained.

116 This tree has a trunk diameter of 8”: it is an English holly (*Ilex aquifolium*), a species of tree that is evergreen and produces berries therefore can be somewhat invasive. The critical root zone is 8 radial feet. The limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 12 radial feet. This tree is not very tall and fully branched to the ground with dark green, full leaves. Based upon the appearance, my conclusion is that this tree is in good condition and health and has high viability under the existing site conditions. This tree is proposed to be removed.

119 This large tree has a trunk diameter of 26”. It is a western red cedar (*Thuja plicata*), an evergreen conifer that is native to this region. It has a crown spread of 32 feet diameter, itx critical root zone is 26 radial feet and he limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 17 radial feet. This tree is fully branched to the ground with dark green, full size scales. Based upon the appearance, my conclusion is that this tree is in good condition and health and has high viability under the existing site conditions. This tree is proposed to be retained.

120 This very large tree has a trunk diameter of 60”. It is a western red cedar (*Thuja plicata*), an evergreen conifer that is native to this region. It has a crown spread of 46 feet diameter, itx critical root zone is 60 radial feet and he limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 24 radial feet. This tree is fully branched to the ground with dark green, full size scales. Based upon the appearance, my conclusion is that this tree is in good condition and health and has high viability under the existing site conditions. This tree is proposed to be retained.

122 This tree has a trunk diameter of 10”: it is an English holly (*Ilex aquifolium*), a species of tree that is evergreen and produces berries therefore can be somewhat invasive. The critical root zone is 10 radial feet. The limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 14 radial feet. This tree is not very tall and fully branched to the ground with dark green, full leaves. Based upon the appearance, my conclusion is that this tree is in good condition and health and has high viability under the existing site conditions. This tree is proposed to be removed.

123 This very large tree has a trunk diameter of 66”. It is a bigleaf maple (*Acer macrophyllum*), a deciduous tree that is native to this region and very common. The crown spread of this tree is 72’ diameter and the critical root zone is 66 radial feet. The crown is high enough that some encroachment into the drip line and CRZ is possible so the limits of allowable disturbance are a minimum of 18 radial feet from the trunk. This tree has been topped at a height of approximately 15 feet resulting in considerable re-growth with weak attachments and therefore is recommended to be removed.

124/125 This very large tree has two trunks connected at the base (see photo) with diameters of 36” and 50”. It is a Douglas fir (*Pseudotsuga menziesii*), an evergreen tree that is native to this region and very common. The combined crown spread of both trunks of this tree is 68’ diameter and the critical root zone is 68 radial feet. The crown is high enough that some encroachment into the drip line and CRZ is possible so the limits of allowable disturbance are a minimum of 18 radial feet from the trunk. It appears to be in good condition and meets the size criteria to be classified as exceptional. This tree is proposed to be removed.

126 This tree has a trunk diameter of 10”: it is a flowering dogwood (*Cornus kousa*), an ornamental tree that is deciduous and produces flowers. The crown spread is 14 feet diameter and the critical root zone is 10 radial feet. The limits of allowable disturbance, in order to provide protection for the low crown, is a minimum of 8 radial feet. It is in good condition and health. This tree is proposed to be removed. The location of this tree was confirmed to be in Tract A.

The survey shows six trees off site to the east. However, the 32” evergreen is not there and the two trunks listed as separate trees at 24” and 26” evergreens are both of the same trees. Therefore, there are actually four trees just off-site to the east and two just off-site to the south with crowns that spread onto the site. Following is information on these trees. Column CSD is crown spread distance onto the property.

<u>East</u>
OS1 - White oak (*Quercus alba*), 16” dbh, CSD 16 feet onto site.
OS2 - Norway spruce (*Picea abies*), 18” dbh, CSD 18 feet onto site.
OS3 - Deodar cedar (*Cedrus deodara*), 24” and 26” dbh, CSD 18’ onto site.
OS4 - Bigleaf maple (*Acer macrophyllum*), 30” dbh, CSD 32’ onto site.

<u>South</u>
OS5 - English laurel (*Prunus laurocerasus*), 14” dbh, CSD 10 feet onto the site.
OS6 - English holly (*Ilex aquifolium*), 10” dbh, CSD 6 feet onto site.

All but 13 of the trees on the property are contained within a grove.

5.0 LOD Special Instructions

The City of Mercer Island checklist requires the specification of any special instructions specifically outlining any work proposed within the limits of disturbance protection areas. Following are the special instructions to limit impacts withinthe limits of disturbance protection areas:

- In areas where excavation or grade lowering within the limits of disturbance protection areas and roots may be encountered, methods including but no limited to hand-digging, air spade and tunneling may be employed to reduce root impacts.
- Some clearing and grade changes within this protection area may be conducted by hand in order to limit root impacts.
- Any damaged roots as large as 1/2” diameter are to be hand cut.
- If any work is proposed within the protection areas, a minimum of 6” of wood chips are to placed over the entire protection area.
- Following completion of development, all retained trees with impacts sustained in their protection areas are to be monitored yearly for a minimum of three years.

Once the development plan is available, the impacts within the protection areas and treatment of them will be determined

6.0 Impact of Necessary Tree Removal on Remaining Trees

The site conditions are very open and exposed so removal of the seven trees will not result in any appreciable exposure of the retained trees. Based upon the crown conditions of the trees to be retained, they are clearly adapted to well-exposed conditions. No trees proposed to be removed are within the drip lines of retained trees, therefore, removal will not result in encroachment into any of the retained trees' LODs.

Most of the trees off-site occur near the southeast corner of the project site and the conditions there are also very open, so all of these trees have clearly adapted to these open conditions, thus removing trees on the project site will not have a significant impact on these trees, if any impact at all.

7.0 Tree Retention and Protection Measures Timing and Installation

The City of Mercer Island requires the retention of 30% of all trees with diameters of 10" or greater. At 11 trees with diameters of 10" dbh or greater, a total of 3.3 trees are required to be retained. This project proposes the retention of 4 trees meeting the minimum retention percentage.

The City of Mercer Island requires the protection of retained trees and trees on adjacent lots with driplines that extend onto the developing property. All tree protection measures must be in accordance with the tree protection standards as outlined in MICC 19.10, requiring the following:

A. To ensure long-term viability of trees identified for protection, permit plans and construction activities shall comply with the then-existing Best Management Practices (BMP) – Managing Trees During Construction, published by the International Society of Arboriculture, adopted by reference. The tree protection plan shall be prepared by a qualified arborist and the plan shall be reviewed for adequacy by the city arborist. All minimum required tree protection measures shall be shown on the development plan set and tree replanting/restoration/protection plan.
B. *Alternative Methods.* The city arborist may approve construction-related activity or work within the tree protection barriers if the city arborist concludes:
1. That such activity or work will not threaten the long-term health of the retained tree(s); and

2. That such activity or work complies with the protective methods and best building practices established by the International Society of Arboriculture. (Ord. 17C-15 § 1 (Att. A)).

Tree protection fencing of the type required by the City is to be placed at the specified distance of the LOD of each tree prior to beginning any work on the property. The fencing is only to be removed upon completion of the project as authorized by the City. The location of the fencing is not be relocated or adjusted during development unless authorized by the City.

Signage identifying the tree protection area with required City of Mercer Island tree protection guidelines and restrictions is to be posted on the fencing for each protected tree.

Any pruning of the off-site trees is to be done under the instruction of the project consulting arborist. Any additional impacts (such as grade changes) within the driplines of the off-site trees will need to be reviewed by the project consulting arborist.

8.0 Replacement Trees

The City of Mercer Island checklist requires the suggested location, size and species of replacement trees to be used when required. Replacement is based upon the following criteria:

Lot 1.

Removed tree size	# Removed	Replacement #
< 10” dbh	0	0
10” - 24”	1	5
24” - 36”	0	0
>36” and exceptional trees	1	5
Total	2	10

Lot 2.

Removed tree size	# Removed	Replacement #
< 10” dbh	0	0
10” - 24”	0	0
24” - 36”	0	0
>36” and exceptional trees	0	0
Total	0	0

Lot 3.

Removed tree size	# Removed	Replacement #
< 10” dbh	0	0
10” - 24”	1	5
24” - 36”	0	0
>36” and exceptional trees	0	0
Total	1	5

Lot 4.

Removed tree size	# Removed	Replacement #
< 10” dbh	1	5
10” - 24”	0	0
24” - 36”	0	0
>36” and exceptional trees	0	0
Total	1	5

Tract A.

Removed tree size	# Removed	Replacement #
< 10” dbh	0	0
10” - 24”	1	5
24” - 36”	0	0
>36” and exceptional trees	1	5
Total	2	10

In order to provide replacement for the proposed removal of six trees, 30 trees will be planted between the four new lots.

Replacement trees are to be 2.5” caliper for deciduous species and 6’ tall for evergreen species. I recommend replacement with native species and a mixture of evergreen and deciduous, such as Douglas fir, western red cedar, bigleaf maple and red alder.

9.0 Use of This Report and Limitations

This report is provided to RKK Construction to address the City of Mercer Island’s requirements for tree inventory and retention plans for developing lots. Natural decline and failure of trees following development is not predictable, therefore, Shoffner Consulting and Tony Shoffner cannot be held liable for retained trees that die or fail prior to or following development of the property. The removal of surrounding forest cover, particularly in the direction of prevailing winds, in this case the south and southwest, exposes trees to environmental factors to which many are not adapted.

Cordially,

Tony Shoffner
ISA Certified Arborist #PN-0909A
TRAQ