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Memorandum

Date	12/22/2022
Project No.	2019-06
Project Name	Shoreline 175th Street Corridor

To	Regarding
City of Shoreline	Evaluation of major impacted trees for retention and code required tree replacement quantities

Remarks

Based on the draft in-progress arborist report dated 12/9/2022, HBB and Perteet identified opportunities to preserve an additional 26 trees with design change, and/or modified construction methods. Of the 26 trees identified in this memo, the draft in-progress arborist report made removal recommendations for 23 significant size trees due to major impacts, 1 unlabeled tree below the size threshold of a significant tree due to major impacts, and 2 significant size trees due to direct impacts. These trees are numbered and identified in an arborist report prepared by Urban Forestry Services | Bartlett Consulting. Major impact trees reviewed include numbers: 129, 141, 170, 171, 184, 193, 207, 226, 236, 274, 388, 389, 390, 391, 393, 402, 403, 452, 466, 468, 472, and 487 and an unlabeled tree below the size threshold of a Significant tree in the Ronald Bog vicinity. Trees 271a and 470 are direct impact trees evaluated for reasons discussed in remarks 4 and 10, below. Tree 401 is identified for preservation in the arborist report, and commented upon in remark 8.

Trees evaluated for preservation	Quantity	Tree number
Saved	5	226, 466**, 468**, 470**, 472**
Unable to save	15	170, 171, 184, 193, 207, 236, 388, 389, 390, 391, 393, 402, 403, 487, one tree below the Significant tree size threshold
To be evaluated during 90% design development for adjustments to retain tree*	6	129, 141, 271a, 274, 401, 452

* Arborist field work was done in the early stages of 60% design. Unknowns in 60% design, such as (but not limited to) final stormwater design on acquired property, will require further evaluation during the 90% design phase when permanent impacts are solidified.
** See remark 10 for design alterations needed to preserve these trees.

Major impacted trees are those which are not a direct conflict with the design, but are so severely threatened by construction impacts to their roots, trunk, canopy, or adjacent environmental damage they are recommended for removal. Maintaining a safe traffic corridor by reducing the risk of a trees' structural failure and potential falling is a primary driver for the removal of these trees.

Additional considerations included the current health of the trees evaluated for removal. The arborist report provides ratings for each tree under the categories Vigor, Structure, and Preservation Value. Vigor refers to a trees health and was determined by visual inspection. Examples of poor Vigor may include (for the species) a thin canopy, small leaves, signs of insect damage such as borer holes or dead portions of the tree canopy; and decay, as observed in open wounds or the fruiting bodies of fungus growing from the wood. Examples of poor Structure could be seen in examples such as: trees that have been topped in the past and have regrown multiple, or unbalanced leaders, physical impacts such as vehicular strikes where significant portions of bark and cambium has been damaged; weak or compromised branch attachments, split trunks, and damage to roots. A trees' Vigor and Structure rating directly impact its Preservation Value, but are not the sole determining factors. A long-lived species of tree with fair Vigor and Structure may have a higher preservation value than a short-lived tree near the end of life with similar Vigor and Structure ratings.

The 175th Street corridor is one of Shoreline's most active east-west arterials connecting the city's busiest north-south roadways. Shoreline has made it a priority to improve N 175th Street between Stone Avenue N and Interstate 5 (I-5) by making it easier and safer for all corridor users. The N 175th Street project, from Stone Avenue N to I-5, will support growth and promote safety and mobility by widening the roadway, constructing pedestrian and cyclist improvements along the full length of the corridor, and improving the intersection at N 175th Street and Meridian Avenue N. The following is a summary of the trees evaluated for potential preservation while still meeting the overall project objectives of providing safe and comfortable pedestrian and bicyclist facilities.

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1. Trees 170, 171, 184, 193, 207, 236 will all sustain substantial impacts within their interior critical root zones from wall installation and could not be preserved through design changes.
2. Tree 129 has a high potential for preservation and will be monitored during design progress to reduce impacts. This tree is being impacted by wall installation.
3. Tree 141 has significant impacts to the critical root zone from installation of Wall #3b, with wall related grading impacting the interior critical root zone. This tree will be monitored during design progress for potential ways to reduce impacts, but has a low likelihood of preservation.
4. Tree 271a and 274 are impacted by grading for stormwater detention that is still under design. Full design for stormwater detention and associated restoration will carefully consider preservation of adjacent trees, including these. Preserving these trees may conflict with the fullest and best use of land for this site but will be monitored during design progress.
5. Tree 226 is impacted by a proposed wall and private property driveway replacement. The length of driveway will be evaluated to reduce the impacts to this tree; there is a moderate chance of preservation if this tree is only impacted by the wall.
6. Tree 487 is a red alder at the west side of Ronald Bog and will be impacted by a sheet pile wall installation within the interior critical root zone and could not be preserved through design changes. After removal this tree could be environmentally beneficial as woody debris within the park.
7. Trees 388, 389, 390, 391, 393, 402 and 403 and a tree below the Significant tree size threshold will be impacted within their interior critical root zone by a sheet pile wall. Attempting to preserve these trees would require notching the sheet pile wall around them, which would significantly protrude into the sidewalk. A moderate amount of risk for tree survival would still remain, attempting to preserve these trees is not recommended.
8. Tree 401 is Leyland cypress tree which is part of a larger hedge; all other Leyland cypress trees in this hedge are below the Significant tree size threshold and not included in the arborist report or numbered. This hedge of trees is likely to incur significant impacts from installation of a sheet pile wall. Further discussions with the wall designers after the arborist field work was completed indicate it is unlikely the trees will survive the wall installation process. Trees are marked for protection in the arborist report and will be monitored as the design progresses and their status updated as necessary. These trees' primary function is for screening of a private residence.
9. Tree 452 is impacted by grading. This tree will be monitored during design to see if a steeper slope can be accommodated which would reduce the extents of grading and potentially save the tree.
10. Trees 466, 468, and 472 are all impacted by grading. These trees could potentially be saved through the installation of a continuous block wall to reduce the necessary grading extents. Installation of a wall could potentially also preserve tree 470. A preliminary opinion of cost to save these trees with a basic block wall with fall protection fencing above would cost approximately $40,000. Do to the highly visible location of the walls needed, to the east of the gateway sign outside Ronald Bog, and additional $10,000-$25,000 would be recommended for a more ornamental style of wall that would tie into the design of the gateway sign. Three of the four trees are listed as having 'fair' Vigor, and 'poor to fair' Structure. Installation of a wall to preserve these trees and associated project construction will put added stress on these trees. Provided City of Shoreline Tree Protection Guidelines and UFS|BC Tree Protection Guidelines are followed there is a moderate chance of survival and recovery for these trees with this preservation approach.

Tree Mitigation Requirements

Tree mitigation on private property and city park property for this project will be calculated and provided according to Shoreline Municipal Code (SMC) 20.50.360. Removal of trees within the right-of-way are exempt from mitigation per oversite of the Director.

Mitigation ratios defined in SMC 20.50.360, C. are:

1. One existing significant tree of eight inches in diameter at breast height for conifers or 12 inches in diameter at breast height for all others equals one new tree.
2. Each additional three inches in diameter at breast height equals one additional new tree, up to three trees per significant tree removed.
3. Minimum size requirements for replacement trees under this provision: Deciduous trees shall be at least 1.5 inches in caliper and evergreens six feet in height.

103 new, replacement trees will be required for private and park property tree mitigation. Up to 33 additional replacement trees may be required for trees on private property identified for removal, which have not been surveyed. No information regarding size and tree type to calculate tree mitigation is available at this time for these trees. Based on Google street view and visual review from the sidewalk, the project arborist estimates 11 of 23 trees at the following parcels are of significant size. These 23 trees are located on city acquired parcels at 1610 N 175th St., 1616 N 175th St., and 1615 N 175th St. The maximum replacement value for 11 significant trees is 33, the Tree Mitigation Summary table below does not incorporate mitigation for these parcels.

147 new trees are proposed in the 60% design. These include (4), 6'-8' height conifers on Park Property at Ronald Bog, and (143), 2" caliper deciduous trees within city right-of-way along the N 175th Street corridor.

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41 of 60 trees removed from private property and park property require mitigation at the following rates. Significant tree sizes begin at 6" DBH*, whereas the mitigation for significant trees removed begins at 8" DBH for evergreen trees and 12" DBH for Deciduous trees.

Tree Mitigation summary		
Type	*DBH* and associated mitigation quantity*	*Required replacement quantity*
Evergreen		
	8"-11" = 1 tree	**2**
Quantity removed	2	
	11.1"-14" = 2 trees	**6**
Quantity removed	3	
	≥14.1" = 3 trees	**84**
Quantity removed	28	
Deciduous		
	12"-15" = 1 tree	**6**
Quantity removed	6	
	15.1"-18" = 2 trees	**2**
Quantity removed	1	
	≥18.1" = 3 trees	**3**
Quantity removed	1	
	Total	**103**

*DBH is Diameter at Breast Height, measured 4.5' up from the ground surface.

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Signed Michael Walton, ASLA, ISA