Todd Prager & Associates LLC

MEMORANDUM

DATE: November 23, 2022

TO: Fr. Gregg Bronsema (St. Michael's Catholic Church)

FROM: Christine Johnson, ISA Certified Arborist® PN-8730A

RE: St. Michael's Catholic Church Tree Inventory and Modified Level I Tree Risk Assessment

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Summary

Todd Prager & Associates, LLC was contacted by St. Michael's Catholic Church to resolve an unpermitted tree removal issue and conduct a visual tree risk assessment on trees in a natural area in the northeast corner of the property. The inventory resulted in 126 trees, 47 of which were also assessed for risk. Three trees are recommended for removal or height reduction to mitigate for low risk. Several general recommendations are also provided to reduce tree risk and/or improve site conditions.

Background

In August 2022, St. Michael's Catholic Church removed seven parking lot trees without a permit. Several months later, a red alder (*Alnus rubra*) in the northeast corner of the property partially failed and landed on a neighboring property and caused minor property damage. Per my conversations via email and phone with the City of Sandy staff, the city is requesting St. Michael's Catholic Church provide a written report that includes an inventory of existing trees over 8-inches in diameter and a tree risk assessment of trees in the northeast corner. The minimum tree retention standard requires three trees per acre in good condition. As such, 17 trees in good condition are required for the property.

Assignment

The scope of work requested of our firm was as follows:

1. Inventory existing trees 8-inches in diameter and larger at 18090 SE Langsand Road. The following information will be recorded for each tree: tree number, common name, species, name, diameter (DBH), crown radius, health condition, structural condition, and pertinent comments. A site map with approximate tree locations will also be provided. Trees will be tagged with corresponding tree numbers for future reference.
2. Conduct a modified level II, basic tree risk assessment for trees in the northeast corner.
3. Provide risk mitigation recommendations for trees in the northeast corner as applicable.

4. Summarize findings in an arborist report for the City of Sandy.
5. Provide recommendations to mitigate for bare soil (if applicable).

Limitations
Tree risk assessments are based on the tree and site conditions at the time of assessment. Any changes to the tree or site parameters merit a reassessment. Trees need to be visually re-assessed if site parameters change (i.e., nearby trees are removed, severe weather event, etc.). Additionally, tree risk assessments are not guarantees that a tree will not fail within the stated time frame. Healthy trees can fail under the right storm conditions or from structural defects or disease that cannot be visually detected.

Tree Inventory
I visited the site on November 17, 2022, and November 21, 2022. Tree risk assessments were performed on November 21, 2022. The following information was recorded for all 126 trees: tree number, common name, scientific name, diameter (DBH), crown radius, health condition, structural condition, and pertinent comments. For the purposes of this report, trees were separated into one of two categories: landscape and parking lot trees (trees 1 through 73, and 122 through 126), or natural area trees (trees 74 through 121). All trees were tagged with aluminum tags that correspond with the tree number on the site map (Attachment 1) and inventory tables (Attachments 2 and 3).

Trees in the natural area were subjected to a level II, tree risk assessment process. I assessed all trees over 8 inches in diameter at 4.5 feet above ground level that were in striking distance of a target (e.g., house, fence, walking path). I performed a 360-degree assessment from the ground assessing the trunk flare, lower trunk, and canopy as I walked around each tree. If a characteristic of concern or defect was found (e.g., disease, cavities, etc.), I proceeded to perform a level II basic tree risk assessment. If no characteristics of concern were found, I noted as such and did not assess the tree for risk. If a defect was observed, but no targets were within the height of the tree, the tree was not assessed for risk, which is common for small diameter trees that would not reach a target. Additional information was collected on trees that were assessed for risk, which is discussed further in the next section.

A diameter tape was used to measure trunk diameter at 4-feet, 6-inches above ground level. A Bosch Blaze GLM 400C laser measurer was used to measure distances to nearby structures. A rubber mallet was used to sound the lower trunks.

I observed that the area where the seven trees were removed to the west of the parking lot is mulched and has been replanted with eucalyptus trees (*Eucalyptus sp.*). Hence, bare soil does not exist where the seven trees were removed.

Risk Assessment Methodology and Ratings
The visual tree risk assessment process was used to rate the trees for risk. Our firm used the standards for a Level II, basic tree risk assessment found in the American National Standards Institute (ANSI) A300 standards[1] and the International Society of Arboriculture's (ISA) best

[1]American National Standards Institute. (2017). *ANSI A300 (Part 9) - 2017 Tree Risk Assessment a. Tree Failure.* A revision of ANSI A300 (Part 9) – 2011.

management standards for Level II, basic tree risk assessment[2]. The risk assessment timeframe was set at 5 years.

The following sections provide an overview of the visual tree risk assessment process and key terms to guide the reader.

Targets

A *target* is defined as any person, object, or service disruption within reach of a falling tree or part of a tree, that may be injured, damaged, or disrupted. If a target is within 1-times the height of the tree being assessed, it is typically included in a risk assessment. This parameter is based off the ISA's basic tree risk assessment process and is a good guideline when considering what property or who may be impacted by a tree or tree part failure. An *occupancy rate* (constant, frequent, occasional, rare) is associated with a target. The homes and shed have a constant occupancy rate.

Risk Categorization

Tree risk assessment is conducted using a systematic approach to identify, analyze, and evaluate tree risk. If targets are present, then risk can be assessed. When performing a tree risk assessment, an arborist's task is to evaluate the parameters of the site and the trees' characteristics, taking note of any defects or unusual features the tree and/or the site may have or pose to the stability of the tree or parts of the tree.

From the collection of data, the arborist then uses three factors to calculate the overall risk rating: (1) the likelihood of failure, (2) the likelihood of impact, and (3) the consequence of failure. A summary of the below risk factors for each tree is in Table 2 and discussed in the following section. For the purposes of this risk assessment, only whole tree failure was assessed.

Likelihood of failure is the chance of a tree or tree part failing within the stated time frame of five years. There are four levels: improbable, possible, probable, and imminent. A tree would be given an improbable likelihood of failure if it were healthy and not likely to fail in normal or even stormy weather conditions. Possible likelihood of failure would mean that there may be a significant defect, but the tree is not expected to fail in normal storm events, or even in storms that would be expected to occur every year. Probable likelihood rating would indicate that the defect is likely to cause failure within the stated time frame. A tree would be given an imminent likelihood of failure if it has already started to fail or would fail in the near future, within three weeks or so.

Likelihood of impact assesses that once the tree or tree part with the defect has failed, what is the likelihood of the tree or tree part impacting the target. There are four levels: very low, low, medium, and high. A tree would be given a very low likelihood of impact if the occupancy rate of the target of concern in that area is rare. A low rating would mean the target of concern being struck by the failing tree or tree part is less than 50 percent but greater than rare. A rating of medium is given if the target of concern is as likely to get struck as not. A tree would be given a high likelihood of impact if it is likely to impact the target when it fails.

[2]International Society of Arboriculture. (2017). *Tree Risk Assessment Manual* (2nd ed.) Champaign, IL: International Society of Arboriculture.

Consequences of failure is the level of damage associated with a tree or tree part failure that has struck a target of concern. There are four levels: negligible, minor, significant, and severe. A negligible consequence would consist of a tree or tree part failing and resulting in no injuries to people and little to no damage to property or disruption to service. A minor consequence would be damage that could be repaired at a reasonable cost or injuries that people could heal quickly from and would not necessitate a hospital stay. Examples would be a damaged gutter, or a cut or minor bone breakage on a person. Significant consequences would be damage with higher repair costs and injuries that would require a hospital stay but one could expect a full recovery with no lingering impacts. An example of significant property damage would be where a roof's structural support is significantly damaged. A severe consequence would be a tree or tree part failing and resulting in a serious injury with lifelong impacts or death, or property damage with very high repair costs.

Risk Mitigation Recommendations

Three trees (83, 84 and 86) are recommended for removal to reduce the risk of failing and falling onto a neighbor's property and causing negligible damage. These three trees are red alders in poor or very poor condition. The trees can be either completely removed or reduced in height so that they would not cause damage to neighboring properties. The use of the walking path through the natural area was assumed to be occasional when assessing for risk. If the walking path becomes used more heavily, it may be appropriate to remove the remaining alders in poor condition (trees 87 and 88); but, if the goal is to manage this area as a forest, there is low risk to retaining these two trees and restrict access during high wind events.

The remaining trees in the grove that are not recommended for removal should be monitored for risk on a five-year cycle. As a grove, the Douglas-fir (*Pseudotsuga menziesii*) and western redcedar (*Thuja plicata*) are in good health and do not show signs of disease or decline.

In addition to the above risk mitigation recommendations, there are also general recommendations that should be applied to prevent mechanical damage and reduce stress.

1. **Establish mulch rings around trees or groves of trees to prevent mechanical damage to lower trunks.** Some landscape trees showed signs of mechanical damage to the lower trunk, buttress roots, or surface roots. This damage was likely caused by lawn mowers, weed eaters, or other landscaping equipment. Mulch rings will prevent such damage from happening. If mulch rings would alter the preferred aesthetic of the landscape, then instruct volunteers managing the landscape to remove weeds by hand near trees and not to use weed eaters.
2. **Establish a designated landscape compost pile away from trees**. I observed a deep pile of landscape debris (grass clippings) within the dripline and against the trunks of trees 93 through 95. I recommend removing this debris to a level where you can see the trunk flare meet the ground and designating a separate area away from mature trees to pile landscape debris. Rocks, gravel, or other materials stored on top of soil within the dripline of trees should also be moved. Piling of debris and materials on top of soil impacts the exchange of air and water with roots, thereby impacting tree health.
3. **Removal of invasive species in the natural area**. Several invasive species were observed in the natural area and eradicating or managing these plants is recommended for the health of the stand. The level of establishment is not a concern at this point in time; however, invasive species are often fast-growing plants that can become well established

in a few growing seasons. The invasive species observed include: English holly (*Ilex aquifolium*), cherry laurel (*Prunus laurocerasus*), and Himalayan blackberry (*Rubus armeniacus*). Any removal of these plants should be done by hand and without the use of herbicides.

Conclusion

There are 126 trees over 8-inches in diameter on St. Michael's Catholic Church property, the majority of which are in good condition. The minimum tree number is met. All 47 trees in the natural area in the northeast corner of the property that were assessed for risk resulted in a low risk rating. Three trees (trees 83, 84, and 86) are recommended for removal or height reduction to mitigate for low risk.

Please let me know if there are any questions regarding this report.

Sincerely,

Christine Johnson

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ISA Qualified Tree Risk Assessor
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Enclosures: Attachment 1 – Site Map
Attachment 2 – Landscape and Parking Lot Trees
Attachment 3 – Natural Area Trees
Attachment 4 – Assumptions and Limiting Conditions

Attachment 1 - Site Map

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Attachment 1 - Site Map

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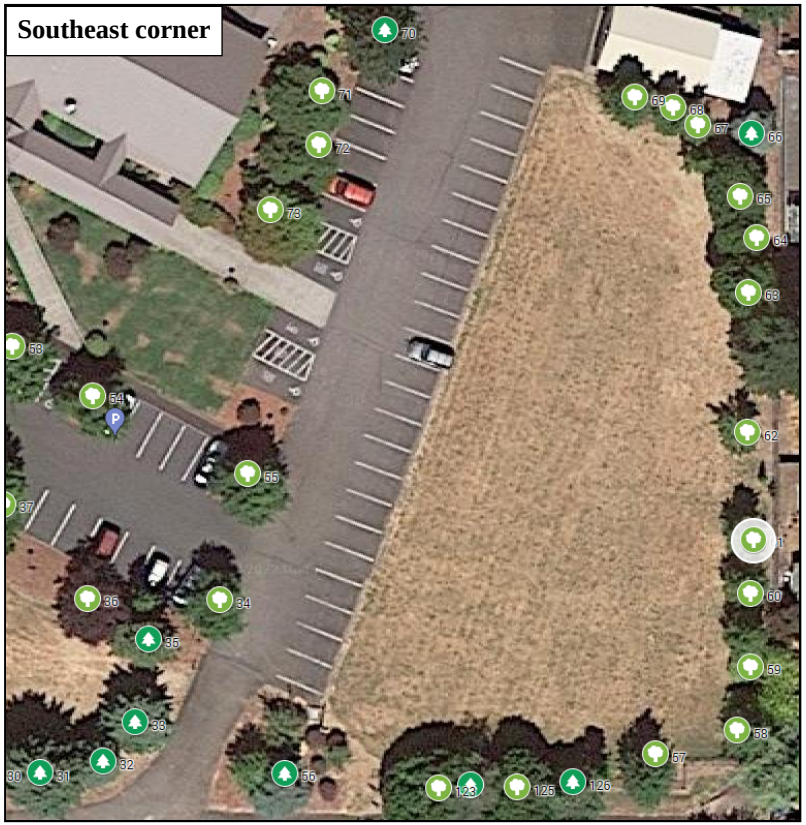
Northwest corner

Southeast corner



Southeast corner

Attachment 1 - Site Map

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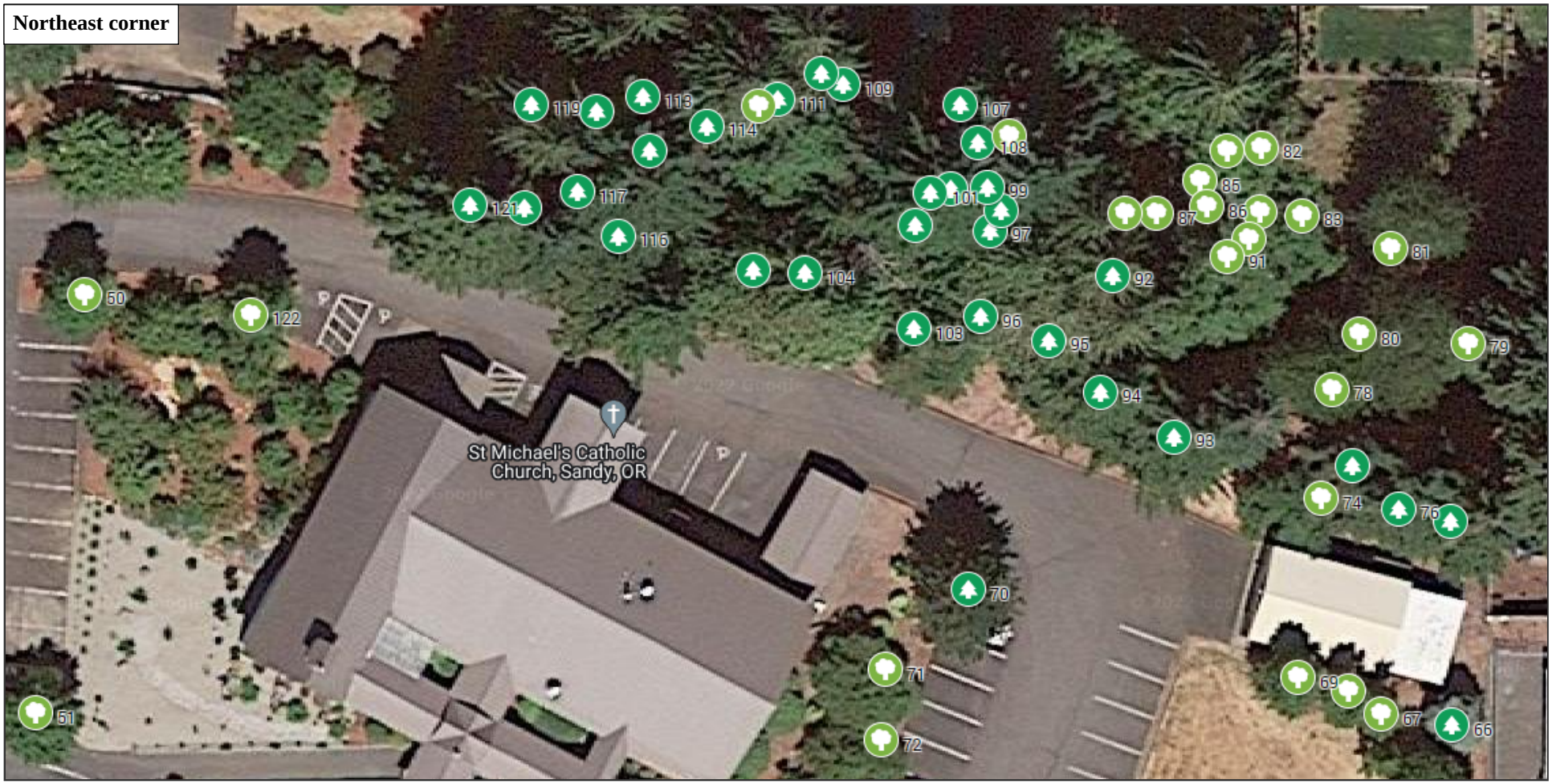

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Attachment 2 - Landscape and Parking Lot Tree Inventory
November 2022

Tree No.	Common Name	Scientific Name	DBH[1] (in)	Single DBH[2] (in)	C-Radius[3] (ft)	Condition[4]	Structure[4]	Comments
1	black pine	*Pinus nigra*	20	20	12	good	fair	crooked trunk, closed cavity at 10' on south side
2	English walnut	*Juglans regia*	27	27	20	fair	poor	diameter measured at 3.5', trunk decay, several leaders with decay, crossing and fused leaders, cable properly installed, trunk decay from ground to 10'
3	hedge maple	*Acer campestre*	9	9	8	good	good	mower damage on lower trunk, all sides, surface root damage
4	hedge maple	*Acer campestre*	8	8	8	good	good	minor mower damage
5	hedge maple	*Acer campestre*	10	10	12	fair	fair	diameter measured at 4.0', codominant leaders, trunk decay, one sided
6	deodar cedar	*Cedrus deodara*	26	26	20	good	good	
7	deodar cedar	*Cedrus deodara*	28	28	20	good	good	
8	deodar cedar	*Cedrus deodara*	28	28	20	good	good	
9	hedge maple	*Acer campestre*	9	9	8	good	good	
10	hedge maple	*Acer campestre*	8	8	10	good	good	closed trunk wounds
11	Flowering cherry	*Prunus serrulata*	18	18	15	good	fair	diameter measured at 3.0', codominant leaders
12	Flowering cherry	*Prunus serrulata*	16	16	13	good	good	diameter measured at 4.0'
13	monkey puzzle	*Araucaria araucana*	24	24	15	good	good	
14	Colorado blue spruce	*Picea pungens* var. *glauca*	20	20	15	good	good	
15	Colorado blue spruce	*Picea pungens* var. *glauca*	17	17	15	good	good	
16	Colorado blue spruce	*Picea pungens* var. *glauca*	20	20	16	good	good	
17	Colorado spruce	*Picea pungens*	20	20	15	good	good	
18	Colorado blue spruce	*Picea pungens* var. *glauca*	18	18	16	good	fair	sweeping trunk, multiple leaders at 30'
19	Colorado blue spruce	*Picea pungens* var. *glauca*	13,11	17	17	good	fair	codominant leaders with inclusion
20	Colorado spruce	*Picea pungens*	20	20	12	good	good	
21	Colorado blue spruce	*Picea pungens* var. *glauca*	20	20	12	good	good	
22	Colorado blue spruce	*Picea pungens* var. *glauca*	15	15	10	good	fair	codominant leaders with inclusion
23	Colorado spruce	*Picea pungens*	16	16	15	good	good	
24	Colorado blue spruce	*Picea pungens* var. *glauca*	17,14	22	14	good	fair	codominant leaders
25	Colorado spruce	*Picea pungens*	17	17	10	good	fair	codominant leaders
26	Colorado blue spruce	*Picea pungens* var. *glauca*	18	18	10	good	good	
27	Colorado spruce	*Picea pungens*	13,11	17	12	good	fair	codominant leaders
28	Colorado blue spruce	*Picea pungens* var. *glauca*	21	21	13	good	good	
29	cherry	*Prunus sp.*	9	9	14	good	fair	multiple leaders at 15'
30	Colorado spruce	*Picea pungens*	12	12	8	good	good	
31	Colorado spruce	*Picea pungens*	21	21	15	good	good	

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November 2022

Tree No.	Common Name	Scientific Name	DBH[1] (in)	Single DBH[2] (in)	C-Radius[3] (ft)	Condition[4]	Structure[4]	Comments
32	Colorado blue spruce	*Picea pungens* var. *glauca*	15	15	10	good	fair	crooked trunk
33	Colorado blue spruce	*Picea pungens* var. *glauca*	16	16	12	good	fair	codominant leaders, crooked leaders
34	callery pear	*Pyrus calleryana*	13	13	10	good	fair	epicormic branches, crowded and crossing branches
35	black pine	*Pinus nigra*	20	20	10	good	fair	lean, one sided, crooked trunk
36	purple leaf plum	*Prunus cerasifera* ''Atropurpurea'	8,8,6	13	10	good	fair	codominant leaders, epicormic branches, crowded and crossing branches
37	callery pear	*Pyrus calleryana*	11	11	10	good	fair	codominant leaders, epicormic branches, crowded and crossing branches, closed trunk wounds
38	cherry	*Prunus sp.*	11	11	12	good	fair	diameter measured at 3.5', four leaders at 4.5'
39	black pine	*Pinus nigra*	22	22	16	good	fair	codominant leaders, lean, one sided
40	black pine	*Pinus nigra*	13	13	10	good	fair	crooked trunk
41	black pine	*Pinus nigra*	19	19	10	good	good	
42	black pine	*Pinus nigra*	14	14	12	good	fair	discolored foliage, one sided
43	black pine	*Pinus nigra*	15,15	21	12	good	fair	codominant leaders
44	black pine	*Pinus nigra*	22	22	14	good	fair	codominant leaders, hanging branch southeast side
45	cherry	*Prunus sp.*	11	11	10	good	fair	diameter measured at 4.0', codominant leaders
46	black pine	*Pinus nigra*	20	20	15	good	fair	codominant leaders, lean, girdling roots
47	callery pear	*Pyrus calleryana*	9	9	12	good	good	
48	bigleaf maple	*Acer macrophyllum*	30	30	25	good	fair	diameter measured at 2.0', codominant leaders with inclusion
49	callery pear	*Pyrus calleryana*	10	10	8	good	fair	codominant leaders with inclusion, trunk wound east side
50	callery pear	*Pyrus calleryana*	11	11	10	good	good	crowded and crossing branches
51	callery pear	*Pyrus calleryana*	14	14	10	good	fair	crowded and crossing branches
52	callery pear	*Pyrus calleryana*	16	16	13	good	fair	codominant leaders, crowded and crossing branches
53	callery pear	*Pyrus calleryana*	15	15	11	good	fair	crowded and crossing branches, mushroom on north side, 6" off trunk
54	callery pear	*Pyrus calleryana*	14	14	11	good	fair	codominant leaders with inclusion, crowded and crossing branches
55	callery pear	*Pyrus calleryana*	13	13	11	good	fair	codominant leaders, epicormic branches, crowded and crossing branches
56	Colorado blue spruce	*Picea pungens* var. *glauca*	16	16	14	good	fair	codominant leaders with inclusion
57	callery pear	*Pyrus calleryana*	10	10	9	good	good	
58	callery pear	*Pyrus calleryana*	9	9	10	good	good	trunk wound west side
59	callery pear	*Pyrus calleryana*	9	9	10	good	fair	codominant leaders, trunk wound west side
60	callery pear	*Pyrus calleryana*	8	8	10	good	good	epicormic sprouts
61	callery pear	*Pyrus calleryana*	8	8	10	good	good	trunk wound west side
62	callery pear	*Pyrus calleryana*	8	8	10	good	fair	epicormic branches, epicormic sprouts at base, closed trunk wounds

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Attachment 2 - Landscape and Parking Lot Tree Inventory
November 2022

Tree No.	Common Name	Scientific Name	DBH[1] (in)	Single DBH[2] (in)	C-Radius[3] (ft)	Condition[4]	Structure[4]	Comments
63	American hornbeam	*Carpinus caroliniana*	10	10	10	good	good	basal wound east side
64	American hornbeam	*Carpinus caroliniana*	9	9	9	good	fair	multiple trunk wounds at various heights, good wound wood
65	American hornbeam	*Carpinus caroliniana*	11	11	10	good	fair	diameter measured at 3.0', lost central leader, crowded branches
66	Colorado blue spruce	*Picea pungens* var. *glauca*	10	10	9	good	fair	lean, crooked trunk
67	callery pear	*Pyrus calleryana*	8	8	7	good	fair	codominant leaders
68	callery pear	*Pyrus calleryana*	9	9	6	good	good	
69	callery pear	*Pyrus calleryana*	11	11	10	good	fair	codominant leaders with inclusion, lean, epicormic branches, possible crack developing between codominant leaders
70	red pine	*Pinus resinosa*	20	20	20	good	fair	codominant leaders, either black pine or red pine, seven leaders at 6', minor pitch moth
71	Japanese maple	*Acer palmatum*	9	9	14	good	fair	diameter measured at 1', minor trunk/leader decay, good wound wood
72	Japanese maple	*Acer palmatum*	9	9	16	good	fair	diameter measured at 1.5', girdling roots, minor trunk decay
73	Japanese maple	*Acer palmatum*	8,8,7,7,5,4	16	12	good	good	
122	callery pear	*Pyrus calleryana*	11	11	8	good	fair	diameter measured at 3.5', codominant leaders, epicormic branches
123	American hornbeam	*Carpinus caroliniana*	12	12	14	good	good	diameter measured at 1', DBH estimated, crowded branches
124	Scot's pine	*Pinus sylvestris*	13,12	18	14	good	fair	codominant leaders, one sided, phototropic lean
125	American hornbeam	*Carpinus caroliniana*	12	12	12	good	good	diameter measured at 3.0', crowded branches
126	Scot's pine	*Pinus sylvestris*	15,12	19	14	good	fair	codominant leaders, English holly at base

[1]**DBH** is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.
[2]**Single DBH** is the trunk diameter of a multi-stem tree converted to a single number according to the following formula: square root of the sum of the squared diameter of each trunk at 4½ feet above mean ground level.
[3]**C-Rad** is the approximate crown radius in feet.
[4]**Condition and Structure** ratings range from dead, very poor, poor, fair, to good.
Note: Trees 74 through 121 are located in Attachment 3 - Natural Area Tree Inventory.

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Attachment 3 - Natural Area Tree Inventory
November 2022

Tree No.	Common Name	Scientific Name	DBH[1] (in)	Single DBH[2] (in)	C-Radius[3] (ft)	Condition[4]	Structure[4]	Defect assessed[5]	Target[6]	Likelihood of Failure[7]	Likelihood of Impact[8]	Consequence of Failure[9]	Risk Rating[10]	Risk Mitigation/ Recommendations	Comments
74	Unknown	*unknown*	7,7	10	8	fair	fair	trunk oddities	Covered storage	improbable	very low	negligible	low	monitor	codominant leaders, trunk oddities
75	Douglas-fir	*Pseudotsuga menziesii*	15	15	10	good	fair	crooked trunk	Covered storage	improbable	very low	high	low	monitor	one sided, crooked trunk
76	Douglas-fir	*Pseudotsuga menziesii*	21	21	15	good	fair	crooked trunk	Covered storage	improbable	very low	high	low	monitor	one sided, crooked trunk, phototropic lean
77	Douglas-fir	*Pseudotsuga menziesii*	23	23	15	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	
78	sweet cherry	*Prunus avium*	13	13	8	good	fair	codominant leaders	walking path	improbable	very low	severe	low	monitor	codominant leaders, trunk decay, good wound wood
79	bigleaf maple	*Acer macrophyllum*	16	16	15	fair	fair	one sided	fence (1' east)	improbable	very low	negligible	low	monitor	deadwood, one sided
80	sweet cherry	*Prunus avium*	14	14	10	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	
81	sweet cherry	*Prunus avium*	13	13	9	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	moderate sapsucker marks
82	red alder	*Alnus rubra*	12	12	0	dead	dead	whole tree failure	fence (~10' north)	improbable	very low	negligible	low	n/a (retain as wildlife snag)	snag at 20'
83	red alder	*Alnus rubra*	16	16	8	fair	fair	stem failure	fence (29' north)	probable	low	negligible	low	remove or create a wildlife snag	high crown, phototropic lean, discolored bark at approximately 50' (height approximate 70)
84	red alder	*Alnus rubra*	16	16	0	very poor	very poor	basal decay	fence (17' north)	probable	medium	negligible	low	remove or create a wildlife snag	trunk decay, basal decay southwest side, western redcedar offers some protection
85	red alder	*Alnus rubra*	14	14	0	dead	dead	whole tree failure	walking path	improbable	very low	negligible	low	n/a (retain as wildlife snag)	snag at 20'
86	red alder	*Alnus rubra*	14	14	8	poor	poor	stem failure	fence (37' north)	possible	low	negligible	low	remove or create a wildlife snag	thin, phototropic lean, sounded hollow
87	red alder	*Alnus rubra*	11	11	0	very poor	very poor	very poor health	walking path	probable	very low	negligible	low	monitor	lean west, high crown (though likely dead) suppressed
88	red alder	*Alnus rubra*	18	18	8	very poor	very poor	very poor health	walking path	possible	very low	negligible	low	monitor	deadwood, thin, high crown, basal wound southwest side, stem failure more likely than whole tree failure
89	bigleaf maple	*Acer macrophyllum*	7	7	6	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	self corrected phototropic lean
90	bigleaf maple	*Acer macrophyllum*	8	8	6	fair	fair	lean	no target	n/a	n/a	n/a	n/a	monitor	Lost top, leaning trunk, ivy.
91	bigleaf maple	*Acer macrophyllum*	8	8	6	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	self corrected phototropic lean, lost top, one sided
92	Douglas-fir	*Pseudotsuga menziesii*	12	12	8	fair	good	fair health	no target	n/a	n/a	n/a	n/a	monitor	thin, suppressed
93	Douglas-fir	*Pseudotsuga menziesii*	24	24	25	fair	good	dead top	parking lot	improbable	very low	negligible	low	monitor and remove debris around trunk to reveal trunk flare	dead top, may be declining
94	Douglas-fir	*Pseudotsuga menziesii*	25	25	20	fair	good	dead top	parking lot	improbable	very low	negligible	low	monitor and remove debris around trunk to reveal trunk flare	dead top, may be declining
95	Douglas-fir	*Pseudotsuga menziesii*	22	22	22	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor and remove debris around trunk to reveal trunk flare	buried trunk flare, may have heavy cone crop
96	Douglas-fir	*Pseudotsuga menziesii*	12	12	12	good	fair	one sided	no target	n/a	n/a	n/a	n/a	monitor	one sided, phototropic lean
97	western redcedar	*Thuja plicata*	40	40	25	good	fair	one sided	walking path	improbable	medium	severe	low	monitor and remove ivy from trunk	one sided, large codominant leader to north failed, foliage slightly yellow, monitor ivy growth
98	western redcedar	*Thuja plicata*	36	36	22	good	fair	one sided	walking path	improbable	medium	severe	low	monitor	one sided, slightly discolored foliage
99	western redcedar	*Thuja plicata*	31	31	18	good	fair	one sided	fence (33' north); walking path	improbable	high	severe	low	monitor	one sided
100	western redcedar	*Thuja plicata*	9	9	4	fair	poor	poor structure	no target	improbable	medium	severe	low	monitor	deadwood, thin, suppressed, lost and regrew top
101	western redcedar	*Thuja plicata*	38	38	20	good	fair	one sided	walking path	improbable	medium	severe	low	monitor	one sided
102	western redcedar	*Thuja plicata*	37,28,19	50	22	good	good	codominant leaders	parking lot	improbable	low	negligible	low	monitor	codominant leaders split at 1'
103	western redcedar	*Thuja plicata*	15,13	20	18	good	fair	codominant leaders	parking lot	improbable	low	negligible	low	monitor	codominant leaders, one sided, possible piling up if debris with dripline
104	western redcedar	*Thuja plicata*	35	35	25	good	fair	one sided	walking path	improbable	high	severe	low	monitor	one sided
105	western redcedar	*Thuja plicata*	44	44	24	good	fair	codominant leaders	parking lot	improbable	low	negligible	low	monitor	codominant leaders, one sided
106	bigleaf maple	*Acer macrophyllum*	13	13	12	fair	fair	fence	fence (6' north)	improbable	high	negligible	low	monitor	suppressed, one sided, Suppressed by DF and western redcedar, closed trunk cavity on east side, no targets other than fence
107	western redcedar	*Thuja plicata*	9	9	8	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	thin, suppressed, tree will grow into fence within a few years
108	Douglas-fir	*Pseudotsuga menziesii*	41	41	22	good	fair	codominant leaders	fence (14' north);walking path	improbable	high	severe	low	monitor	codominant leaders at 30-40' , good reactive wood, possible leader failure south or north
109	western redcedar	*Thuja plicata*	15	15	8	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	
110	western redcedar	*Thuja plicata*	13	13	10	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	
111	Douglas-fir	*Pseudotsuga menziesii*	41	41	25	good	fair	stem failure	fence (14' north)	improbable	high	severe	low	monitor	sweeping trunk, 0 to 5' possible crack with pitch flow on north side, accumulation of pitch also observed on east side at base in of trunk.
112	bigleaf maple	*Acer macrophyllum*	9	9	6	poor	poor	poor health	fence (15' north)	improbable	low	negligible	low	monitor	one sided, dead top
113	western redcedar	*Thuja plicata*	21	21	14	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	lost and regrew multiple tops
114	western redcedar	*Thuja plicata*	10	10	8	good	fair	one sided	walking path	improbable	medium	severe	low	monitor	one sided
116	Douglas-fir	*Pseudotsuga menziesii*	30	30	22	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	
117	Douglas-fir	*Pseudotsuga menziesii*	20	20	11	good	fair	one sided	walking path	improbable	medium	severe	low	monitor	one sided, slightly sweeping trunk
118	Douglas-fir	*Pseudotsuga menziesii*	40	40	18	good	good	no defect	n/a	n/a	n/a	n/a	n/a	monitor	slightly sweeping trunk, two red ring rot conks observed on south side
119	western redcedar	*Thuja plicata*	54	54	18	good	fair	codominant leaders	18080 SE Langensand Rd	possible	medium	significant	low	monitor	3 leaders at 2' and 8', slightly discolored foliage.
120	Douglas-fir	*Pseudotsuga menziesii*	25	25	14	good	fair	trunk wound	walking path	improbable	high	severe	low	monitor	one sided, trunk wound southwest side, good wound wood
121	Douglas-fir	*Pseudotsuga menziesii*	30	30	20	good	fair	one sided	walking path	improbable	high	severe	low	monitor	one sided, sign nailed to trunk

[1]**DBH** is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.
[2]**Single DBH** is the trunk diameter of a multi-stem tree converted to a single number according to the following formula: square root of the sum of the squared diameter of each trunk at 4½ feet above mean ground level.
[3]**C-Rad** is the approximate crown radius in feet.
[4]**Condition and Structure** ratings range from dead, very poor, poor, fair, to good.
[5]**Defect** is a part of a tree that could fail or a condition of concern.
[6]**Target** is defined as any person, object, or service disruption within reach of a falling tree or part of a tree, that may be injured, damaged, or disrupted
[7]**Likelihood of Failure**: Improbable, Possible, Probable, Imminent.
[8]**Likelihood of Impact:** Very low, Low, Medium, High.
[9]**Consequence of Failure**: Negligible, Minor, Significant, Severe.
[10]**Risk rating:** Low, Moderate, High, Extreme.

Attachment 4 - Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The following are the limitations of the tree risk assessments included in this report.
    a. Tree risk assessments considers only known targets and visible or detectible tree conditions.
    b. Tree risk assessments represent the conditions of the trees and site at the time of the assessment.
    c. Any tree, whether it has visible weakness or not, will fail if the forces applied exceed the strength of the tree or its parts.
    d. This tree risk assessment consisted of a limited visual assessment of the trees from the ground. No advanced assessment techniques such as aerial inspections, sonic tomography, or root crown excavations were performed to determine factors such as cracks or internal decay that could not be determined with a visual assessment from the ground.
8. The purpose of this report is to:
    a. Inventory existing trees over 8-inches in diameter on St. Michael’s Catholic Church property.
    b. Assess trees in the northeast corner for risk and provide risk mitigation recommendations.