

Tree Inventory and Assessment

Angeline Street North
Colborne Street West to Kent Street

Prepared For:
City of Kawartha Lakes

April 2019

CREATING QUALITY SOLUTIONS TOGETHER



TREE INVENTORY AND ASSESSMENT

for

Angeline Street North
from Colborne Street West to Kent Street
City of Kawartha Lakes

Prepared by Ainley Group

April 2019

Prepared By:

A handwritten signature in black ink, appearing to read "D. Davidson".

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1.0 INTRODUCTION

Ainley Group was retained by the City of Kawartha Lakes to complete a Schedule B Class EA including detailed design for the proposed reconstruction of Angeline Street North from north of Colborne Street West to Roosevelt Street in the Town of Lindsay. The assessment includes a tree survey of roadside trees, including general ratings of health and hazards.

2.0 PURPOSE OF THE REPORT AND SCOPE OF WORK

The report and scope of work has been based on City approved methods, and includes the following scope of work for all inventoried trees:

- Road Chainage (station);
- Setback from curb;
- Species identification;
- Measurement of the diameter at breast height (DBH);
- General health assessment; and,
- General hazard assessment.

It should be noted that the tree inventory on the subject property was intended to provide a general inventory and assessment of trees within the project limits.

2.1 DATA COLLECTION METHODOLOGY

Field data collection for the tree inventory and assessment was completed on October 26, 2018. A measuring wheel was used to record the distance of trees from a known surveyed feature. The wheel was also used to measure offset distance from curb to the trunk. Distances were then converted to stations (chainage).

Trees with a diameter at breast height (DBH) equal to or greater than 0.15 m and within 8 metres from Edge of Pavement were included in the inventory. Each tree was given a tree identification code, identified to species level, if possible, measured for DBH and photographed. The characteristics of each tree was recorded in a field note book and located on aerial imagery. For those trees with multiple stems, the DBH of each individual stem was recorded.

In addition to the above information, a general assessment of health and hazard level associated with the tree were recorded. The health assessment utilized a four-stage ranking system (good, fair, poor, dead) and was based on non-invasive *in situ* observations of the tree. Characteristics used in the health assessment included such things as wounds/callusing, dieback, fungal growth, decay, breakage, etc.

The hazard rating for each tree incorporated the general health assessment as well as the morphology of the tree and included both potential and actual hazards. Conditions used to rate hazard levels included lean, crown balance, extent of disease, dead branches, cracks, cavities, broken branches, target (objects or areas toward which the tree could fall), etc. The hazard rating also utilized a four-stage ranking system (none, low, moderate, high).

3.0 INVENTORY AND ASSESSMENT RESULTS

A total of 95 trees representing 17 species were recorded, including 47 conifers and 48 deciduous trees (**Table 1**). Trees of all health levels were observed within the project limits. Sixty-five percent of the trees were considered to exhibit good health, while 21 % exhibited fair health. Only 6% exhibited poor/fair health and 4% were in poor health.

The majority of trees (82%) were considered to be of no hazard. 8% were considered at low to low/moderate hazard levels, while 10% exhibited moderate to high hazard levels. Photos typical of each health rating are shown in **Appendix A**.

Higher hazard ratings were given to trees that exhibited certain conditions including advanced age, damage, disease, uneven pruning, significant lean, etc.

Tree ID	Common Name	Latin Name	DBH (m)	Station	Offset	West	Offset to Dripline	Condition		Field Comments
					East			Rating ¹	Hazard Potential ²	
A005	Norway Maple	Acer platanoides	0.52	18+881		4.01		Fair	Low/Moderate	Trimmed; Leaning Toward House
A004	Norway Maple	Acer platanoides	0.58	18+875		5		Fair	None	Branch Dieback; Trimmed from Utility
A003	Blue Spruce	Picea pungens	0.38	18+865		7.05		Fair	None	Branch Dieback
A002	Norway Maple	Acer platanoides	0.61	18+859		5.05		Good	None	Trimmed from Utility
A009	Scots Pine	Pinus sylvestris	0.38, 0.21	18+847	7.8			Fair	Low/Moderate	2 Trunks; Smaller Trunk Dead
A008	Scots Pine	Pinus sylvestris	0.23	18+846	9.1			Fair	None	Minimal Branching
A007	Scots Pine	Pinus sylvestris	0.52	18+846	5.0			Good	None	
A006	Scots Pine	Pinus sylvestris	0.39	18+840	7.0			Good	None	Sign on Tree
A001	Flowering Crabapple	Malus sp.	0.29, 0.22, 0.21	18+837		4		Good	None	Multistem
A076	Scots Pine	Pinus sylvestris	0.30, 0.28	18+808	6.7			Good	None	Split at 1.17m
A077	Silver Maple	Acer saccharinum	0.65	18+796	5.9			Fair/Poor	Moderate/High	Peeling Bark, Dieback
A010	Sugar Maple	Acer saccharum	0.6	18+787		16.2	8.7	Good	None	Broad Crown
A078	Sugar Maple	Acer saccharum	0.26	18+769	9.2		6.6	Good	None	
A011	Red Pine	Pinus resinosa	0.42	18+754		7		Good	Low	Heavy Branching
A012	Red Pine	Pinus resinosa	0.44	18+752		10.12		Good	Low	Heavy Lean to South
A013	Red Pine	Pinus resinosa	0.35	18+750		5.07		Good	None	
A016	White Spruce	Picea glauca	0.28	18+508		12.5	10.6	Good	None	Adjacent to Chain link Fence
A015	White Spruce	Picea glauca	0.25	18+508		8.6		Good	None	Adjacent to Chain link Fence
A014	Eastern White Cedar	Thuja occidentalis	0.15	18+508		6.3		Good	None	Adjacent to Chain link Fence
A017	Norway Maple	Acer platanoides	0.4	18+494		7.62		Good	None	Trimmed from Utility
A018	Sugar Maple	Acer saccharum	0.22	18+481		7.62		Good	None	Multiple Branches at Breast Height
A019	Eastern White Cedar	Thuja occidentalis	0.26	18+456		9.7		Good	None	
A020	Eastern White Cedar	Thuja occidentalis	0.3	18+453		9.7		Fair/Poor	Moderate	Thin Branching; Callused Wound at 4m
A079	White Spruce	Picea glauca	0.28	18+429	7.9			Good	None	
A021	Norway Maple	Acer platanoides	0.8	18+422		9.5	4.1	Fair	None	Some Branch Dieback
A080	Norway Maple	Acer platanoides	0.18	18+419	5.5			Good	None	Yellow Leaves
A081	Norway Maple	Acer platanoides	0.18	18+410	5.5			Good	None	Yellow Leaves
A082	Norway Maple	Acer platanoides	0.18	18+400	5.5			Good	None	Yellow Leaves
A022	Norway Maple	Acer platanoides	0.8	18+400		9.8	5.8	Good	None	Broad Crown
A023	Red Maple	Acer rubrum	0.2	18+364		10.3		Poor	Moderate/High	Multiple Dead Branches
A024	Silver Maple	Acer saccharinum	0.85	18+353		9.95	4.6	Good	None	Trimmed from Utility
A083	Blue Spruce	Picea pungens	0.25	18+346	8.9		6.9	Good	None	
A025	White Birch	Betula papyrifera	0.27	18+340		10.5		Fair/Poor	Moderate	Callused Wounds
A026	Norway Maple	Acer platanoides	0.71	18+315		10.2	4.4	Good	None	Trimmed from Utility
A027	Scots Pine	Pinus sylvestris	0.41	18+296		10.65	6.3	Good	None	
A028	Crabapple	Malus sp.	0.28	18+282		5.25		Fair	Low	Callused Wounds; Lean to South
A029	Crabapple	Malus sp.	0.28, 0.28	18+281		5.4		Fair/Poor	Low/Moderate	Multistem; One Trunk Broken
A030	Red Maple	Acer rubrum	0.33	18+276		10.8	6.9	Fair	None	Some Branch Dieback
A084	Norway Maple	Acer platanoides	0.19	18+271	8.3		6.1	Good	None	Green Leaves
A031	Red Maple	Acer rubrum	0.48	18+261		10.9	5.3	Good	None	
A032	Green Ash	Fraxinus pennsylvanica	0.3	18+254		10.6	4.3	Good	Low	Slight Lean to Road
A085	Norway Maple	Acer platanoides	0.18	18+252	9.2		7.7	Good	None	Yellow Leaves
A033	Norway Maple	Acer platanoides	0.24	18+251		6.6		Fair	None	Lightening Strike
A086	Scots Pine	Pinus sylvestris	0.24	18+250	7.0			Good	None	
A088	Scots Pine	Pinus sylvestris	0.45	18+244	6.9			Good	None	
A087	Scots Pine	Pinus sylvestris	0.32	18+244	3.1			Good	None	
A089	Scots Pine	Pinus sylvestris	0.22	18+239	7.6			Good	None	
A090	Norway Maple	Acer platanoides	0.22	18+237	5.3			Good	None	Yellow Leaves
A034	White Spruce	Picea glauca	0.26	18+232		5.22		Fair	None	Trimmed from Utility
A091	Norway Maple	Acer platanoides	0.21	18+229	5.8			Good	None	Yellow Leaves
A035	White Spruce	Picea glauca	0.29	18+229		5.2		Fair	None	Trimmed from Utility
A092	Norway Maple	Acer platanoides	0.22	18+220	5.6			Good	None	Yellow Leaves
A037	Norway Maple	Acer platanoides	0.6	18+219		9.3	5.2	Fair/Good	None	Trimmed from Utility
A036	White Spruce	Picea glauca	0.23	18+219		5		Fair	None	Trimmed from Utility
A038	White Spruce	Picea glauca	0.32	18+212		5.03		Fair	None	Trimmed from Utility
A093	Flowering Crabapple	Malus sp.	0.16	18+211	7.8			Good	None	
A039	White Spruce	Picea glauca	0.32	18+209		5.03		Fair	None	
A040	White Spruce	Picea glauca	0.35	18+207		5.03		Fair	None	
A041	White Spruce	Picea glauca	0.25	18+204		5.03		Fair	None	
A094	Flowering Crabapple	Malus sp.	0.17	18+203	7.2			Good	None	
A042	White Spruce	Picea glauca	0.4	18+202		5.03		Good	None	
A043	Blue Spruce	Picea pungens	0.48	18+199		8.3		Good	None	
A044	Blue Spruce	Picea pungens	0.45	18+198		9.9	7.9	Good	None	
A095	Green Ash	Fraxinus pennsylvanica	0.2	18+196	7.0			Fair	None	Callused Wound
A045	Norway Maple	Acer platanoides	0.16	18+195		7.8		Good	Low	Reds Leaves, Growth Around Old Staking Wire
A096	Green Ash	Fraxinus pennsylvanica	0.16	18+190	6.5			Good	None	
A053	Norway Spruce	Picea abies	0.37	18+127		6.1		Poor	Moderate/High	Branch Dieback, Dead Leader
A054	Norway Spruce	Picea abies	0.41	18+121		6.2		Poor	Moderate/High	Leader / Branch Dieback
A061	Siberian elm	Ulmus pumila	0.22	18+119	11.9		6.6	Good	None	
A062	Manitoba Maple	Acer negundo	0.12 to 0.18	18+116	11.9		6.6	Fair	None	5 Stems
A055	Manitoba Maple	Acer negundo	0.39	18+104		6.75		Fair	None	Squirrel Nest, Trimmed From Utility
A056	Manitoba Maple	Acer negundo	0.33	18+104		7.5		Fair	None	Fence line -Slight Lean Towards Building
A063	Norway Spruce	Picea abies	0.55	18+096	8.6		4.3	Good	None	
A057	Scots Pine	Pinus sylvestris	0.43	18+084		5.57		Good	None	
A065	Scots Pine	Pinus sylvestris	0.23	18+071	6.7			Good	None	
A064	Scots Pine	Pinus sylvestris	0.33	18+071	5.5			Good	None	
A066	Scots Pine	Pinus sylvestris	0.24	18+070	5.5			Good	None	
A067	Scots Pine	Pinus sylvestris	0.3	18+069	7.9			Good	None	
A068	Scots Pine	Pinus sylvestris	0.34	18+066	5.9			Good	None	
A069	Scots Pine	Pinus sylvestris	0.4	18+059	4.7			Good	None	
A070	Scots Pine	Pinus sylvestris	0.24	18+057	4.9			Good	None	
A058	Norway Maple	Acer platanoides	0.28	18+057		6.3		Fair	None	Green Leaves
A071	Scots Pine	Pinus sylvestris	0.25	18+053	4.9			Good	None	
A072	Scots Pine	Pinus sylvestris	0.3	18+051	5.1			Good	None	
A059	Sugar Maple	Acer saccharum	0.67	18+051		6.2		Fair/Poor	Moderate	Dieback, Trimmed
A073	Scots Pine	Pinus sylvestris	0.39	18+049	5.2			Good	None	
A060	Sugar Maple	Acer saccharum	1.04	18+041		6.3		Good	None	Minor Trimming From Utility
A074	Sugar Maple	Acer saccharum	0.51	18+037	4.8			Good	None	
A052	Green Ash	Fraxinus pennsylvanica	0.53	20+055 (Kent St.)	4.9			Fair	None	South, Broken Branches
A047	Norway Maple	Acer platanoides	0.77	20+058 (Kent St.)	14.6		5.8	Good	None	North, Red Leaves
A051`	Norway Maple	Acer platanoides	0.4	20+064 (Kent St.)	7.5			Fair/Good	None	South, Red Leaves
A050	Black Walnut	Juglans nigra	0.55	20+073 (Kent St.)	6.4			Good	None	South
A046	Norway Maple	Acer platanoides	0.25	20+084 (Kent St.)	9.4		6.9	Good	None	North
A049	Silver Maple	Acer saccharinum	0.58	20+102 (Kent St.)	16.7		6.9	Fair/Poor	Moderate	South, Dead Stems
A048	Silver Maple	Acer saccharinum	0.72	20+107 (Kent St.)	15.5		6.7	Good	None	South
A075	White Spruce	Picea glauca	0.28	20+196 (Kent St.)	8.7			Poor	High	South - Dead

¹ Good/Fair/Poor/Dead

² None/Low/Moderate/High

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

A total of 95 trees were inventoried and assessed within the project limits. During the assessment seventeen (17) species were identified, of which eleven (11) were deciduous and five (6) were coniferous. Sixty-five percent of the assessed trees were considered to be in good health. Another 21% exhibited fair health. Only 6% exhibited poor/fair health and 4% were in poor health.

Eight trees, or 8% exhibited moderate to moderate/high hazard levels based on the condition of the tree including age, size, extent of disease and/or damage, etc. Only one (1) tree (dead White Spruce) was considered to be at a high hazard level. Most trees (82%) were considered to be of no hazard.

No species at risk trees were identified. Some large diameter trees were observed during the survey that may be considered higher valued trees by the City and preservation of these trees in particular may be desired.

In general, the footprint of road improvements is proposed to be similar to the existing configuration of street features and direct removal of street trees is not scheduled. However, proposed construction may impact some trees through unavoidable disturbance of roots within critical root zones. The critical root zone may be defined as the radius of land surrounding the tree trunk at a minimum distance of 12 inches per inch of tree trunk radius measured at DBH (137 cm or 4.5 feet)(Municipality of Port Hope, 2016). Zones may differ depending on tree species, soil conditions, etc.

In addition, consideration by the City of Kawartha Lakes, in consultation with the landowner, to remove some existing trees that exhibit a moderate/high to high hazard may also be warranted.

4.2 Recommendations

A summary of the general health and hazard levels of trees observed during the assessment has been provided. This report may be used as a general guide to identify trees that may be impacted during street improvements or in order to reduce potential hazards. Typical tree mitigation measures are recommended for those trees that are to be preserved. Tree protection measures may include perimeter fencing at the critical root zone, proper storage of machinery and equipment away from the tree during construction as well as use of permeable final treatments over the critical root zones of trees (Municipality of Port Hope, 2016).

Replacements with new, native tree species may also be desired.

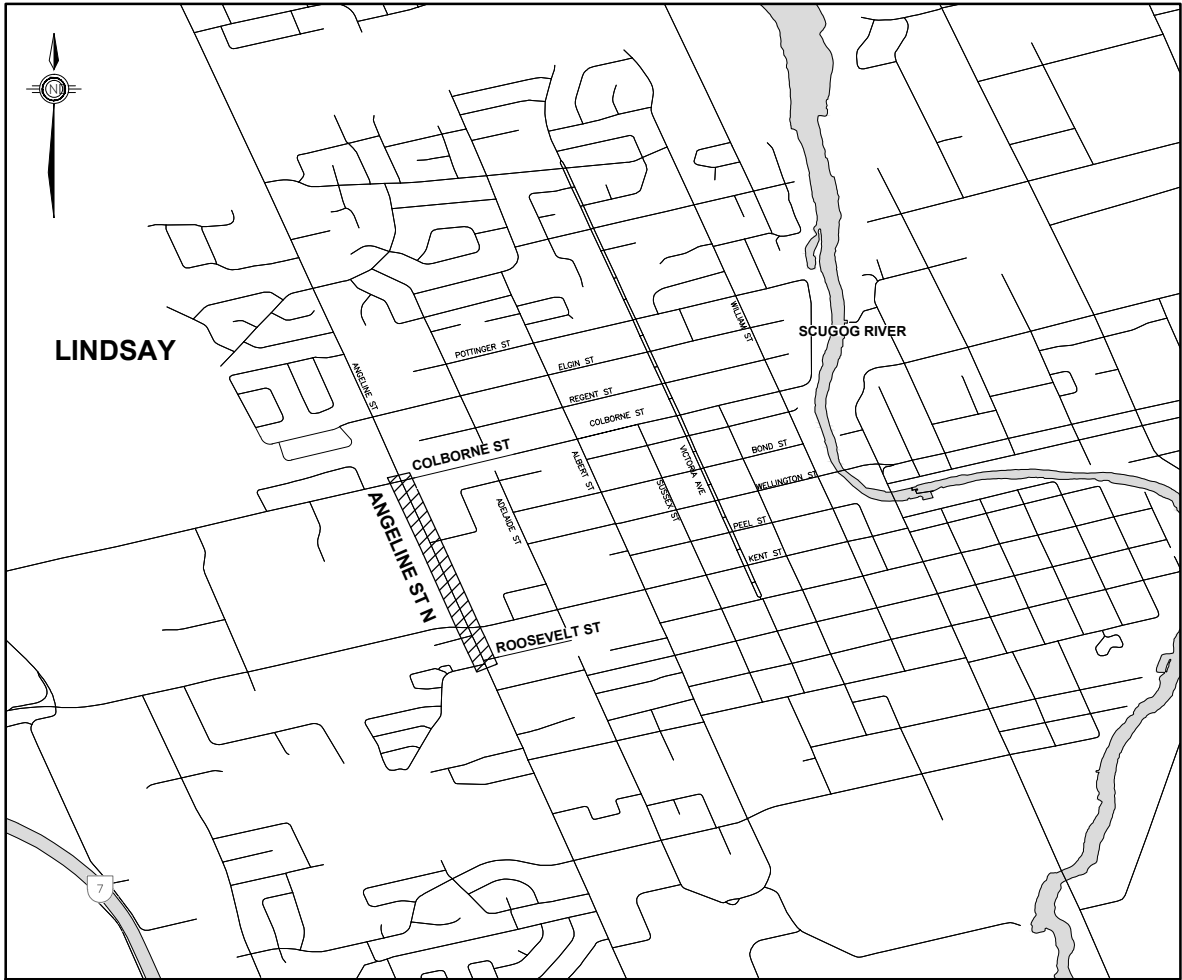
5.0 CLOSURE

Ainley Group has prepared this Tree Inventory and Assessment report per the scope as outlined in **Section 2.0** in an effort to provide a general inventory of trees on the subject property and an assessment of their health and hazard rating.

6.0 References

2016. Municipality of Port Hope Tree Planting and Protection Policy. Municipality of Port Hope.

FIGURES



PROJECT AREA
N.T.S.

Legend

TREE LOCATIONS

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETERS
UNLESS OTHERWISE SHOWN

ANGELINE MCEA

Anginley

GROUP

CONSULTING
ENGINEERS
PLANNERS

FIGURE
1

TREE INVENTORY



Legend

- TREE LOCATIONS

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETERS
UNLESS OTHERWISE SHOWN

ANGELINE MCEA	
 CONSULTING ENGINEERS PLANNERS	
FIGURE 2	
TREE INVENTORY	



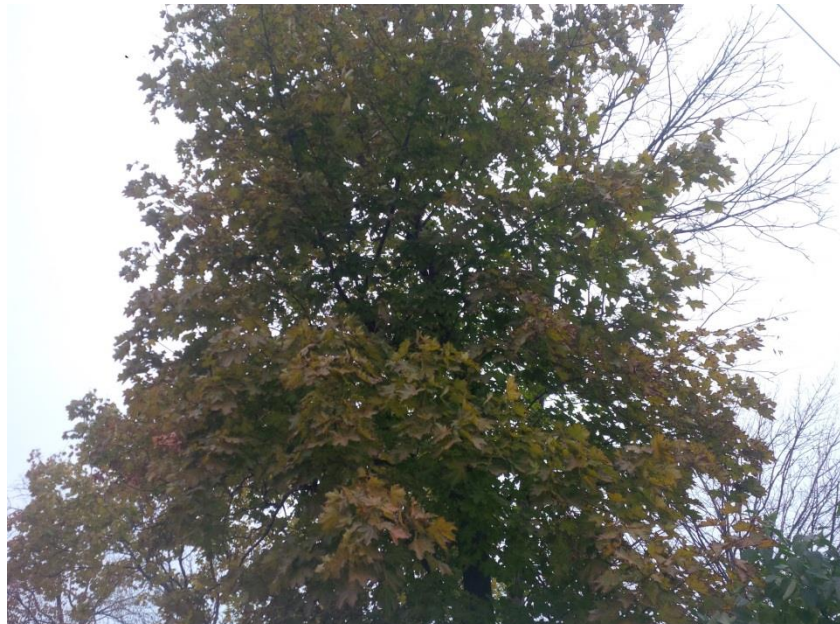
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Source: Land Information Ontario (MN F)

APPENDIX A

Photographic Log



Photograph 1. Typical healthy Norway Maple – November 26, 2018.



Photograph 2. Typical Norway Maple in fair health – November 26, 2018.



Photograph 3. Typical healthy Scots Pine – November 26, 2018.



Photograph 4. Typical Scots Pine in fair health – November 26, 2018.



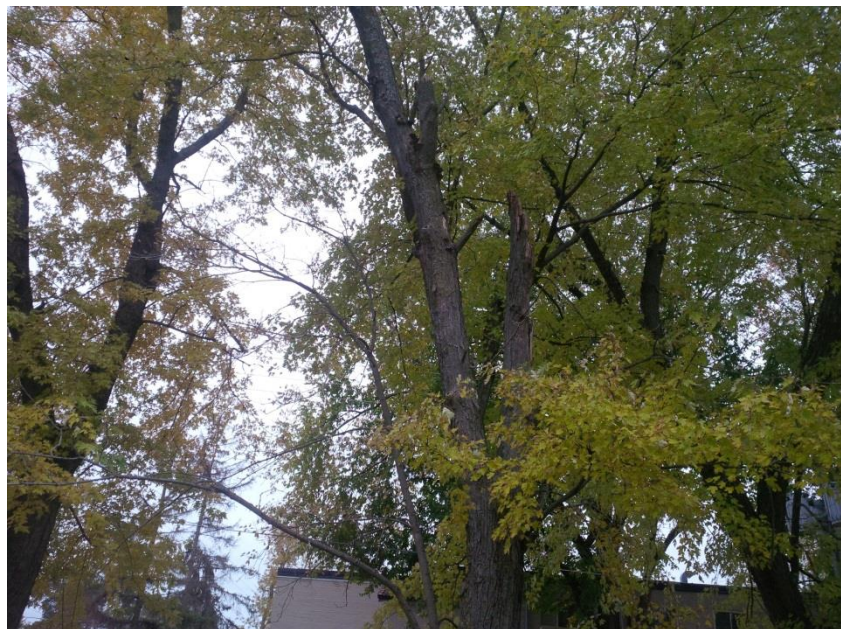
Photograph 5. Typical healthy White Spruce – November 26, 2018.



Photograph 6. Typical White Spruce in fair health – November 26, 2018.



Photograph 7. Silver Maple in good health – November 26, 2018.



Photograph 8. Silver Maple in poor to fair health – November 26, 2018.



Photograph 9. Red Maple exhibiting no hazard – November 26, 2018.



Photograph 10. Red Maple exhibiting moderate/high hazard potential – November 26, 2018.



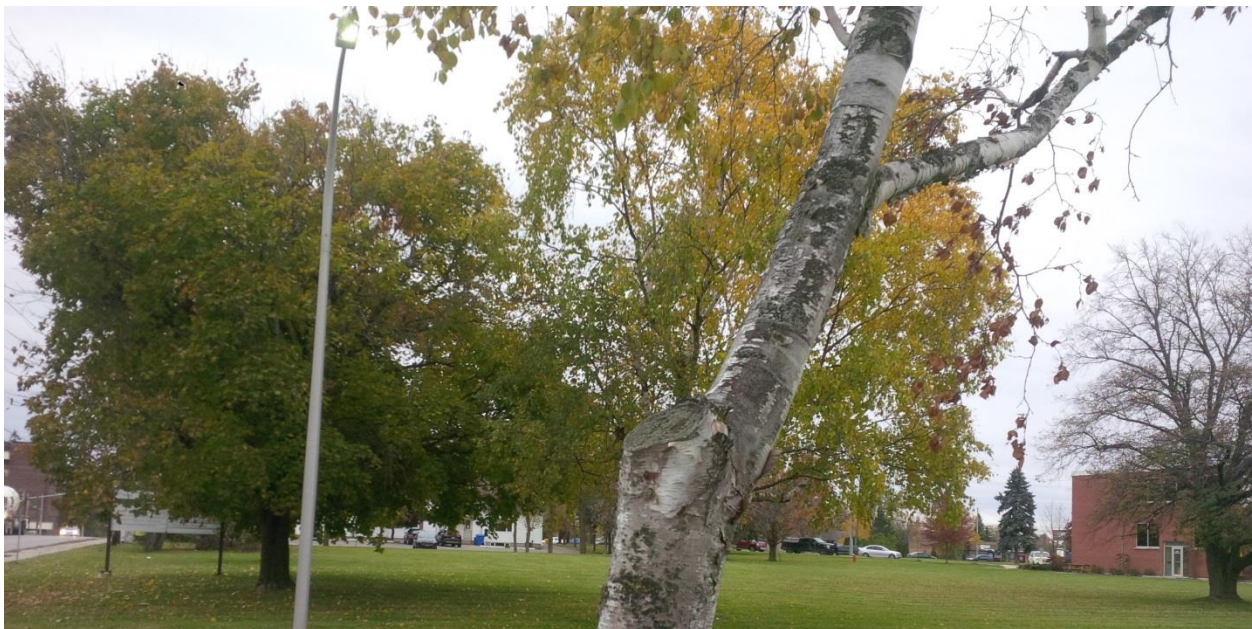
Photograph 11. Sugar Maple exhibiting moderate hazard potential – November 26, 2018.



Photograph 12. Norway Spruce exhibiting moderate/high hazard potential – November 26, 2018.



Photograph 13. Silver Maple exhibiting moderate/high hazard potential – November 26, 2018.



Photograph 14. White Birch exhibiting moderate hazard potential – November 26, 2018.