Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

LAKESHORE TRANSPORTATION STUDIES - NEW CREDIT RIVER ACTIVE TRANSPORTATION (AT) BRIDGE STUDY

ARBORIST REPORT
MISSISSAUGA, ONTARIO

Prepared for:
HDR CORPORATION

Prepared by:
MATRIX SOLUTIONS INC.

Version 5.0
January 2023
Mississauga, Ontario

Suite 3001, 6865 Century Ave.
Mississauga, ON, Canada L5N 7K2
T 905.877.9531 F 289.323.3785
www.matrix-solutions.com

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ARBORIST REPORT

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Prepared for HDR Corporation, January 2023

Kierian Keele, B.Sc.
Ecologist/ISA Certified Arborist

reviewed by

Arnel (Arnie) Fausto, M.Sc.
Senior Ecologist

CONTRIBUTORS

Name	Job Title	Role
Kierian Keele, B.Sc.	Ecologist	Co-author
Erica Wilkinson, B.A., E.R.P.G.	Ecologist/ISA Certified Arborist	Co-author
Arnel (Arnie) Fausto, M.Sc.	Senior Ecologist	Technical reviewer
Robyn Leppington, B.Sc.	Senior Biologist	Technical reviewer

VERSION CONTROL

Version	Date	Issue Type	Filename	Description
V0.1	10-Nov-2021	Draft	33023-512 Lakeshore AT Bridge Study Arborist R 2021-11-10 draft V0.1.docx	Issued to client for review
V0.2	07-Apr-2022	Draft revised 1	33023-512 Lakeshore AT Bridge Study Arborist R 2022-04-07 draft V0.2.docx	Reissued to client for review
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V3.0	30-Aug-2022	Final revised 2	33023-512 Lakeshore AT Bridge Study Arborist R 2022-08-30 final V3.0.docx	Revisions issued to client as final
V4.0	21-Dec-2022	Final revised 3	33023-512 Lakeshore AT Bridge Study Arborist R 2022-12-21 final V4.0.docx	Revisions issued to client as final
V5.0	30-Jan-2023	Final revised 4	33023-512 Lakeshore AT Bridge Study Arborist R 2023-01-30 final V5.0.docx	Revisions issued to client as final

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1 INTRODUCTION

HDR Corporation and the City of Mississauga (the City) retained Matrix Solutions Inc. to conduct a detailed arborist investigation to aid in the preliminary design phase and prepare an arborist report and tree preservation plan as part of the Lakeshore Transportation Studies. The studies include three infrastructure projects in the Lakeview, Port Credit, and Clarkson communities that build from the 2019 Lakeshore Connecting Communities Transportation Master Plan. These studies include the Lakeshore Bus Rapid Transit (BRT) Study, Lakeshore Complete Street Study, and the New Credit River Active Transportation (AT) Bridge Study.

As part of the Lakeshore Transportation Studies, HDR is developing the preliminary design and completing the Schedule B Class Environmental Assessment for a new AT bridge over the Credit River north of Lakeshore Road. The new span bridge will connect the existing multi-use path on Mississauga Road to an existing multi-use path on the east side of Credit River. This bridge will enhance mobility across the river for pedestrians.

This arborist report outlines the trees that will likely be impacted by the construction of the AT bridge over the Credit River as well as mitigation measures and tree protection recommendations. Trees likely impacted as part of the Lakeshore BRT Study and the Complete Street Study along the Lakeshore Road corridor will be discussed in separate reports.

1.1 Study Area

The study area for the new Credit River AT bridge includes the preferred crossing alignment over the Credit River that is located immediately south of the Canadian National Railway (CN) rail tracks. This crossing alignment stretches from Mississauga Road on the west to the parking lot of the Port Credit Memorial Park on the east. Based on preliminary mapping provided by the client, a 0.47 km stretch (including a 10 m buffer on each side) outlines the study area for tree inventory. The AT bridge study area (Figure 1) consists of residential streets, parking lots, the Credit River, mowed parkland, and cultural woodland in the riparian zone. It is important to note that no trees originating on the rail side of the railway right-of-way fence are included in the tree inventory. As the design and limit of disturbance became further defined, additional areas have been identified that will require subsequent tree inventory during detailed design (Figure 2).

- AT Bridge Footprint
- Tree Inventory Limit
- Rail Corridor – No Access
- Preferred Crossing Location
- Watercourse
- Railway
- Road

1:2,000 metres
20 0 20 40
NAD 1983 UTM Zone 17N

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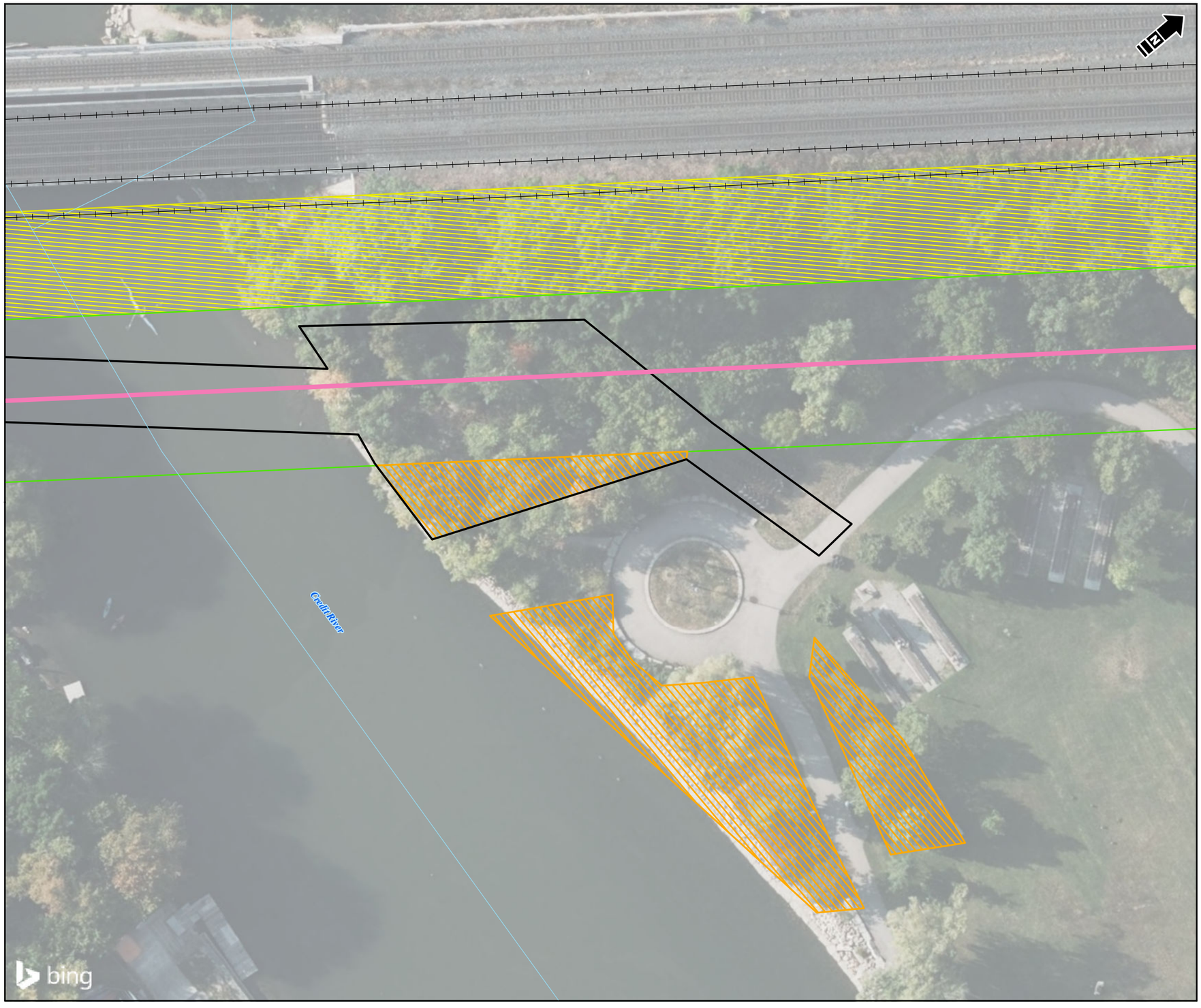
HDR Corporation
Lakeshore Credit River Active Transportation Bridge Study

Tree Inventory Study Area

Date:	Project:	Submitter:	Reviewer:
June 2022	32259	E. Wilkinson	R. Leppington

Figure 1



- AT Bridge Footprint
- Tree Inventory Limit
- Additional Area of Tree Inventory Required
- Rail Corridor – No Access
- Preferred Crossing Location
- Watercourse
- Railway

1:500 metres
5 0 5 10
NAD 1983 UTM Zone 17N

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

HDR Corporation
Lakeshore Credit River Active Transportation Bridge Study

Areas Requiring Additonal Tree Inventory During Detailed Design Phase

Date:	Project:	Submitter:	Reviewer:
June 2022	32259	E. Wilkinson	R. Leppington

Figure 2

2 POLICY REQUIREMENTS

The following documents and policies were reviewed and used in decision making for the analysis and completion of this project:

- *Mississauga Official Plan* (City of Mississauga 2021)
- *The Corporation of the City of Mississauga Private Tree Protection By-law 254-12* (City of Mississauga 2012)
- *Tree Preservation & Protection Standards* (City of Mississauga 2019)

3 METHODOLOGY

An International Society of Arboriculture (ISA)-certified arborist conducted the tree inventory and assessment on June 2, 2021. The purpose of the tree inventory is to document tree resources within 10 m of the proposed AT bridge alignment as provided by HDR in the summer of 2021. Data collected as part of the tree inventory will be used to inform project planning and design to minimize the need for tree removal and injury. As per the Request for Proposal, all trees 10 cm or greater in diameter at breast height (DBH) were included in the inventory and the following information was collected for each tree:

- genus or species identification based on physical characteristics of each tree
- measurement of DBH, which is the diameter of the trunk at 1.4 m above the ground (City of Mississauga 2019)
- general rating ("Good," "Fair," "Poor") of trunk integrity, crown structure, and crown vigour based on observations of overall physical appearance of tree, such as existing defects or injuries, leaf colour and quantity, as well as general health
    - No detailed structural assessments of roots, trunk, or branches were conducted.
- condition observations, including presence of multiple or codominant stems, percentage of crown dieback, lean direction, presence or absence of pathogens (fungus or rot), insect pests, epicormics growth, cavities or wounds, and other physical anomalies (i.e., Emerald Ash Borer)
- other general comments relating to unique conditions or surrounding growing conditions

Dead trees were included in the inventory (if greater than 10 cm DBH); their presence within the site was noted and used to assess wildlife habitat. Further information on wildlife habitat related to dead trees can be found in the report titled *Lakeshore Transportation Studies - New Credit River Active Transport (AT) Bridge, Natural Environment Assessment Report, Mississauga, Ontario* (Matrix 2021).

As requested, no physical tags were used on the trees within the study area; therefore, an arbitrary tag number system was used. For the AT bridge study area, the tree tags range from 270 to 396.

Trees were surveyed using a TopCon HiPer SR GPS receiver through real-time network technology. This model is able to collect data with sub-centimeter accuracy under ideal conditions. Due to interference from the urban landscape (tall buildings, concrete walls, etc.) conditions were sometimes less than ideal. Recognizing the technology's limitations, Matrix field staff decreased the accuracy tolerance from a fixed solution to a fixed or float solution. This change allowed the field staff to collect data in the range of 1 cm to approximately 1 m, with the majority of points falling into the range of 1 to 30 cm.

A species at risk (SAR) information request was submitted to the Ontario Ministry of the Environment, Conservation and Parks (MECP) on May 27, 2021, with a response received on June 3, 2021 (Appendix A). There were no SAR tree species included in the response from MECP, just an agreeance that Butternut, as recorded in the Natural Heritage Inventory Centre database, may be found in the study area. No SAR were found during the tree inventory of AT bridge study area.

It has been noted that some trees in the study area have been impacted by Metrolinx works at the fenced CN property after the tree inventory had been completed. These subsequent impacts are not reflected in the findings of this report.

3.1 Tree Condition Ranking

As part of the detailed investigation, the general condition of each tree was collected to gain an understanding of its overall health and the impact that may be experienced if that tree was proposed for removal or injury. Table 1 presents the detailed guidelines used for the general rating of trunk integrity, crown structure, and crown vigour.

TABLE 1 Guidelines used to Determine Ranking for Trunk Integrity, Crown Vigour, and Crown Structure

Rating	Guidelines
Good	Minimal to no wounds on trunk and branches; ≤10% crown dieback; crown structure is appropriate for tree species and is not influenced by infrastructure.
Fair	Wound on trunk or branches that has little impact on integrity; 11% to 30% crown dieback; crown structure is potentially impacted by infrastructure or is naturally not appropriate for tree species (i.e., trunk has inappropriate lean angle).
Poor	Extensive wounds on trunk or branches that has an impact on integrity; >31% crown dieback; crown structure is impacted by infrastructure (i.e., pruned to avoid hydro lines) or is naturally not appropriate for tree species.

4 TREE INVENTORY RESULTS

A master inventory table of all trees collected during the field program for the AT bridge can be found in Appendix B.

A total of 126 trees were collected within 10 m of the proposed crossing alignment. This includes 17 different genus and 23 different species. Trees range in size from 10 to 137 cm DBH. Table 2 provides a summary of trees found within the study area.

TABLE 2 Summary of Tree Species Identified in the Active Transportation Bridge Study Area

Species Common Name	Species Scientific Name	Quantity
Norway Maple	*Acer platanoides*	2
Manitoba Maple	*Acer negundo*	64
Silver Maple	*Acer saccharinum*	8
Sugar Maple	*Acer saccharum*	2
Staghorn Sumac	*Rhus typhina*	6
Siberian Elm	*Ulmus pumila*	8
American Elm	*Ulmus americana*	1
Green Ash	*Fraxinus pennsylvanica*	3
Basswood	*Tilia americana*	2
Hackberry	*Celtis occidentalis*	3
Black Locust	*Gleditsia triacanthos*	1
White Oak	*Quercus alba*	2
Red Oak	*Quercus rubra*	2
Bur Oak	*Quercus macrocarpa*	3
Willow sp.	*Salix sp.*	1
Basswood	*Tilia americana*	2
Black Walnut	*Juglans nigra*	5
Blue Beech	*Carpinus caroliniana*	1
Eastern Cottonwood	*Populus deltoides*	2
Eastern White Cedar	*Thuja occidentalis*	4
Sycamore	*Platanus occidentalis*	2
Tulip Tree	*Liriodendron tulipifera*	1
Umbrella Magnolia	*Magnolia tripetala*	1
	TOTAL	**126**

Development footprint, construction access, and laydown areas have been determined conservatively to include anticipated disturbance for all alternatives being considered for the Part C bridge alignment. Based on the proposed alignment, construction access, and laydown areas, it was estimated that of the 126 trees that were inventoried, 59 trees would require removal, and 18 trees would be potentially injured, while the remaining 49 trees would not be impacted. The disturbance footprint for all alternatives indicates that the actual quantified impacts to trees will be variable. These impacts will therefore need to be reassessed during the detailed design phase to more accurately anticipate impacts to trees, as well as to evaluate the potential for lessened impact.

5 TREE PRESERVATION MEASURES

Tree preservation is an important aspect of all construction activity within Mississauga, as it aids in maintaining the current tree canopy cover that provides essential ecological functions. Protection barriers are important in preventing injuries to trees during construction. They prevent mechanical injuries to the

trunk and branches as well as impacts to the roots from compaction. Using proper pruning techniques can greatly reduce the potential for subsequent negative effects, but branches that are fractured or experience uneven breaks due to accidental contact with construction equipment may cause long-term negative effects.

5.1 Protection Barrier

Two options of protective barrier can be used throughout the study area to provide sufficient protection of trees during the construction phases of the project. Orange plastic fencing framed with solid top and bottom rail shall be utilized in the protection of trees throughout this project. If required, a second option is to use plywood barriers. Preferably, the protection barrier should encompass the entire TPZ; however, at a minimum the protection barriers should encompass the dripline to provide sufficient protection. Details on the construction and installation of both protection barrier types can be found in Appendix C.

A tree preservation plan has been created showing the recommended placement of tree protection fencing for the AT bridge study area (Appendix D). The tree preservation plan presented in this report is preliminary and will need to be finalized during detailed design. At detailed design, the details and plans should be updated to incorporate the additional area that was not surveyed in 2021 and updated to reflect any changes to the disturbance footprint for the new Credit River AT bridge.

5.2 Pruning

Pruning is to be conducted by a certified arborist or a qualified employee of the City Forestry Department. Pruning should be conducted according to ISA standards. The minimum amount of pruning should be conducted to avoid negative effects to the structure and integrity of the tree. Pruning may include both the branches and roots depending on the extent of the dripline. Extra care should be taken when pruning roots so as to not impact the structure of the tree or its ability to uptake water and nutrients.

6 IMPACT OFFSETTING

As stated in Section 4, tree impacts (i.e., removals and potential injuries) can only be estimated at this stage (i.e., preliminary design) in the project. At this time, it is estimated that 59 trees will require removal and 18 trees will be potentially injured. Based on these estimates, estimated compensation can be calculated. Compensation will allow for the restoration of an area that has undergone tree removals or that experiences tree injuries. Replacing trees will aid in the goal of increasing the canopy cover in Mississauga to reach the target of 15% to 20% urban forest cover by 2033 (City of Mississauga 2014). Trees play a crucial part to the quality of life in the urban setting of Mississauga and a proactive approach is required to upkeep this important asset.

The Credit Valley Conservation (CVC) *Ecosystem Offsetting Guideline* (CVC 2020) provides two options for tree compensation, depending on whether tree coverage is greater than or less than 35%. The AT Bridge study area includes areas that are both greater than and less than 35% tree coverage; therefore,

compensation calculations have been split into two. The first is for the areas directly in the valley of the Credit River (greater than 35% tree coverage) on both the west and east side, which will be conservatively compensated for based on the largest offset ratio based on basal area impact. The second are the street and park trees which will be compensated based on the set ratios used for areas with less than 35% tree coverage.

Table 3 summarizes the compensation requirements for trees being removed within the Credit River valley. Due to the tree data collection methodology not including prism sweeps, a conservative offset ratio of 1:8 will be used to compensate for trees being removed. Table 4 summarizes the compensation requirements for street/park trees being removed. The estimated compensation required for the AT bridge study area is 542 trees.

TABLE 3 Compensation Results for Estimated Credit River Valley Tree Removals

Quantity Being Removed	Compensation Ratio	Compensation Requirement
50	1:8	400

CVC (2020)

TABLE 4 Compensation Results for Estimated Street/ Park Tree Removals

DBH (cm)	Compensation Ratio	Quantity Being Removed	Compensation Requirement
0 to 10	1:1	0	0
10.1 to 20	1:3	4	12
20.1 to 30	1:10	3	30
30.1 to 40	1:15	0	0
40.1 to 50	1:20	0	0
50.1 to 60	1:30	0	0
60.1 to 70	1:40	0	0
70.1+	1:50	2	100
ESTIMATED TOTAL COMPENSATION			**142**

DBH - diameter at breast height
CVC (2020)

To compensate for removing trees/shrubs 5 to 10 cm DBH in size within woodland communities with less than 35% cover, which were not surveyed, additional tree and shrub plantings will occur. Table 5 summarizes the additional shrub/tree compensation using an estimated 1:3 ratio.

TABLE 5 Compensation Results for Estimated Loss of 5 to 10 cm Diameter at Breast Height Trees/Shrubs within Credit River Valley/Street/Park

Estimated Quantity to be Removed	Compensation Ratio	Compensation Requirement
59	1:3	177

CVC (2020)

It is highly recommended that compensation plantings be installed within the site where trees were removed to aid in returning that ecosystem community back to existing conditions. If the quantity of compensation plantings can not be accommodated onsite, offsite planting is an option and should be discussed with each respective conservation authority for appropriate locations. If onsite and offsite planting can not accommodate the quantity of required plantings cash-in-lieu will be accepted.

7 RECOMMENDATIONS

In addition to City tree by-laws, it is expected that all tree removals and pruning will be conducted in accordance with the *Migratory Birds Convention Act*. It is recommended that all removals are avoided during the breeding bird season, which extends from the beginning of April to the end of August (ECCC 2018). If it is necessary to work during the breeding bird season, then mitigation measures to avoid incidental harm to migratory birds must be in place.

The following site-specific recommendations are as follows:

- The construction site supervisor shall be familiar with City by-laws and understand the purpose and function of TPZ.
- Prior to commencement of any construction or site activity, all tree protection measures specified on the plan must be installed to the satisfaction of City Forestry Department.
- Tree protection measures, once installed, should be inspected and approved by the City Forestry Department.
- No construction activities are permitted within the TPZ as displayed on the plans. Altering of grade, excavating, trenching, dumping, disturbances of any kind, or storage of equipment/soil is prohibited within the TPZ.
- Areas of a TPZ that may be encroached upon as approved by a certified arborist should receive a layer of wood chips (6 to 10 inches), unless already disturbed by pavement, to aid in mitigating the potential for soil compaction. Plywood should be placed on top to help dissipate compressive forces. Once the encroachment is eliminated, the plywood should be removed, and the wood chips should be spread around so the layer is 2 to 4 inches thick.
- All tree protection measures must remain in place for the entire duration of the project, including demolition, construction, and restoration phases. They will not be removed or altered until authorization is given by the City Development and Design Division.

- Should any additional, incidental, or accidental tree injuries occur throughout the duration of the construction activity, a qualified arborist or City Forestry Department employee should be consulted to determine if further protective measures should be put in place.

- All pruning of branches and roots must be completed in accordance with good arboricultural practices and be completed by a qualified arborist or City Forestry Department employee.

8 NEXT STEPS

The tree inventory, this arborist report, and the tree preservation plan (Appendix D) are preliminary and will need to be updated and finalized during detailed design. At detailed design after the second public open house, the details and plans should be updated to reflect any changes to the disturbance footprint for the new Credit River AT bridge.

9 DISCLAIMER

9.1 Limitations of Assessment

This assessment is based on the circumstances and observations as they existed at the time of the site inspection of the study area and the trees situated thereon and upon information provided by the client to Matrix. The opinions in this assessment are given based on observations made and using generally accepted professional judgement, however, because trees are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this assessment are valid only as at the date any such observations and analysis took place and no guarantee, warranty, representation, or opinion is offered or made as to the length of validity of the results, observations, recommendations, and analysis contained within this assessment. As a result, the client shall not rely upon this assessment, save and except for representing the circumstances and observations, analysis, and recommendations that were made as at the date of such inspections. It is recommended that the trees discussed in this assessment should be re-assessed periodically.

9.2 Restrictions of Assessment

The assessment carried out was restricted to the study area provided by the client. No assessment of any other trees or plants has been undertaken by Matrix. Matrix is not legally liable for any other trees or plants within the study area except those expressly discussed herein. The conclusions of this assessment do not apply to any areas, trees, plants, or any other property not covered or referenced in this assessment.

9.3 Professional Responsibility

In carrying out this assessment, Matrix has exercised a reasonable standard or care, skill, and diligence as would customarily and normally provided in carrying out this assessment. The assessment has been made using accepted arboricultural techniques. These include visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, discoloured foliage, the condition of any visible root structures, the direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people.

10 REFERENCES

City of Mississauga. 2021. *Mississauga Official Plan*. Mississauga, Ontario. 8 April 2021. https://www.mississauga.ca/projects-and-strategies/strategies-and-plans/mississauga-official-plan/

City of Mississauga. 2019. *Tree Preservation & Protection Standards*. The Urban Tree Management Group. Original dated May 15, 2018, revised July 15, 2019. Mississauga, Ontario. 15 July 2019.

City of Mississauga. 2014. *Urban Forest Management Plan*. Mississauga, Ontario. January 2014. http://www7.mississauga.ca/Departments/Rec/parks/nhufs/pdf/FINAL_ufmp.pdf

City of Mississauga. 2012. *The Corporation of the City of Mississauga Private Tree Protection By-law 254-12*. Enacted and Passed on December 12, 2012. Effective March 1, 2013 (0013-2013). http://www.mississauga.ca/file/COM/treeprotection.pdf

Credit Valley Conservation (CVC). 2020. *Ecosystem Offsetting Guidelines*. 13 March 2020.

Environment and Climate Change Canada (ECCC). 2018. *General Nesting Periods of Migratory Birds in Canada*. Modified on October 30, 2018. https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html

Matrix Solutions Inc. (Matrix). 2021. 'Lakeshore Transportation Studies - New Credit River Active Transportation (AT) Bridge Study, Natural Environment Assessment, Mississauga, Ontario'. Version 0.1. Draft prepared for HDR Corporation. Mississauga, Ontario. 10 November 2021.

APPENDIX A
Ontario Ministry of the Environment, Conservation and Parks Species at Risk Communication

From: Snell, Shamus (MECP)
To: Erica Wilkinson
Subject: [External] MECP SARB Review: SAR Information Request
Date: June 3, 2021 2:06:25 PM
Attachments: image003.jpg
image005.png

Hi Erica

The Ministry of Environment, Conservation and Parks (MECP) Species at Risk Branch (SARB) has conducted review of Lakeshore Road, and the areas adjacent to it and has detected the following additional Species at Risk (SAR) occurrences which were not already identified in the species list below.

- American Chestnut (*Castanea dentata*);
- Short-eared Owl (*Asio flammeus*);
- Louisiana Waterthrush (*Parkesia motacilla*);
- Eastern Small-footed Myotis (*Myotis leibii*);
- Little Brown Myotis (*Myotis lucifugus*);
- Northern Myotis (*Myotis septentrionalis*);

While this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments will need to be performed to verify site conditions, identify and confirm presence of species at risk and/or their habitats.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities can not avoid impacting protected species and their habitats then the proponent will need to apply for a authorization under the Endangered Species Act (ESA).

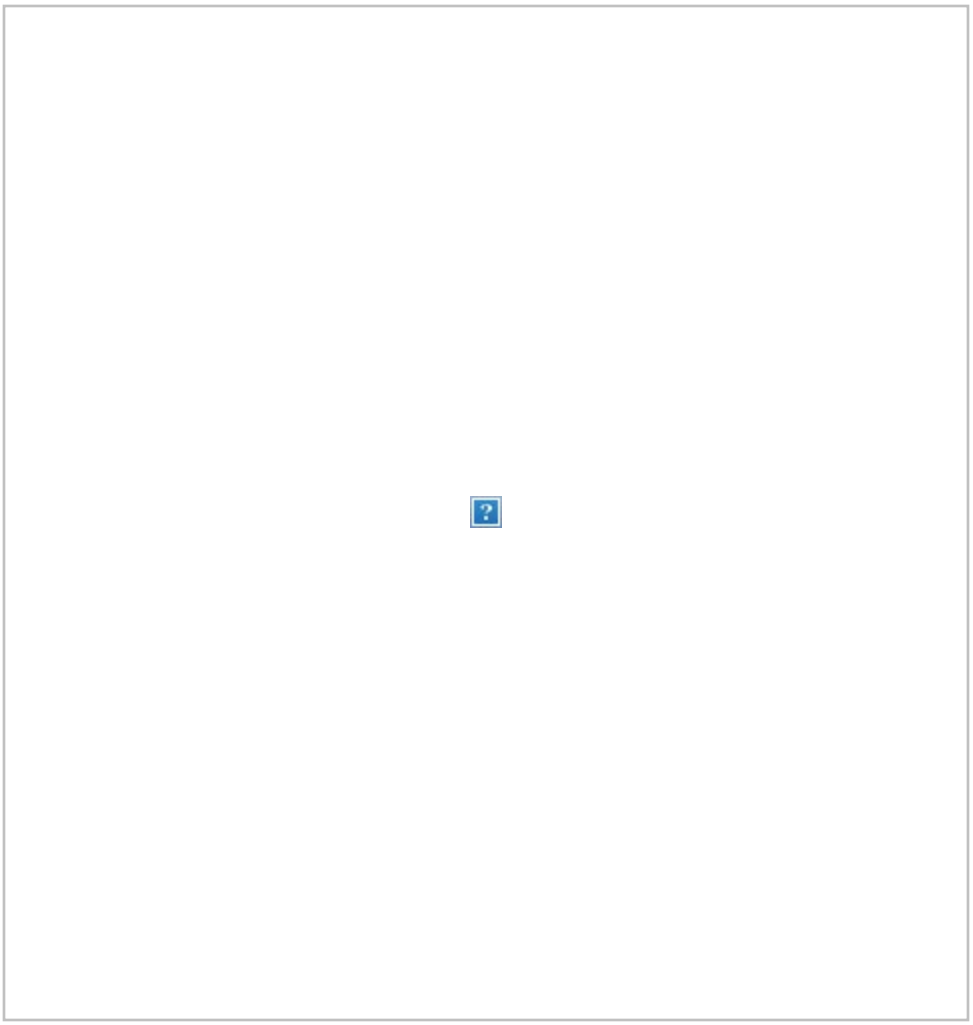
Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Erica Wilkinson <ewilkinson@matrix-solutions.com>
Sent: May 27, 2021 2:22 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: SAR Information Request

Hello,

I am helping out with the natural heritage portion of the Lakeshore EA being conducted by the City of Mississauga. The study area stretches approximately 12 kms and incorporates approximately 50 m on each side of the road (100 m width total). The study area shown below is split into three parts; A (red), B (green), and C (yellow area surrounding Credit River).



We have conducted a preliminary SAR search through various databases (NHIC, OBBA, OBA, ORA, DFO mapping). Below is a table of what we have found to date.

Species	ESA	SARA
Shortnose Cisco	Endangered	Endangered
Redside Dace	Endangered	Endangered
American Eel	Endangered	-

Lake Sturgeon	Threatened	-
Deepwater Sculpin	-	Special Concern
Henslow's Sparrow	Endangered	Endangered
Barn Swallow	Threatened	Threatened
Bobolink	Threatened	Threatened
Wood Thrush	Special Concern	Threatened
Chimney Swift	Threatened	Threatened
Eastern Meadowlark	Threatened	Threatened
Bank Swallow	Threatened	Threatened
Peregrine Falcon	Special Concern	Not at Risk
Eastern Wood-pewee	Special Concern	Special Concern
Least Bittern	Threatened	Threatened
Common Nighthawk	Special Concern	Threatened
Northern Bobwhite	Endangered	Endangered
Butternut	Endangered	Endangered
Midland Painted Turtle	-	Special Concern
Snapping Turtle	Special Concern	Special Concern
Blanding's Turtle	Threatened	Threatened
Northern Map Turtle	Special Concern	Special Concern
Eastern Musk Turtle	Special Concern	Special Concern
Eastern Milksnake	-	Special Concern
Eastern Ribbonsnake	Special Concern	Threatened
Jefferson Salamander (2005 observation date)	Endangered	Endangered
Mottled Duskywing	Endangered	-
Monarch	Special Concern	Special Concern
Butternut	Endangered	Endangered

I was hoping you would be able to provide any additional information that was not recorded in the database search. Thank you in advance for you time and help in this matter.

Thanks,

Erica Wilkinson, B.A., ERPG
Ecologist

MATRIX SOLUTIONS INC.
Environment & Engineering
7B, 650 Woodlawn Rd. W, Guelph, ON N1K 1B8
D 226.314.1915
T 519.772.3777 **F** 226.314.1908
24-Hour Emergency Spill Response 1.877.774.5525
www.matrix-solutions.com

APPENDIX B
Detailed Tree Inventory

Project: Lakeshore Part C
Client: HDR
Collectors: EW/PD
Date: June 2/2021
Area: Part C

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	DBH Estimation	Additional Stems	Private Yard	Tree Type	Street Name	Side of Credit River (W/E)	TPZ (m)- City of Mississauga	Unimpacted	Protection	Potential Injury	Removal	Comments	Conservation Authority
270	Ulmus pumila	Siberian Elm	45.0				Valley	N of Lakeshore Road	W	3.00				x		CVC
271	Ulmus pumila	Siberian Elm	60.0		3		Valley	N of Lakeshore Road	W	3.60				x	DBH 60/12/12/12	CVC
273	Acer negundo	Manitoba Maple	27.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
274	Ulmus pumila	Siberian Elm	19.0				Valley	N of Lakeshore Road	W	1.50				x	Use GPS Code 4 for this point.	CVC
275	Acer negundo	Manitoba Maple	68.0		1		Valley	N of Lakeshore Road	W	4.20				x	DBH 68/46	CVC
276	Acer negundo	Manitoba Maple	24.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
277	Acer negundo	Manitoba Maple	50.0		1		Valley	N of Lakeshore Road	W	3.00		x	x		DBH 50/19	CVC
278	Acer negundo	Manitoba Maple	35.0		3		Valley	N of Lakeshore Road	W	2.40				x	DBH 35/32/28/25	CVC
279	Ulmus pumila	Siberian Elm	29.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
280	Ulmus pumila	Siberian Elm	90.0				Valley	N of Lakeshore Road	W	5.40				x		CVC
281	Acer negundo	Manitoba Maple	31.0		1		Valley	N of Lakeshore Road	W	2.40				x	DBH 31/17	CVC
282	Acer negundo	Manitoba Maple	18.0		1		Valley	N of Lakeshore Road	W	1.50				x	DBH 18/15	CVC
283	Acer saccharinum	Silver Maple	29.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
284	Fraxinus pennsylvanica	Green Ash	16.0				Valley	N of Lakeshore Road	W	1.50				x	Dead	CVC
285	Salix sp.	Crack Willow	110.0		1		Valley	N of Lakeshore Road	W	6.60				x	DBH 110/36, Right on EOW	CVC
286	Acer platanoides	Norway Maple	18.0				Valley	N of Lakeshore Road	W	1.50				x		CVC
287	Acer negundo	Manitoba Maple	42.0				Valley	N of Lakeshore Road	W	3.00				x	Half dead.	CVC
288	Ulmus pumila	Siberian Elm	25.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
289	Acer negundo	Manitoba Maple	14.0				Valley	N of Lakeshore Road	W	1.50				x		CVC
290	Juglans nigra	Black Walnut	24.0				Valley	N of Lakeshore Road	W	1.80				x	Small terminal leaflet.	CVC
291	Fraxinus pennsylvanica	Green Ash	46.0				Valley	N of Lakeshore Road	W	3.00				x		CVC
292	Acer negundo	Manitoba Maple	23.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
293	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	W	1.50				x		CVC
294	Fraxinus pennsylvanica	Green Ash	16.0				Valley	N of Lakeshore Road	W	1.50				x	Dead	CVC
295	Ulmus pumila	Siberian Elm	18.0				Street/Park	N of Lakeshore Road	W	1.50				x		CVC
296	Ulmus pumila	Siberian Elm	14.0				Street/Park	N of Lakeshore Road	W	1.50				x		CVC
297	Ulmus pumila	Siberian Elm	10.0				Street/Park	N of Lakeshore Road	W	1.50				x	Behind fence.	CVC
298	Ulmus pumila	Siberian Elm	11.0				Street/Park	N of Lakeshore Road	W	1.50				x	Behind fence.	CVC
299	Robinia pseudoacacia	Black Locust	25.0		1		Street/Park	N of Lakeshore Road	W	1.80				x	DBH 25/13, Behind fence.	CVC
300	Juglans nigra	Black Walnut	75.0				Street/Park	N of Lakeshore Road	W	4.80				x	Pruned for hydro.	CVC
301	Thuja occidentalis	Eastern White Cedar	27.0		1		Street/Park	N of Lakeshore Road	W	1.80				x	DBH 27/15, behind fence.	CVC
302	Thuja occidentalis	Eastern White Cedar	28.0		2		Street/Park	N of Lakeshore Road	W	1.80				x	DBH 28/16/11	CVC
303	Acer negundo	Manitoba Maple	30.0				Street/Park	N of Lakeshore Road	W	1.80		x	x			CVC
304	Thuja occidentalis	Eastern White Cedar	27.0				Street/Park	N of Lakeshore Road	W	1.80		x	x			CVC
305	Thuja occidentalis	Eastern White Cedar	24.0				Street/Park	N of Lakeshore Road	W	1.80		x	x			CVC

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	DBH Estimation	Additional Stems	Private Yard	Tree Type	Street Name	Side of Credit River (W/E)	TPZ (m)- City of Mississauga	Unimpacted	Protection	Potential Injury	Removal	Comments	Conservation Authority
306	Acer saccharinum	Silver Maple	137.0				Street/Park	N of Lakeshore Road	W	8.22				x	Beautiful.	CVC
307	Acer negundo	Manitoba Maple	27.0				Valley	N of Lakeshore Road	E	1.80	x					CVC
308	Acer negundo	Manitoba Maple	10.0		1		Valley	N of Lakeshore Road	E	1.50	x				DBH 10/8	CVC
309	Acer negundo	Manitoba Maple	14.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
310	Juglans nigra	Black Walnut	10.0				Valley	N of Lakeshore Road	E	1.50		x				CVC
311	Acer negundo	Manitoba Maple	10.0				Valley	N of Lakeshore Road	E	1.50		x				CVC
312	Acer negundo	Manitoba Maple	12.0		1		Valley	N of Lakeshore Road	E	1.50		x			DBH 12/12	CVC
313	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	E	1.50		x	x			CVC
314	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	E	1.50		x				CVC
315	Acer negundo	Manitoba Maple	19.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
316	Acer negundo	Manitoba Maple	17.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
317	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
318	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
319	Rhus typhina	Staghorn Sumac	15.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
320	Acer negundo	Manitoba Maple	14.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
321	Rhus typhina	Staghorn Sumac	17.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
322	Acer negundo	Manitoba Maple	14.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
323	Ulmus americana	American Elm	31.0		2		Valley	N of Lakeshore Road	E	2.40				x	DBH 31/17/6	CVC
324	Acer negundo	Manitoba Maple	23.0				Valley	N of Lakeshore Road	E	1.80		x				CVC
325	Acer negundo	Manitoba Maple	19.0				Valley	N of Lakeshore Road	E	1.50		x	x			CVC
326	Acer negundo	Manitoba Maple	18.0		1		Valley	N of Lakeshore Road	E	1.50		x	x		DBH 18/16	CVC
327	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
328	Acer negundo	Manitoba Maple	13.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
329	Acer saccharinum	Silver Maple	27.0		1		Valley	N of Lakeshore Road	E	1.80				x	DBH 27/19	CVC
330	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
331	Acer negundo	Manitoba Maple	21.0				Valley	N of Lakeshore Road	E	1.80				x		CVC
332	Acer negundo	Manitoba Maple	19.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
333	Acer negundo	Manitoba Maple	15.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
334	Acer negundo	Manitoba Maple	19.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
335	Acer negundo	Manitoba Maple	17.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
336	Acer negundo	Manitoba Maple	17.0		1		Valley	N of Lakeshore Road	E	1.50				x	DBH 17/17	CVC
337	Acer negundo	Manitoba Maple	17.0		2		Valley	N of Lakeshore Road	E	1.50				x	DBH 17/15/12	CVC
338	Acer negundo	Manitoba Maple	13.0		1		Valley	N of Lakeshore Road	E	1.50		x			DBH 13/10	CVC
339	Acer negundo	Manitoba Maple	14.0		1		Valley	N of Lakeshore Road	E	1.50				x	DBH 14/10	CVC
340	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
341	Acer negundo	Manitoba Maple	16.0		1		Valley	N of Lakeshore Road	E	1.50				x	DBH 16/14	CVC
342	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
343	Celtis occidentalis	Hackberry	17.0				Valley	N of Lakeshore Road	E	1.50				x		CVC

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	DBH Estimation	Additional Stems	Private Yard	Tree Type	Street Name	Side of Credit River (W/E)	TPZ (m)- City of Mississauga	Unimpacted	Protection	Potential Injury	Removal	Comments	Conservation Authority
344	Acer negundo	Manitoba Maple	13.0				Valley	N of Lakeshore Road	E	1.50				x		CVC
345	Acer negundo	Manitoba Maple	20.0				Valley	N of Lakeshore Road	E	1.50		x	x			CVC
346	Acer negundo	Manitoba Maple	13.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
347	Acer negundo	Manitoba Maple	17.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
348	Acer negundo	Manitoba Maple	26.0		1		Valley	N of Lakeshore Road	E	1.80	x				DBH 26/10	CVC
349	Celtis occidentalis	Hackberry	25.0				Valley	N of Lakeshore Road	E	1.80		x	x			CVC
350	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	E	1.50		x	x			CVC
351	Celtis occidentalis	Hackberry	20.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
352	Acer negundo	Manitoba Maple	11.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
353	Populus deltoidesssp. deltoides	Eastern Cottonwood	41.0		1		Valley	N of Lakeshore Road	E	3.00		x	x		DBH 41/37, old tag 00048	CVC
354	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
355	Rhus typhina	Staghorn Sumac	12.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
356	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50	x				Growing through fence.	CVC
357	Rhus typhina	Staghorn Sumac	20.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
358	Rhus typhina	Staghorn Sumac	13.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
359	Acer negundo	Manitoba Maple	14.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
360	Rhus typhina	Staghorn Sumac	15.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
361	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
362	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50		x	x			CVC
363	Acer negundo	Manitoba Maple	18.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
364	Acer negundo	Manitoba Maple	29.0				Valley	N of Lakeshore Road	E	1.80		x	x			CVC
365	Acer negundo	Manitoba Maple	10.0				Valley	N of Lakeshore Road	E	1.50	x					CVC
366	Carpinus caroliniana	Blue Beech	10.0		1		Valley	N of Lakeshore Road	E	1.50		x			DBH 10/7	CVC
367	Populus deltoidesssp. deltoides	Eastern Cottonwood	32.0				Valley	N of Lakeshore Road	E	2.40	x					CVC
368	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
369	Acer saccharinum	Silver Maple	22.0				Valley	N of Lakeshore Road	W	1.80		x	x			CVC
370	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	W	1.50		x	x			CVC
371	Acer negundo	Manitoba Maple	35.0				Valley	N of Lakeshore Road	W	2.40	x					CVC
372	Acer negundo	Manitoba Maple	15.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
373	Acer negundo	Manitoba Maple	11.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
374	Juglans nigra	Black Walnut	14.0				Valley	N of Lakeshore Road	W	1.50		x	x			CVC
375	Quercus macrocarpa	Bur Oak	10.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
376	Quercus alba	White Oak	13.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
377	Acer negundo	Manitoba Maple	16.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
378	Juglans nigra	Black Walnut	11.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
379	Magnolia sp.	Umbrella Magnolia	17.0				Valley	N of Lakeshore Road	W	1.50	x					CVC
380	Acer platanoides	Norway Maple	29.0				Valley	N of Lakeshore Road	W	1.80	x					CVC
381	Acer saccharinum	Silver Maple	26.0				Valley	N of Lakeshore Road	W	1.80	x					CVC

TAG#	Species Scientific Name	Species Common Name	DBH (cm)	DBH Estimation	Additional Stems	Private Yard	Tree Type	Street Name	Side of Credit River (W/E)	TPZ (m)- City of Mississauga	Unimpacted	Protection	Potential Injury	Removal	Comments	Conservation Authority
382	Acer saccharinum	Silver Maple	26.0				Valley	N of Lakeshore Road	W	1.80				x		CVC
383	Platanus occidentalis	Sycamore	18.0				Street/Park	N of Lakeshore Road	W	1.50		x				CVC
384	Quercus alba	White Oak	16.0				Street/Park	N of Lakeshore Road	W	1.50		x				CVC
385	Quercus macrocarpa	Bur Oak	16.0				Street/Park	N of Lakeshore Road	W	1.50	x					CVC
386	Liriodendron tulipifera	Tulip Tree	16.0				Street/Park	N of Lakeshore Road	W	1.50	x					CVC
387	Platanus occidentalis	Sycamore	30.0				Street/Park	N of Lakeshore Road	W	1.80		x	x			CVC
388	Acer saccharinum	Silver Maple	30.0				Street/Park	N of Lakeshore Road	W	1.80		x	x			CVC
389	Acer saccharinum	Silver Maple	29.0				Street/Park	N of Lakeshore Road	W	1.80		x				CVC
390	Quercus rubra	Red Oak	23.0				Street/Park	N of Lakeshore Road	W	1.80	x					CVC
391	Quercus rubra	Red Oak	20.0				Street/Park	N of Lakeshore Road	W	1.50	x					CVC
392	Quercus macrocarpa	Bur Oak	21.0				Street/Park	N of Lakeshore Road	W	1.80	x					CVC
393	Acer saccharum ssp. saccharum	Sugar Maple	20.0				Street/Park	N of Lakeshore Road	W	1.50	x					CVC
394	Acer saccharum ssp. saccharum	Sugar Maple	14.0				Street/Park	N of Lakeshore Road	W	1.50	x					CVC
395	Tilia americana	Basswood	27.0				Street/Park	N of Lakeshore Road	W	1.80		x				CVC
396	Tilia americana	Basswood	26.0				Street/Park	N of Lakeshore Road	W	1.80		x				CVC

Legend

DBH (cm)	Diameter at breast height
TI	Trunk Integrity
CS	Crown Structure
CV	Crown Vigour
DL (m)	Drip Line
CDB	Crown Dieback
EAB	Emeral Ash Borer
ESA/SARA	Species at Risk
TPZ	Tree Protection Zone
Lean Dir.	Lean Direction

Condition

G	Good
F	Fair
P	Poor
D	Dead
L	Light
M	Moderate
H	Heavy
E	East
W	West
N	North
S	South

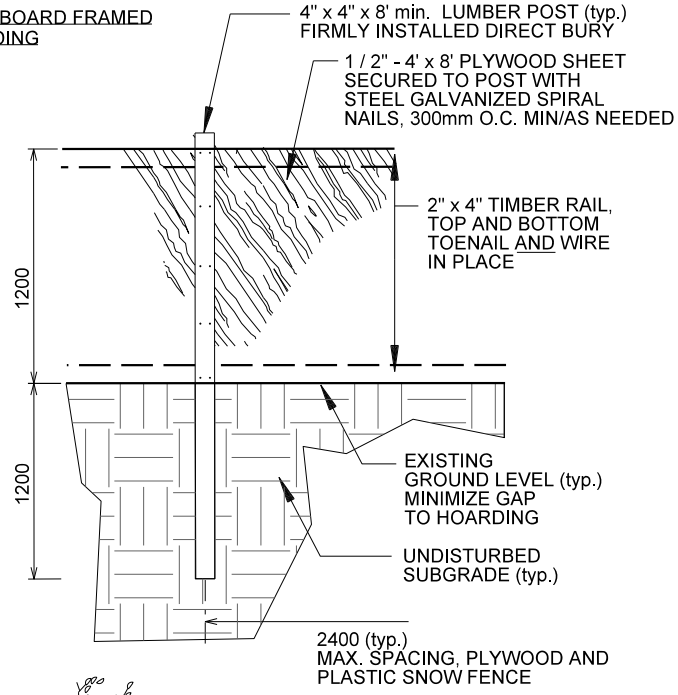
APPENDIX C
Tree Protection Detail

02830-6

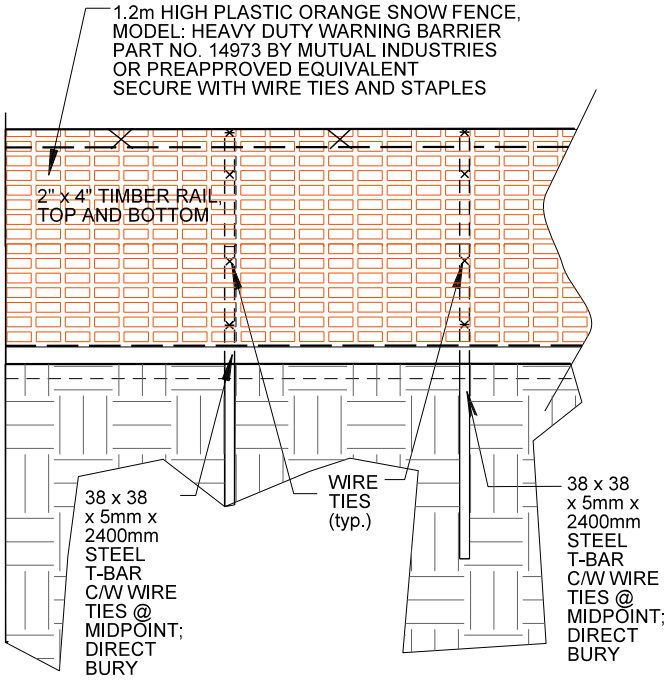
Hoarding
Framed Protective Construction Hoarding
Solid Board- Plastic Snow Fence

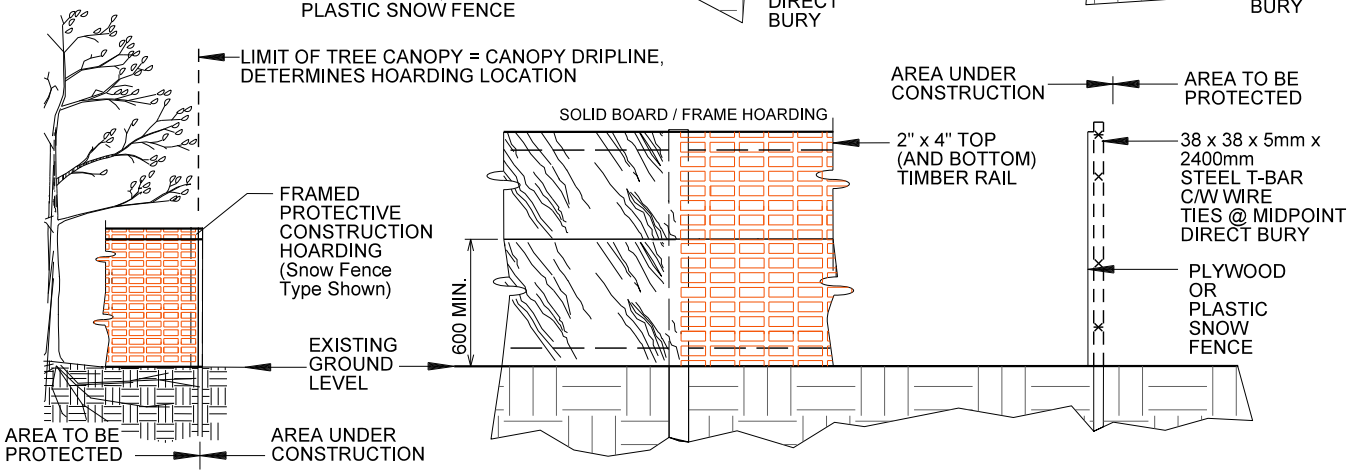
NOTE:
TO BE USED AS A GUIDELINE ONLY. NOT TO SCALE. REMOVE CITY TITLE BLOCK AND REDRAW TO REPRESENT SITE SPECIFIC CONDITIONS. ALL SITE SPECIFIC CONDITIONS ARE TO BE CONFIRMED BY THE PROJECT CONSULTANT.

SOLID BOARD FRAMED HOARDING



PLASTIC SNOW FENCE FRAMED HOARDING





NOTES:

1. HOARDING LOCATION AS PER DRAWINGS. HOARDING INSTALLATIONS ARE TO INCLUDE WOVEN GEOTEXTILE FABRIC FOR SEDIMENT CONTROL.
2. NO MOBILIZATION OR CONSTRUCTION WORK TO OCCUR UNTIL HOARDING HAS BEEN INSPECTED AND APPROVED BY COMMUNITY SERVICES PROJECT MANAGER (CSPM). CONTRACTOR TO ARRANGE FOR A HOARDING INSPECTION WITH (CSPM), 48 HOUR NOTICE RQUIRED.
3. HOARDING TO BE SUPPLIED, INSTALLED AND MAINTAINED BY THE CONTRACTOR THROUGH ALL PHASES OF WORK ON SITE.
4. THE CONTRACTOR IS TO REMOVE AND DISPOSE THE HOARDING OFF SITE WHEN DIRECTED BY THE (CSPM).
5. ALL WOOD PRODUCTS TO BE NEW AND LUMBER KILN DRIED SPF.
6. ALL FASTENERS TO BE NEW GALVANIZED STEEL AND SECURELY INSTALLED. WIRE TIES MIN 3.5mm DIA. GALVANIZED STEEL.
7. DO NOT ALLOW WATER TO COLLECT AND/OR POND ON EITHER SIDE OF THE HOARDING.
8. WHEN INSTALLING DIRECT BURY TIMBER POSTS AND T-BARS, TAKE CARE TO AVOID VISIBLE AND ASCERTAINABLE TREE ROOTS.
9. PLACE HOARDING AT LIMIT OF TREE CANOPY DRIP LINE OR BEYOND (E.G. FURTHER AWAY FROM TRUNK) OF TREE.
10. HOARDED OFF AREA TO REMAIN UNDISTURBED. NO STOCKPILING, STAGING OR MOVEMENT OF VEHICLES TO OCCUR WITHIN PROTECTED AREA.
11. FOR PROTECTION OF TREE'S AND ROOT SYSTEM, CONTRACTOR MAY BE REQUIRED TO PROVIDE WATERING, MULCHING, FERTILIZING, PRUNING OR OTHER ACTIVITIES TO ENSURE THE HEALTH OF THE TREE(S).
12. ALL MEASUREMENTS IN MILLIMETRES UNLESS NOTED OTHERWISE (E.G. DIMENSIONAL LUMBER).
13. CONTRACTOR RESPONSIBLE FOR LOCATES

N.T.S.

APPENDIX D
Tree Preservation Plan

- AT Bridge Footprint
- Tree Inventory Limit
- Rail Corridor – No Access
- Preferred Crossing Location
- Watercourse
- Railway
- Road

1:2,000 metres
20 0 20 40
NAD 1983 UTM Zone 17N

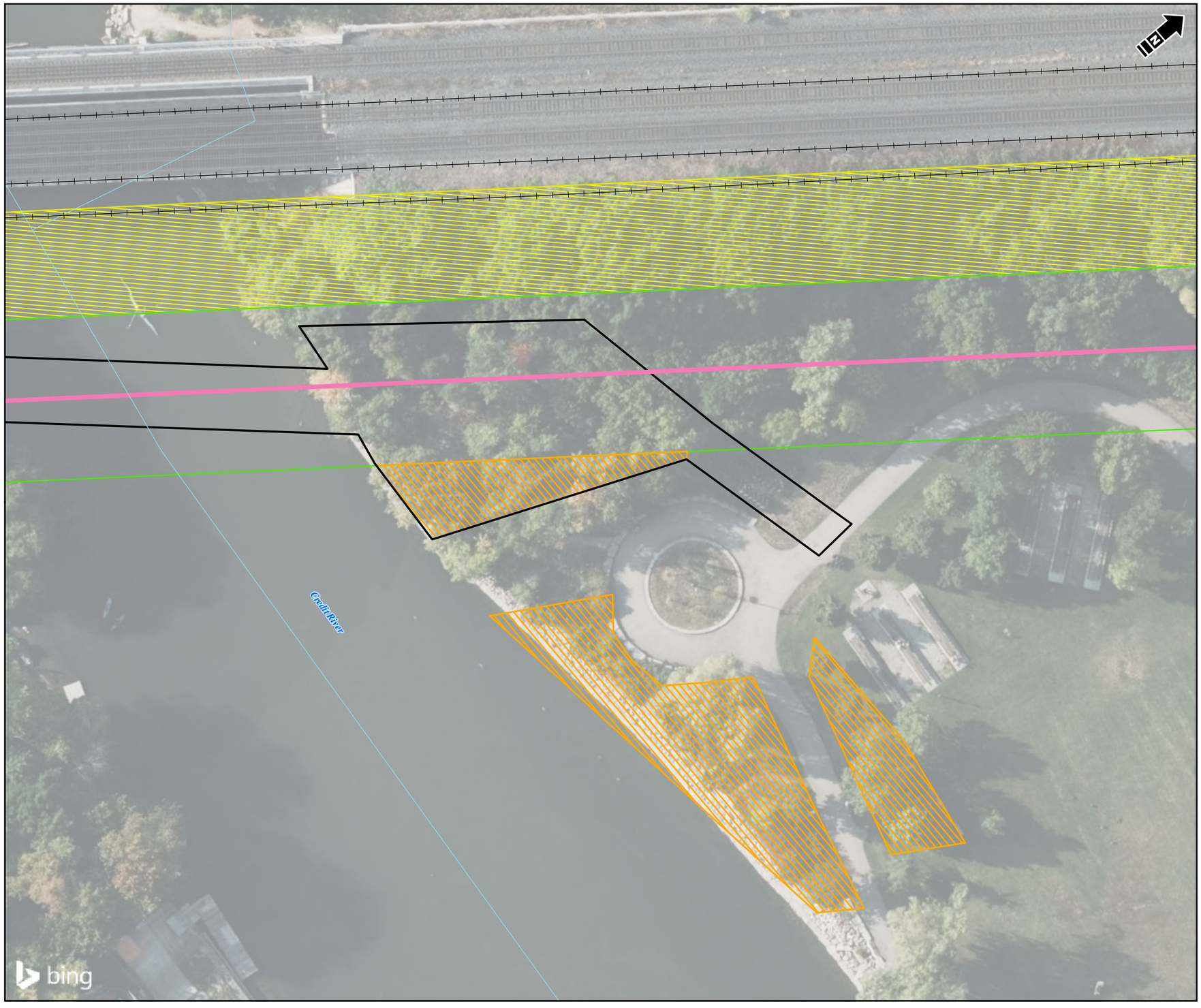
Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

HDR Corporation
Lakeshore Credit River Active Transportation Bridge Study

Tree Inventory Study Area

Date:	Project:	Submitter:	Reviewer:
June 2022	32259	E. Wilkinson	R. Leppington

Figure 1



- AT Bridge Footprint
- Tree Inventory Limit
- Additional Area of Tree Inventory Required
- Rail Corridor – No Access
- Preferred Crossing Location
- Watercourse
- Railway

1:500 metres
5 0 5 10
NAD 1983 UTM Zone 17N

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

HDR Corporation
Lakeshore Credit River Active Transportation Bridge Study

Areas Requiring Additonal Tree Inventory During Detailed Design Phase

Date:	Project:	Submitter:	Reviewer:
June 2022	32259	E. Wilkinson	R. Leppington

Figure 2