

MEMORANDUM

To: Michelle Taggart, Tamarack Developments
From: Anne-Claude Schellenberg
Date: December 13, 2018
Subject: **Street Tree Planting Assessment – Meadows Phases 7-8** Project no: 18-230

This memo provides an assessment of the potential for street tree planting in Tamarack Developments' the Meadows community, phases 7-8. The clay soil map, **Appendix 1**, from the project geotechnical report (PG4242-1, 16-Mar-18) identifies both non-clay (Area 1) and low-to-moderate plasticity clay soils (Area 2) within the project site. There are no tree planting restrictions in Area 1, whereas the City of Ottawa's Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines apply to Area 2 where the tree-to-foundation setback may be reduced to 4.5m for small and medium size trees provided six conditions are met.

1 Modified plasticity index below 40%

Refer to Geotechnical Report.

2 USF Depth 2.1m

Refer to Grading Plan.

3 Soil volume

The city requires a minimum uncompacted soil volume of 25m³ for small trees and 30m³ for medium trees. Soil volume is based on lot Length x Width x 1.5m Depth. Driveway areas are excluded; these are calculated at 50% of the total lot width as this is permitted under the Zoning Bylaw. Shallow utility trenches are excluded; these are calculated using standard excavator widths and specified utility depths. Soil volumes calculations are shown in **Appendix 2**. Tree planting constraints due to soil volume are discussed in the assessment below.

4 Tree Species to be confirmed by Landscape Architect

The Plant List on the future Streetscape Plans will organize species based on the City's definition of "small", "medium" and "large" trees.

5 Reinforcement of foundation walls

Refer to Geotechnical Report.

6 Grading surrounding the tree must promote draining to the tree root zone

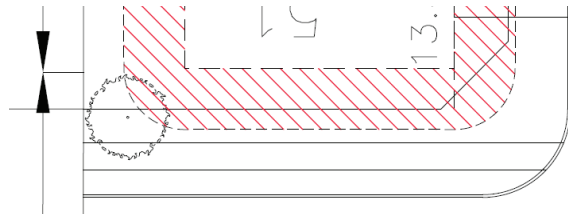
Refer to Standard Detail for Tree Planting in Marine Clay Soils, **Appendix 3**.

Tree Planting Assessment

The landscape conditions above meet the City's requirements for a reduced 4.5m tree-to-foundation setback, and it is assumed that the remaining conditions are also met for the purposes of this assessment.

A. Tree-to-foundation setbacks

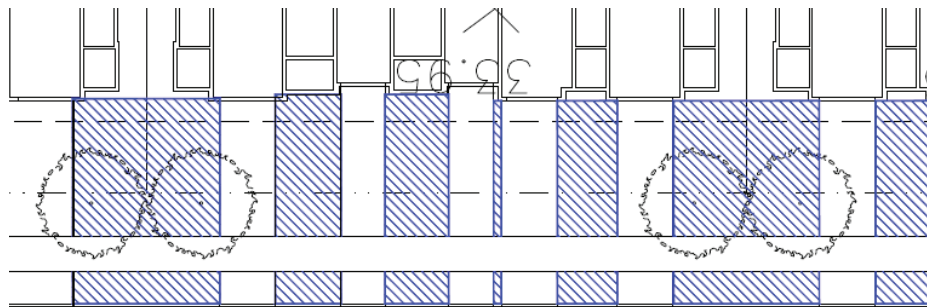
The proposed front yard setbacks have been used to determine whether the 4.5m tree-to-foundation distance can be achieved for all lots. The tree-to-foundation calculations are summarized in **Appendix 4**. The required 4.5 tree-to-foundation setback is met for all front yards under the proposed design. The zoning setbacks for side yards are typically restrictive for tree planting; in this case 11 side yards, highlighted in the summary table, are impacted. For these locations, it is anticipated that 1 tree will be able to be planted, closer to the rear property line where the 4.5m offset can be met.



Side lot tree planting outside the 4.5m tree-to-foundation offset

B. Soil volume

The soil volume calculations in Appendix 2 demonstrate that in most cases, soil volume requirements are being met in the proposed design. The only condition where this requirement is not met is for the interior units of townhouse blocks. Trees cannot be planted for 32 interior townhouse lots. Tree planting at these lots will be staggered along the street.



Front yard tree planting at townhouse blocks.

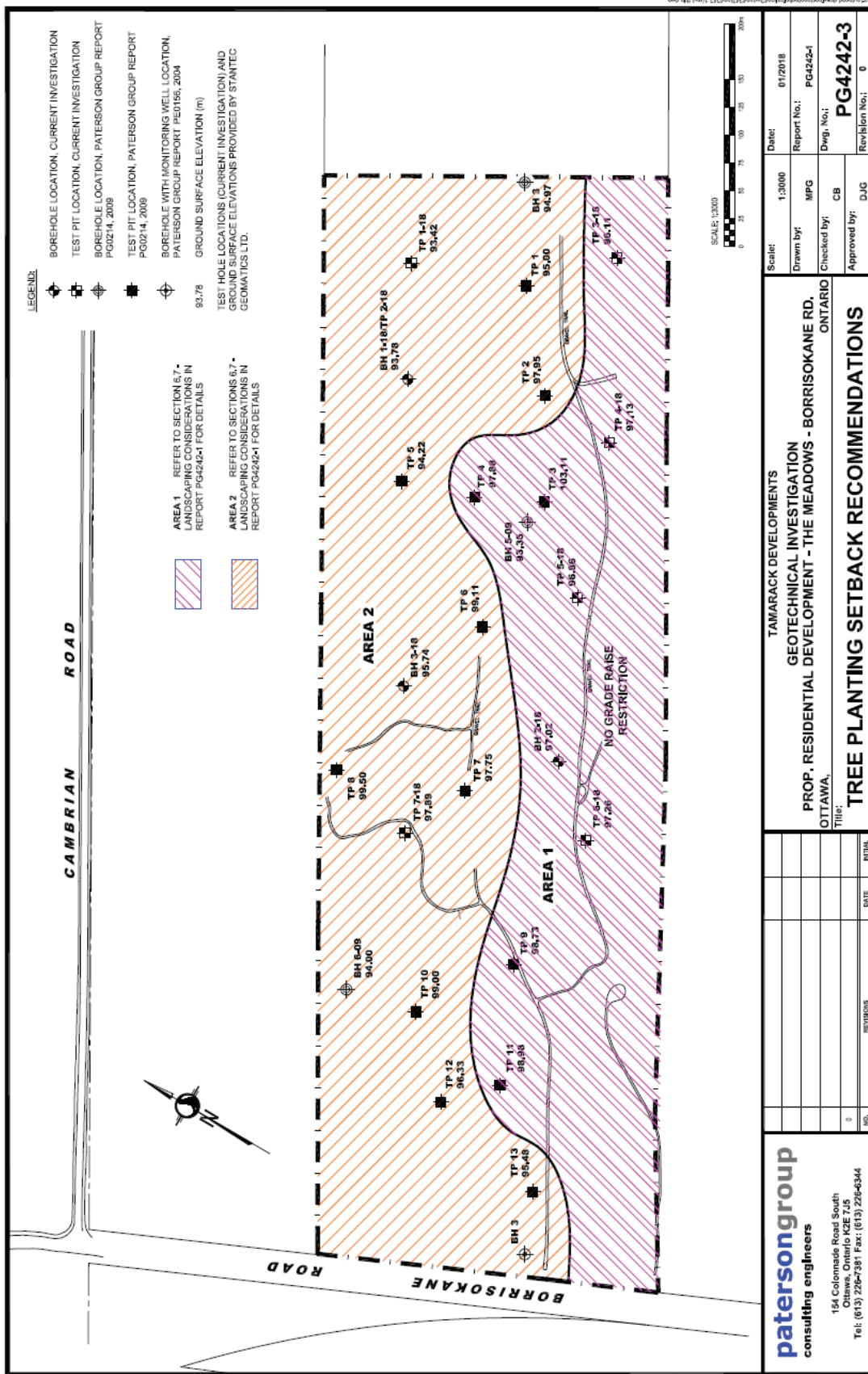
C. Plan Showing Constrained Areas for Tree Planting



I trust this is satisfactory, please don't hesitate to contact the undersigned should you require additional information.

(Signature)
Anne-Claude Schellenberg, OALA, CSLA
Associate

Appendix 1: Clay Soils Map



Source: Paterson Group Report PG4242-1 (March 16, 2018).

Appendix 2: Soil Volume Calculations

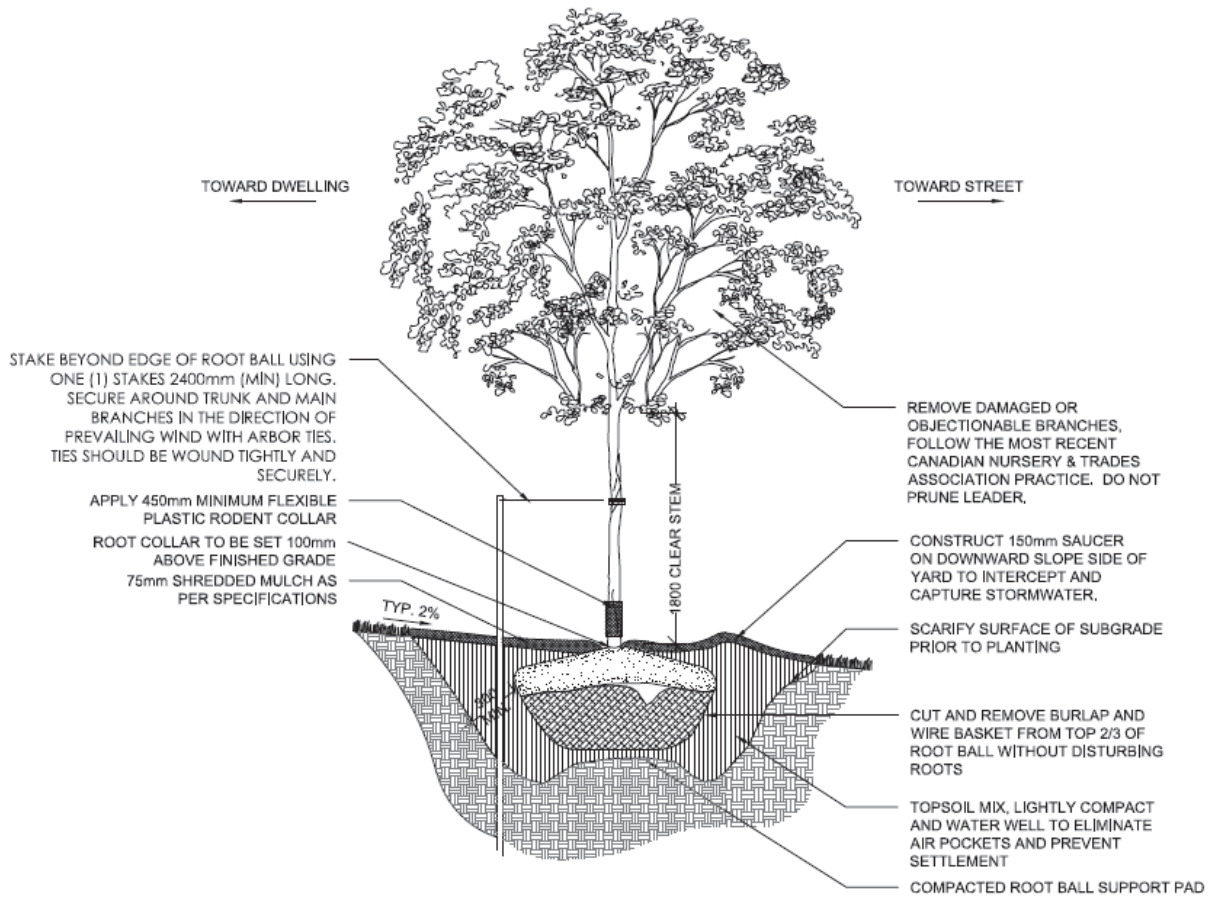
Street No.	House type	ROW XS (m)	Sidewalk	Lawn Length (m)				GROSS SOIL VOLUME				SUBTRACT: UTILITY-TRENCH VOLUMES										NET VOLUME (m ³)	TREE SIZE SUPPORTED	LOCATION RESTRICTIONS	NUMBER OF LOTS IMPACTED								
				Proposed Setback (m)	Median Width ROW XS (m)	Total Lawn Length	Lawn Width	Area	Soil Depth	Soil Volume	Lot Width (m)	Trench Width (m)	Trench Depth (m)	Trench Volume (m ³)	Lot Length (m)	Trench Width (m)	Trench Depth (m)	Trench Volume (m ³)															
																			Max. Driveway Width	Lawn Width	Soil Volume					Lot Width (m)	Trench Width (m)	Trench Depth (m)	Trench Volume (m ³)	Lot Length (m)	Trench Width (m)	Trench Depth (m)	Trench Volume (m ³)
1	towns	24	yes	4.00	4.50	8.50	6.10	3.05	25.93	1.50	38.89	8.50	1.20	1.50	15.30	3.05	0.60	1.00	1.83	21.76	3.91	33.24	1.50	1.50	15.30	3.91	0.60	1.00	2.35	32.21	none	interior units - no trees end units - medium trees	11
2	towns	18	yes	4.00	2.95	6.95	6.10	3.05	21.20	1.50	31.80	6.95	1.20	1.50	12.51	3.05	0.60	1.00	1.83	17.46	3.91	27.17	1.50	1.50	12.51	3.91	0.60	1.00	2.35	25.91	none	interior units - no trees end units - small trees	7
2	towns	18	no	4.00	4.75	8.75	6.10	3.05	26.69	1.50	40.03	8.75	1.20	1.50	15.75	3.05	0.60	1.00	1.83	22.45	3.91	34.21	1.50	1.50	15.75	3.91	0.60	1.00	2.35	33.22	none	interior units - no trees end units - medium trees	7
3	singles	16.5	yes	4.00	2.20	6.20	11.58	5.79	35.90	1.50	53.85	6.20	1.20	1.50	11.16	5.79	0.60	1.00	3.47	39.21	5.79	46.32	1.50	1.50	11.16	5.79	0.60	1.00	3.47	51.61	all units - medium trees all units - medium trees		
4	singles	16.5	yes	4.00	2.20	6.20	11.58	5.79	35.90	1.50	53.85	6.20	1.20	1.50	11.16	5.79	0.60	1.00	3.47	39.21	5.79	46.32	1.50	1.50	11.16	5.79	0.60	1.00	3.47	51.61	all units - medium trees all units - medium trees		
5	singles	16.5	no	4.00	4.00	8.00	11.58	5.79	46.32	1.50	69.48	8.00	1.20	1.50	14.40	5.79	0.60	1.00	3.47	39.21	5.79	46.32	1.50	1.50	14.40	5.79	0.60	1.00	3.47	51.61	all units - medium trees all units - medium trees		
6	b2b	16.5	no	5.75	4.00	9.75	6.50	3.25	31.69	1.50	47.53	9.75	1.20	1.50	17.55	3.25	0.60	1.00	1.95	28.03	3.25	41.34	1.50	1.50	17.55	3.25	0.60	1.00	2.54	41.92	center units - small trees end units - medium trees		
6	b2b	14	no	5.75	4.00	9.75	6.50	3.25	31.69	1.50	47.53	9.75	1.20	1.50	17.55	3.25	0.60	1.00	1.95	28.03	3.25	41.34	1.50	1.50	17.55	3.25	0.60	1.00	2.54	41.92	center units - small trees end units - medium trees		
7	singles	16.5	yes	4.00	2.20	6.20	11.58	5.79	35.90	1.50	53.85	6.20	1.20	1.50	11.16	5.79	0.60	1.00	3.47	39.21	5.79	46.32	1.50	1.50	11.16	5.79	0.60	1.00	3.47	51.61	all units - medium trees all units - medium trees		
7	towns	16.5	no	4.00	4.00	8.00	6.10	3.05	24.40	1.50	36.60	8.00	1.20	1.50	14.40	3.05	0.60	1.00	1.83	20.37	3.91	31.28	1.50	1.50	14.40	3.91	0.60	1.00	2.35	30.17	interior units - no trees end units - medium trees	3	
8	towns	16.5	no	4.00	4.00	8.00	6.10	3.05	24.40	1.50	36.60	8.00	1.20	1.50	14.40	3.05	0.60	1.00	1.83	20.37	3.91	31.28	1.50	1.50	14.40	3.91	0.60	1.00	2.35	30.17	interior units - no trees end units - medium trees	2	
9	towns	16.5	no	4.00	4.00	8.00	6.10	3.05	24.40	1.50	36.60	8.00	1.20	1.50	14.40	3.05	0.60	1.00	1.83	20.37	3.91	31.28	1.50	1.50	14.40	3.91	0.60	1.00	2.35	30.17	interior units - no trees end units - medium trees	2	
9	b2b	16.5	no	5.75	4.00	9.75	6.50	3.25	31.69	1.50	47.53	9.75	1.20	1.50	17.55	3.25	0.60	1.00	1.95	28.03	3.25	41.34	1.50	1.50	17.55	3.25	0.60	1.00	2.54	41.92	interior units - small trees end units - medium trees		
9	b2b	14	no	5.75	4.00	9.75	6.50	3.25	31.69	1.50	47.53	9.75	1.20	1.50	17.55	3.25	0.60	1.00	1.95	28.03	3.25	41.34	1.50	1.50	17.55	3.25	0.60	1.00	2.54	41.92	interior units - small trees end units - medium trees		

soil volume requirement is not met

variable fields (sidewalk and lot width)

Notes
1. Trench width and depth based on standard excavator width and specified depth.
2. Building to curb distance is based on the closest portion of the building foundation to the curb.
3. A medium tree (approx 7.5-15m mature height) requires 30m³ of continuous soil volume (City of Ottawa).
4. A small tree (approx 7.5m mature height) requires 25m³ of continuous soil volume (City of Ottawa).
5. Refer to City of Ottawa "Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines" for other tree planting conditions.

Appendix 3: Standard Tree Planting Detail for Marine Clay Soils



NOTES:

1. REMOVE STAKE AND RODENT GUARD AFTER ONE YEAR OR UNTIL TAKEOVER, UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
2. TOPSOIL MIXTURE AND SHREDDED MULCH AS PER SPECIFICATION
3. REMOVE TREE WRAP & ALL TIES AND TAPES IMMEDIATELY AFTER PLANTING
4. CALIPER TO BE MEASURED AT THE BASE OF TREE AT ROOT BALL.
5. FOR GRADING INFORMATION, REFER TO ENGINEERING PLAN

Appendix 4: Tree-to-foundation distance calculations

Street	House type	ROW XS (m)	Yard	Zoning Setback (m)	Proposed Setback (m)	Tree-to-PL dist (m)	Tree-to-Foundation dist (m)	Complies with Low-to-Mod. Plasticity, 4.5m distance	# of lots impacted
1	towns	24	front	3.00	4.00	0.60	4.60	Y	
1	singles	24	side	3.00	3.00	0.60	3.60	N	2
2	towns	18	front	3.00	4.00	2.25	6.25	Y	
2	towns	18	side	3.00	3.00	2.25	5.25	Y	
3	singles	16.5	front	3.00	4.00	0.60	4.60	Y	
4	singles	16.5	front	3.00	4.00	0.60	4.60	Y	
4	singles	16.5	side	3.00	4.00	0.60	4.60	y	
5	singles	16.5	front	3.00	4.00	0.60	4.60	Y	
6	b2b	16.5	front	3.00	5.75	0.60	6.35	Y	
6	singles	16.5	side	3.00	3.00	0.60	3.60	N	3
6	b2b	14	front	3.00	5.75	2.50	8.25	Y	
6	b2b	14	side	3.00	3.00	2.50	5.50	Y	
7	singles	16.5	front	3.00	4.00	0.60	4.60	Y	
7	singles	16.5	side	3.00	3.00	0.60	3.60	N	1
7	towns	16.5	front	3.00	4.00	0.60	4.60	Y	
7	towns	16.5	side	3.00	3.00	0.60	3.60	N	1
8	towns	16.5	front	3.00	4.00	0.60	4.60	Y	
8	towns	16.5	side	3.00	3.00	0.60	3.60	N	2
9	towns	16.5	front	3.00	4.00	0.60	4.60	y	
9	towns	14	side	3.00	3.00	0.60	3.60	N	2
9	b2b	16.5	front	3.00	5.75	0.60	6.35	Y	
9	b2b	14	front	3.00	3.00	2.50	5.50	Y	
9	b2b	14	side	3.00	3.00	2.50	5.50	Y	
Required 4.5m tree-to-foundation setback is not met									